Standard Conditions for Works Adjacent to Pipelines

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Issue 3 March 2015

AMENDMENT SUMMARY

Amendment No. Date	Brief Description and Amending Action	Owner	Verifier
3.0 March 2015	Full review and update	Neil Sixsmith	Jim Tresnan
2.0 May 2014	Full review and update. Appendix 1 incorporated to provide guidance on tree roots and planting. Improvements to document around vibration monitoring and discolouration	Peter Tucker	Nick Preston
1.2 October 2007	Alterations into Distribution Manual	Richard Duckett	
1.1 August 2007	Alteration to Guideline number 12	Paul Gough	Tony Conway
1 July 2003	First issue in standard format	Phil Hayden / Ian Skilling	Peter Womersley

HISTORY OF THE DOCUMENT

The following table details the task team involved in the full review of the Standard Conditions:

Date and Issue Number	Task Team members
3.0 March 2015	Peter Tucker – UU Engineering Nick Preston – UU Engineering Jim Tresnan – UU Engineering Neil Sixsmith – UU Water Services (Network) Owen Newton - UU Engineering Mike Taylor – UU Water Services (Network)

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1. SCOPE

This document sets out United Utilities plc. (UU) standard conditions for work carried out over / under or adjacent to a UU Pipeline which can include multiple UU Pipelines laid adjacent to each other.

It is UU company policy not to allow any building over UU Pipelines or water mains. Any such building / structure would compromise UU's obligation to maintain a constant water supply, and in particular would obstruct UU's ability to respond in the event of a failure of the Pipeline. Building over mains also has potential risks to the health and safety of anyone who might be affected by a failure, including the occupants of the building.

2. DEFINITIONS

Term	Definition
Pipeline	Means any aqueduct, trunk main, water distribution main, multiple pipes laid adjacent to each other or non-potable main vested in UU as water undertaker.
Easement Width	Means the Easement Width specified in any document (which may include legal documents e.g. conveyance, lease, deed or grant) referred to in section 3 hereof or, where no such width is specified a width of 10 metres being measured 5 metres each side of the Pipeline from the centreline of the Pipeline(s). For small single Pipelines of up to and including 300mm diameter a width of 5 metres being measured 2.5 metres each side from the centreline of the Pipeline(s) may be adopted (see Figure 1: this shows an example of Easement Widths for Single Pipes). Contact UU for specific Easement Width limits and conditions.
Street	The whole or part of any highway, any road, lane, footway, alley or passage, square or court, whether or not a thoroughfare. A Street can therefore be a footpath, cycle track, bridleway or full vehicular highway. Where a Street passes over a bridge or through a tunnel these are included as part of the Street.
PPV	Peak Particle Velocity
Shall or Must	Mandatory requirements are adopted through the use of 'shall' or 'must' or are otherwise specifically stated. The document also contains information and guidance that is not mandatory but is provided for consideration.
Stopping up Order	An order authorising the stopping up (removal of public rights of way) of any highway, if the Secretary of State is satisfied to do so, to allow development to be carried out in accordance to a valid and relevant planning permission granted under the Town and Country Planning Act 2008 as amended or re-enacted from time to time.
Promoter	Any utility company, self-lay organisation, developer, Highway Authority, Local Authority or any other organisation wishing to work adjacent to or cross over or under a UU Pipeline.

3. GUIDELINES

3.1. General Guidelines

3.1.1. The Standard Conditions are issued for the guidance of Promoters and others to reduce the risk of damage to the Pipeline and the consequent liability for such damage. They do not replace or alter any powers or rights exercisable by, or protection afforded to UU by virtue of: -

a) Its ownership of the Pipeline or any rights or privileges in relation thereto;

b) Any conveyance, lease, deed or grant, easement (see Figure 1 Easement Widths), licence, wayleave or other legal document relating to the Pipeline;

c) Any statutory provision (including any provision in subordinate legislation) including but not limited to: -

i. The Water Industry Act 1991 as amended or re-enacted from time to time, will also apply.

ii. Any local statutory provision relating to a Pipeline and to any work of any other body or person which regulate, either generally or in relation to any specific crossing or work, the relations between UU and such other body or person, including any agreement or other document referred to in or incorporated with any such statutory provision.

In the event of any inconsistency between the provisions of these Standard Conditions and those of any document or statutory provision mentioned above, the latter shall prevail unless capable of variation by agreement and the substitution of the relevant provisions of these Standard Conditions is expressly agreed.

3.1.2. The Standard Conditions apply to all Pipeline(s). In the case of Pipeline(s) located in streets, the provisions of the New Roads and Street Works Act 1991 and the Traffic Management Act 2004, as amended or re-enacted from time to time, will also apply.

3.1.3. No work of any description shall take place on or within the easement width before full agreement has been reached with UU regarding the manner in which the work shall be carried out. At least 28 days' notice shall be given of any intention to carry out works.

3.1.4. No vehicle, plant or machinery is to stand, operate or travel within the Easement Width of the Pipeline except as agreed by United Utilities.

3.1.5. UU reserves the right to supervise any work carried out on or within the Easement Width and to recover the costs incurred.

3.1.6. No buildings / structures of any description shall be erected within the easement unless with UU's written consent.

3.1.7. No service shall cross the Pipeline at less than 1 metre in front of a socket face or at less than 300mm behind it. (See Figure 2)

3.1.8. No materials including spoil shall be stored within the Easement Width.

3.1.9. Access to and along the Easement Width shall be kept clear and unrestricted at all times. If gates are installed across an Easement, then these shall not impair UU's ability to have full access to the easement at all times.

3.1.10. Sanitary arrangements approved by UU shall be provided for persons working on or within the Easement Width. Precautions shall be taken to avoid spillage of fuels, oils,

paints, solvents or any other substance, which may damage the Pipeline or its protection.

3.1.11. Where construction of a new structure / building is proposed within 1m of the edge of the Easement Width, its foundations shall be designed to ensure that load from the structure / building is not transferred onto the Pipeline. The design shall also ensure that UU has full access to the lowest point of the bedding of the Pipeline for maintenance or construction purposes.

3.1.12. No alteration to the existing ground levels or surface use of the Easement Width shall be made without prior permission from UU. Notice shall also be given of any proposal to alter ground levels or the surface of land adjoining the Easement Width. This includes increasing the ground level above the Pipeline by placing material to form a landscaping bund or road (or other) embankment, as this has the potential to cause settlement to the Pipeline that could damage it.

3.1.13. Persons or their Promoters working on or within the Easement Width shall be required to indemnify UU for the full cost of any damage caused to its Pipelines and for any costs, charges and expenses resulting from these operations.

3.1.14. In an emergency, contact shall be made immediately using the following telephone number:

The UU Response Manager is available on-
07713887302 and this number shall be used for EMERGENCIES ONLY
E.g. if the UU Pipeline is damaged / burst the UU response Manager must be contacted immediately.

Please supply the UU Response Manager with the following information:

Who you are (name and company)?

What is your contact number?

Exactly where you are (in order to quickly identify which main is damaged and potential risks to UU)?

What is the damage?

Is it causing flooding?

Is flood water entering a watercourse?

4 ISSUES AFFECTING A PIPELINE DURING CONSTRUCTION ACTIVITIES

4.1. Temporary Access

4.1.1. Movement of vehicles and plant with a total weight exceeding 6 tonnes across the unprotected Pipeline is forbidden. The repetitive movement of vehicles or plant of any weight over the unprotected Pipeline in the same position is forbidden. Where temporary or permanent access is required, the Promoter must consult with UU prior to gaining access.

4.1.2. Each proposed temporary crossing point of a Pipeline shall be considered on an individual basis. The Promoter shall submit the design of the proposed crossing point to UU for acceptance. Work to construct the temporary crossing point shall not commence without express written approval from UU.

4.1.3. The Promoter shall design any temporary crossing point such that the load from any vehicle or any item of construction plant that will use the crossing point creates a

suitably factored bearing pressure of not more than 8.5kN/m2 at the crown of the UU Pipeline. (N.B. *This load is approximately equivalent to the loading on a Pipeline with 900mm of cover when a 6 tonne excavator crosses above it.*) In order to achieve this, the Promoter may use substantial timber baulks, reinforced concrete slabs or proprietary ground protection systems (e.g. Eve Trakway). Where it is not possible to distribute the surcharge load from the plant to less than 8.5kN/m2 at the crown of the Pipeline, then the design of the temporary crossing point shall consist of a suspended crossing which bridges over the Pipeline.

4.1.4. Temporary crossing points shall only be used to allow vehicles and plant to traverse across a Pipeline. Temporary crossing points are not to be used as working platforms for construction plant. Plant shall not be allowed to operate above a UU Pipeline unless specific written permission is given by UU. Any request by a Promoter for them to site working plant above a UU Pipeline must demonstrate that the platform which their plant is to be sited on has been designed as a working platform and will ensure that the maximum surcharge load from that plant is distributed to less than 8.5kN/m2 at the crown of the Pipeline, or bridges over the Pipeline.

4.1.5. All parts of a temporary crossing point must be removed when the work is complete, unless written permission is obtained from UU for the crossing to be left in place. The design and construction of the temporary crossing point shall be such that it permits for its removal (and the reinstatement of the ground beneath it) without exposing the Pipeline to undue loading, vibration or risk.

4.2. Temporary Fencing

4.2.1. Fencing shall be erected by the Promoter when they are working in and around the Pipeline easement to demarcate its location, to regulate vehicle movements and to confine the crossing of the Pipeline only to approved crossing points. The fencing shall be of substantial construction. It shall be adequately maintained at all times to the satisfaction of United Utilities.

4.3. Excavations within a Pipeline Easement Width

4.3.1. Prior to general excavation, trial holes shall be dug by hand to determine the precise location of the Pipeline. UU reserves the right to carry out such excavations. The cost of all such excavations shall be borne by the Promoter.

4.3.2. Excavations shall be fully supported and shall be backfilled to the satisfaction of UU. All work shall be carried out during normal working hours, which shall have been previously agreed with UU. UU reserves the right to stop all work on or within the Easement Width which, in the opinion of its officers, places the Pipeline at risk. As a consequence of such action, UU shall not accept any claims for financial loss.

4.3.3. All excavations within the Pipeline easement shall be carried out by hand or may be carried out by mechanical excavator if under the supervision of UU personnel. Excavation within 1 metre of the Pipeline(s) must be carried out by hand and great care must be exercised to ensure that any protective wrapping is not damaged.

4.3.4. If a thrust block is discovered within any excavation adjacent to a Pipeline(s), then work shall be stopped and the excavation backfilled as soon as possible.

4.4. Ground Vibration

4.4.1. No blasting shall be carried out within 300 metres of the Pipeline(s) without the written approval of UU, unless it can be demonstrated that ground vibration from such activities shall not exceed a peak particle velocity (PPV) of 5mm/s in any plane at the closest point of the Pipeline(s) to the blast.

4.4.2. Demolition, piling, tunneling or any other construction technique which induces

significant vibration (not exceeding a peak particle velocity of 5mm/s) shall be permitted up to 10 metres away from the Pipeline(s). Permission will be granted by UU provided that the Promoter has accurately established the position of the Pipeline(s) and this has been verified by UU and a written statement of the precautions to be taken to ensure the safety of the Pipeline(s) has been submitted by the Promoter and received and approved by UU prior to works being undertaken.

4.4.3. Should demolition, piling, tunneling or any other construction technique which induces significant vibration be proposed within 3.5 - 10 metres of the Pipeline(s) this shall be subject to seismic monitoring in order to prevent damage to the Pipeline(s). The Promoter shall accurately establish the position of the Pipeline(s). Seismograph readings shall be taken by the Promoter's specialist organisation on the line of the Pipeline at locations to be agreed with UU. Vibration monitoring shall be done under the supervision of a specialist organisation which has significant experience of similar monitoring work. The identity of the specialist organisation shall be proposed by the Promoter and approved by UU. This approval should not be unreasonably withheld or delayed. The cost of the seismic monitoring shall be borne by the Promoter. Vibration shall be measured in terms of peak particle velocity (PPV) and the Promoter shall employ suitable methods of construction in carrying out its works such that the PPV does not exceed 5mm/s. If the measured PPV does exceed 5mm/s then work shall cease immediately and a review of the monitoring data shall be undertaken between the Promoter and UU Engineering staff. If necessary UU shall notify the Promoter of any reasonable mitigation measures to protect the Pipeline(s) that it requires the Promoter to carry out. The Promoter shall comply with these reasonable mitigation measures in carrying out its works. A written statement of the precautions to be taken to ensure the safety of the Pipeline(s) shall be submitted by the Promoter and received and approved by UU prior to works being undertaken.

4.4.4. If UU identify that there is a risk of discolouration of the potable water supply the Promoter shall not excavate within 1m of the Pipeline(s) in any plane. Given the fact that there shall be significant excavation by hand, it may be more economical for the Promoter to consider directional drilling or another form of trenchless technique. UU would prefer this as an alternative construction technique.

4.4.5. Where practical, and when requested by UU due to the risk of discolouration, downstream turbidity monitoring should be undertaken for potable water Pipelines irrespective of Pipeline diameter. If UU reports to the Promoter that the turbidity levels measured in the main are very close to or exceeding the regulatory standards then work shall cease immediately and a review of the monitoring data shall be undertaken between the Promoter and UU Engineering staff. If necessary UU shall notify the Promoter of any reasonable mitigation measures to protect the Pipeline(s) that it requires the Promoter to carry out. The Promoter shall comply with these reasonable mitigation measures in carrying out its works.

5 ISSUES PERMANENTLY AFFECTING A PIPELINE OR EASEMENT

5.1. Permanent Access

5.1.1. Each crossing of the Pipeline shall be considered on an individual basis. Any permanent access crossing the Easement Width shall be designed and constructed by the Promoter to prevent any damage to the Pipeline. This may typically consist of mass concrete filled trenches constructed on either side of the Pipeline(s) with reinforced concrete slabs spanning between them. The Promoter shall submit the design of the proposed crossing point to UU for acceptance. Work to construct the permanent crossing point shall not commence without express written approval from UU.

5.2. Permanent Fences and Boundaries

5.2.1. Fences or other boundaries crossing the Easement Width shall be as near as possible perpendicular to the line of Pipeline and in no case shall be made at an angle of less than 50 degrees. Proposals for new fences or other boundary crossings shall be submitted to UU for approval. Where necessary a lockable gate shall be provided for UU for their sole use.

5.3. Installation of New Services within the Pipeline Easement

5.3.1. Any pipes, drains, electricity cables or sewers crossing unmade ground over or under the Pipeline shall be laid in steel conduit or ductile iron pipe ideally unjointed (or similar UU approved material) and adequately supported so as to be self-supporting over any subsequent excavation which may have to be carried out i.e. they should extend well into the undisturbed ground at each side of the Pipeline trench and shall cross as near as possible to 90 degrees to the Pipeline.

5.3.2. In no case shall any crossing be made at an angle of less than 50 degrees.

5.3.3. Provided that ground conditions are suitable, pipes crossing below the Pipeline shall be constructed by an approved tunneling method, and agreed by UU. The Promoter shall demonstrate that the predicted - and actual - ground settlement at the level of the invert of the Pipeline as a result of their pipes crossing below the Pipeline is not more than 20mm.

5.3.4. For UU Pipelines up to and including 300mm diameter, any pipes drains, electricity cables or sewers laid adjacent to the Pipeline must have a minimum clearance of 300mm from it. For UU potable water Pipelines over 300mm diameter (or for smaller diameter Pipelines where UU network operations have highlighted a risk of discoloration), there shall be a clearance between the pipes, drains, electricity cables or sewers and the Pipeline that is greater than or equal to the diameter of the Pipeline (ideally at least 1m clearance if possible to reduce the risk of discoloration). These clearances shall apply to crossings above or below the Pipeline, and include pipes, drains, electricity cables or sewers laid adjacent to the Pipeline.

5.3.5. The Promoter shall exercise suitable care when selecting and placing backfill material for any excavation dug within the Pipeline Easement to ensure that it is adequately compacted, provides sufficient support to the Pipeline and will not cause damage to the Pipeline. Reference should be made to the current version of 'Civil Engineering Specification for the Water Industry' (CESWI).

5.4. Cathodic Protection of Pipelines

5.4.1. Where cathodic protection is proposed for the Promoter's works, or where it exists in connection with UU's Pipeline, the Promoter shall take all necessary steps to ensure that the integrity of the system is maintained during the construction of the works. Where cathodic protection exists on UU's Pipeline, or is to be installed by the Promoter on his apparatus, interference tests shall be carried out on completion of the works at the Promoter's expense. Where such tests indicate that UU's Pipeline may be at risk, then the Promoter, at his own expense, must install suitable remedial measures, to be agreed by UU. UU must be consulted in the case of installation of electric tramways over Pipelines.

5.5 Mains Adjacent to Buildings in Streets

5.5.1 Water mains may be laid in a Street (see definition in Section 2) or an easement. Sometimes this is immediately adjacent to a building. In the case of an easement, new buildings and their foundations may not be built within 2.5m of an existing water main (5m for mains > 300mm). This is to facilitate repair and maintenance.

5.6. New Roads, Communal Parking and Driveways

No alteration to the surface use of the easement for the purpose of constructing a

road, communal parking or private driveways (except for vehicular crossings at >50degrees) shall be made without prior written permission from UU. Any agreement will be considered on an individual basis.

6 PLANTING NEAR TO PIPELINES

6.1 Written approval must be obtained from UU before any tree or shrub planting is carried out. Any approval granted is subject to UU retaining the right to remove, at any time, all trees or shrubs that in its opinion becomes a danger or nuisance to the pipeline or asset.

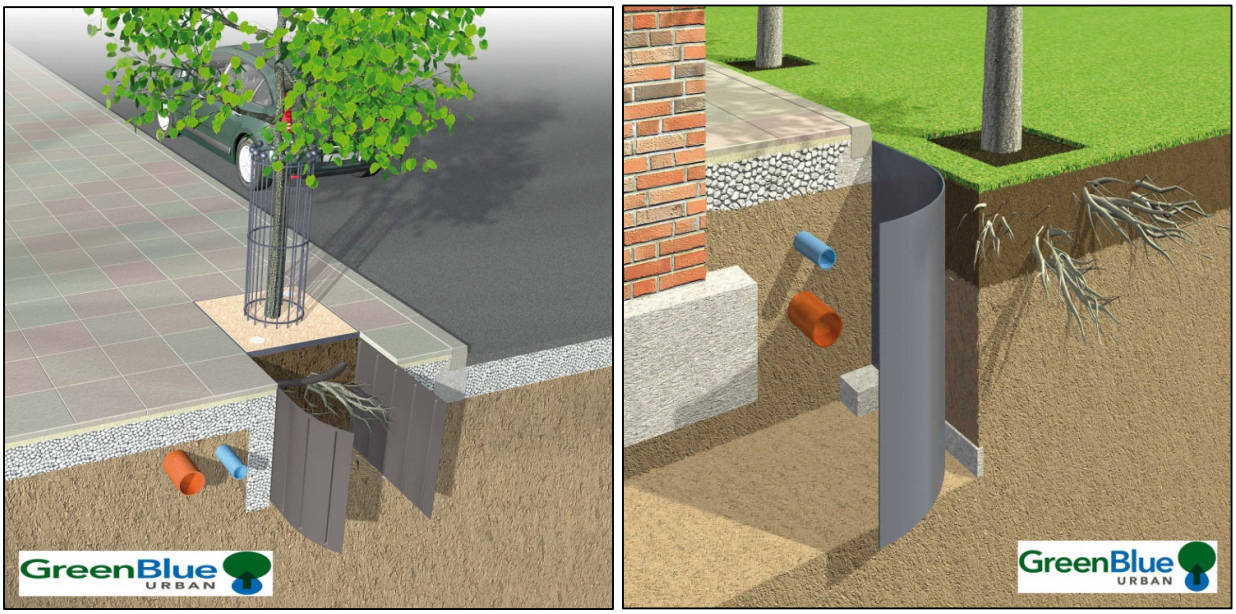
6.2 Selection and planting of tree species should be in accordance with BS8545:2014 Trees: from nursery to independence in the landscape. Recommendation.

6.3 Planting of shallow rooted hedge plants, domestic soft fruiting bushes and ornamental shrubs shall be permitted however these shall not be permitted to develop as shrub trees and shall be maintained by the Promoter / Owner to a maximum height of 1.5m.

6.4 There shall be strictly no planting of Poplus ssp. or Salix ssp. within 10 metres of a pipeline.

6.5 Restrictions apply to all easement widths see Appendix 1 for details. This includes a non-exhaustive list of trees and recommended planting distances.

6.6 United Utilities will consider the proviso of specific tree root barriers where there is a need to establish trees closer to Pipeline(s) than would normally be acceptable best practice. Vertical or horizontal barriers can be effective and acceptable so long as they are professionally specified and installed following manufacturer's instructions and a suitable distance from the tree trunk to ensure tree stability at maturity. See the figures below for typical examples of these methods. These barriers shall be 1 – 2mm thick semi rigid type and be fitted by either a specialist installer or by very closely following the manufacturer's guidance. Further advice about root barriers can be found in BS8545.



Images supplied by GreenBlue Urban

6.7 A useful publication that can assist with planting near to utilities is *"NJUG Guidelines for the Planting, Installation and Maintenance of Utility Apparatus in Proximity to Trees"*

7 EASEMENT INFRINGEMENTS

7.1 It is UU company policy not to allow any building over UU Pipelines or water mains. Any such building / structure would compromise UU's obligation to maintain a constant water supply, and in particular would obstruct UU's ability to respond in the event of a failure of the Pipeline. Building over mains also has potential risks to the health and safety of anyone who might be affected by a failure, including the occupants of the building.

7.2 UU acknowledges that there are situations where structures have been erected either directly above the Pipeline, or within the easement. These encroachments should be assessed and recorded and appropriate actions taken. The assessment shall consider the potential risks to both UU's asset and the structure upon it.

7.3 The options available to UU are:-

a) Notify owner of risks

b) Notify owner and consider mains diversion at owners cost

c) UU may take legal action to obtain a court order to instruct removal of the structure at the owners cost.

The key factors to be considered when selecting one of these options are:-

a) Security of supply

b) Health and safety

c) Cost benefit

d) Company reputation

e) Probability of Pipeline failure and likely consequences. These will vary with the Pipeline material, diameter, depth below foundation, ground conditions and the operating regime of the Pipeline

7.4 The notification given to the owner of the building shall state that, notwithstanding our Statutory Rights and those contained in any deed, UU shall not be liable for any costs whatsoever if damage is occasioned to the structure whilst carrying out our works.

8 STOPPING UP ORDERS

8.1 UU has no objection to a Stopping up Order, provided that access remains for repair and maintenance of the network within the area affected.

8.2 If the proposed development will impede clear access, then the water main must be abandoned or diverted at the applicants cost.

8.3 Typically, there would be no objection if the water main remains within a Street to which there is vehicular access sufficient for UU to perform its statutory duties. It is not necessarily a problem if the Street is within a gated enclosure, e.g. alley gates are not a problem.

8.4 If the main does not remain within a Street, the developer must provide an easement according to UU standard conditions. Detailed information is available from the United Utilities Website

8.5 The following is specifically not permitted in relation to easements.

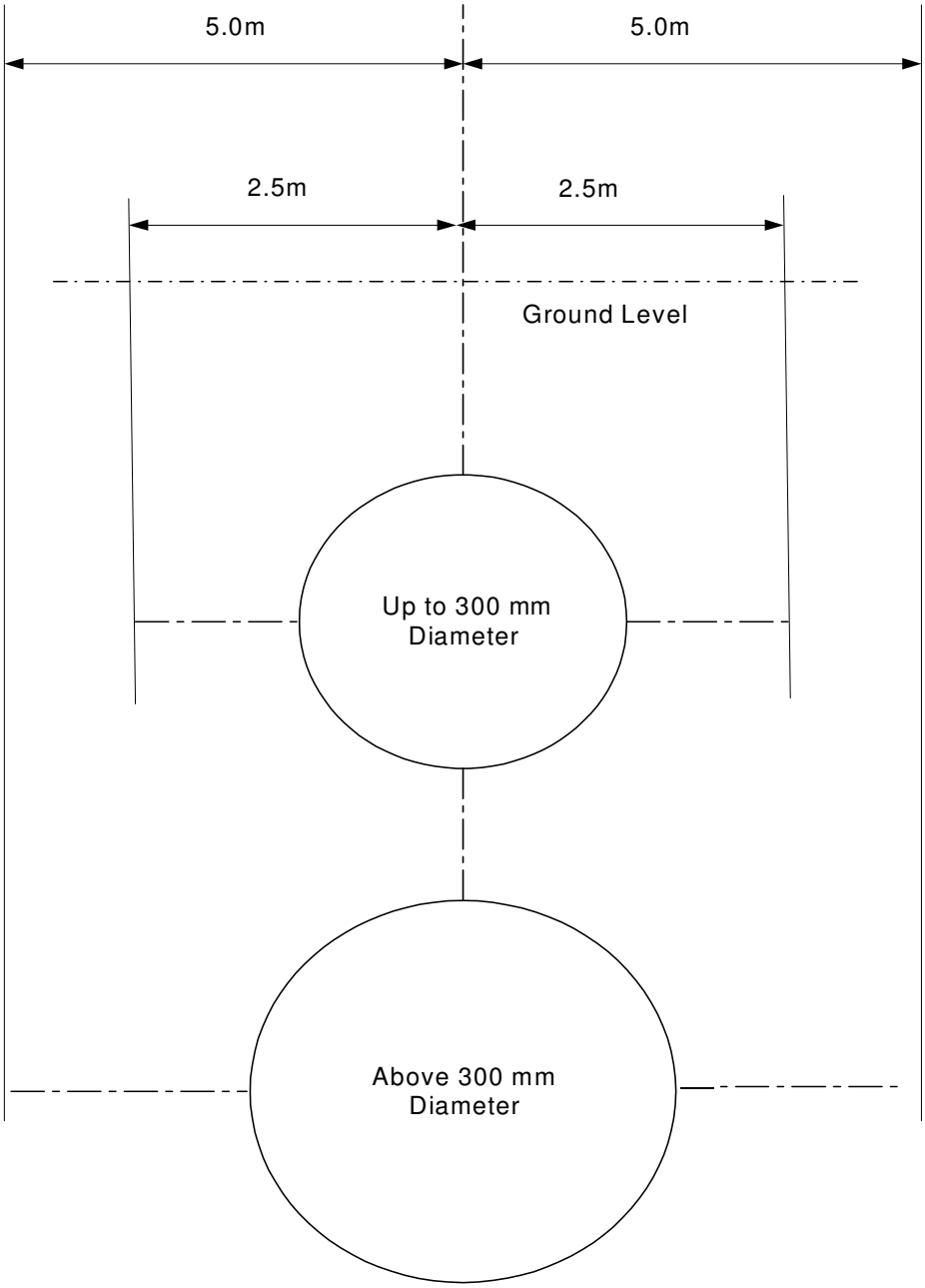
a) Any alteration to ground level which leaves the water main at a depth less than 900mm (750mm for PE pipes), or more than 1200mm.

b) Any building over the main, or within the easement width, such that an excavation of the main would threaten the stability of the building.

c) Planting of large trees (detailed information available in Appendix 1). This shows the distances that various trees and shrubs can be planted away from Pipelines and water mains. Root barriers can be used when planting closer to the mains; however trees root barriers need to be deep enough to stop roots from penetrating under the barrier.

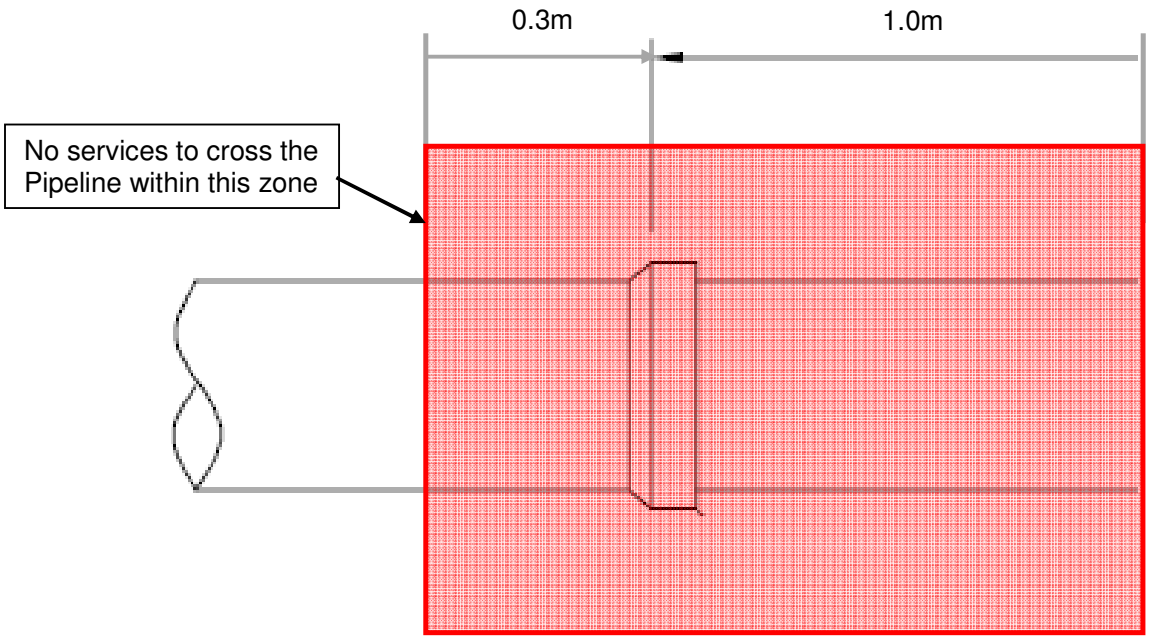
9 DRAWINGS

Figure 1: Easement Widths for Single Pipes



Note: This sketch is issued for guidance only (not to scale)

Figure 2: Service Crossing Restrictions in relation to Pipeline Sockets



APPENDIX 1: PLANTING NEAR TO PIPELINES

Latin Name	Common Name	Tree or shrub planting maintained as hedge (no higher than 1.5m height)	Individual trees planted from 3 metres of underground asset or pipe	Individual trees planted from 6 metres of underground asset or pipe	Group trees planted from 10 metres of underground asset or pipe
Acer campestre	Field Maple	Yes	Yes	Yes	Yes
Aesculus hippocastanum	Horse chestnut	✗	✗	✗	Yes
Carpinus betulus	Hornbeam	Yes	✗	✗	Yes
Castanea sativa	Sweet Chestnut	✗	✗	✗	Yes
Corylus avellana	Hazel	Yes	Yes	Yes	Yes
Crateagus monogyna	Hawthorn	Yes	Yes	Yes	Yes
Fagus sylvatica	Beech	Yes	✗	✗	Yes
Ilex aquifolium	Holly	Yes	Yes	Yes	Yes
Larix decidua	Larch	✗	✗	✗	Yes
Ligustrum vulgare	Privet	Yes	Yes	Yes	Yes
Malus domestica	Apple	✗	Yes	Yes	Yes
Malus sylvestris	Crab Apple	✗	Yes	Yes	Yes
Pinus nigra	Black pine	✗	✗	✗	Yes
Pinus sylvatica	Scots Pine	✗	✗	✗	Yes
Platanus acerifolia	London Plane	✗	✗	✗	Yes
Prunus avium	Wild Cherry	✗	Yes	Yes	Yes
Prunus cerasifera	Plum	✗	Yes	Yes	Yes
Prunus lusitanica	Laurel	Yes	Yes	Yes	Yes
Prunus padus	Bird Cherry	✗	Yes	Yes	Yes
Prunus spinosa	Blackthorn	Yes	Yes	Yes	Yes
Pyrus communis	Pear	✗	Yes	Yes	Yes

Latin Name	Common Name	Tree or shrub planting maintained as hedge (no higher than 1.5m height)	Individual trees planted from 3 metres of underground asset or pipe	Individual trees planted from 6 metres of underground asset or pipe	Group trees planted from 10 metres of underground asset or pipe
Sambucus nigra	**Elder**	**Yes**	**Yes**	**Yes**	**Yes**
Sorbus aria	**Whitebeam**	**✕**	**✕**	**✕**	**Yes**
Sorbus aucuparia	**Rowan**	**✕**	**✕**	**Yes**	**Yes**
Taxus baccata	**Yew**	**Yes**	**✕**	**✕**	**Yes**
Tilia cordata	**Lime**	**✕**	**✕**	**✕**	**Yes**
Ulmus glabra	**Wych Elm**	**✕**	**✕**	**Yes**	**Yes**