Standard Conditions for Works Adjacent to Pipelines

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Issue 2 May 2014

Standard Conditions for
Works Adjacent to Pipelines
AMENDMENT SUMMARY

Amendment No. Date	Brief Description and Amending Action	Owner	Verifier
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

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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
2.0 May 2014	Peter Tucker – UU Engineering Nick Preston – UU Engineering Jim Tresnan – UU Engineering Gill Robinson – Water Services

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CONTENTS

1 SCOPE

This document sets out United Utilities Water plc (UU) requirements for work carried out over or adjacent to a water pipeline aqueduct, large diameter trunk main (LDTM), water distribution main over 200mm, non-potable main and the Mersey Valley Sludge Pipeline (MVSP).

2 DEFINITIONS

Term	Definition
Pipeline	Means any aqueduct, trunk main, water distribution main (over 200mm) or non-potable main and shall also include the Mersey Valley Sludge Pipeline vested in UU as water undertaker.
Easement Width	Means the easement width specified in any document 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. 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 may be adopted (see Figure 1: Easement Widths for Single Pipes). In the case of aqueducts and trunk mains the easement may be off-centre to accommodate access due to local 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 or any other organisation wishing to work adjacent to, 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 contractors 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.

(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 pipelines. In the case of pipelines 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. In an emergency, contact shall be made immediately using the following telephone numbers:

UU Alarm Management Centre (AMC) Numbers:

General Numbers -

North Desk: 0845 0509480

East Desk: 0845 0509482

West Desk: 0845 0509484

Security Desk: 0845 0509486

Emergency only Contact Numbers -

North Desk: 0845 0509481

East Desk: 0845 0509483

West Desk: 0845 0509485

3.1.4 No buildings of any description shall be erected within the easement unless with UU's written consent. No service shall cross the pipeline at less than 1 metre in front of a socket face or at less than 300mm behind it.

No materials including spoil shall be stored within the easement width.

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

Where construction is adjacent to the easement width, foundations shall be designed to ensure UU has full access to the lowest point of the bedding of existing/proposed pipeline(s) for maintenance or construction purposes. The depth of these footings/foundations shall be in accordance with Figure 2: Required Depth of Footing/Foundation Adjacent to Pipeline Easements.

3.2 Planting near to Pipelines

3.2.1 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 become a danger to the pipeline. The following restrictions apply to all easement widths. See Appendix 1 for further details regarding planting adjacent to pipelines.

3.2.2 The only plants which can be planted directly across the pipeline are shallow rooting varieties of hedge plants, such as blackthorn, broom, cotoneaster, elder, hazel, laurel privet, quickthorn, snowberry and most ornamental flowering shrubs. These should only be planted for the purpose of screening or to indicate field boundaries. Hedges should be managed and not allowed to develop into sub-trees. They must be kept at a maximum height of 1.5 metres.

3.3 Pipeline Crossing Excavations General

3.3.1 Any pipes, drains, electricity cables or sewers crossing over or under the pipeline shall be laid in steel conduit or ductile iron pipe (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. In no case shall any crossing be made at an angle of less than 50 degrees. Provided that ground conditions are suitable, pipes crossing below the pipeline shall be constructed by an approved tunnelling method. For UU pipelines up to and including 300mm a minimum of 300mm of clearance must be given to any crossing above or below the pipeline. For UU potable water pipelines over 300mm or where UU network operations have highlighted a risk of discolouration, a clearance all around the main of at least as great as the diameter of the main shall be given to these crossings above, below and including adjacent to the pipeline (ideally at least 1m clearance if possible to reduce the risk of discolouration). Care should be taken when selecting backfill material for the pipeline as they may affect or damage the pipeline. See UU Standard Specification UUCESWI for suitable backfill material details.

3.3.2 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.

3.3.3 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(s) at risk. As a consequence of such action, UU shall not accept any claims for financial loss.

3.4 Ground Vibration

3.4.1 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.

3.4.2 Piling, tunnelling 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 contractor 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 contractor and received and approved by UU prior to works being undertaken.

3.4.3 Should piling, tunnelling 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 contractor shall accurately establish the position of the pipeline(s). Seismograph readings shall be taken by the contractor'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 contractor 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 contractor 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 contractor and UU Engineering staff. If necessary UU shall notify the contractor of any reasonable mitigation measures to protect the pipeline(s) that it requires the contractor to carry out. The contractor 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 contractor and received and approved by UU prior to works being undertaken.

3.4.4 If there is a risk of discolouration of the potable water supply the contractor 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 contractor to consider directional drilling or another form of trenchless technique. UU would prefer this as an alternative construction technique.

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

3.4.6 All excavations within the easement shall be carried out by hand or by mechanical excavator under supervision of UU personnel. Excavation within 1 metre of the pipeline(s) must be carried out by hand and great care exercised to ensure that any protective wrapping is not damaged. Excavations shall be fully supported and shall be backfilled to the satisfaction of UU. All work shall be carried out during 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.

3.5 Fences and Boundaries

3.5.1 Fences or other boundaries crossing the easement width shall be as near as possible to 90 degrees 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.

3.5.2 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.

3.6 Access

3.6.1 Movement of vehicles and plant of 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 access is required at agreed positions, the following protection shall be provided: -

3.6.2 Temporary Access

Each crossing of the pipeline shall be considered on an individual basis. All crossings shall be made in consultation with UU and work shall not commence without express written approval from UU. The following are provided as guidance:

a) Use of gross weight vehicles of 6 to 10 tonnes:

Vehicle crossing of the pipeline shall consist of substantial timber baulks to spread the vehicle weight.

b) Use of gross weight vehicles of 10 to 15 tonnes:

Vehicle crossing of the pipeline shall consist of a reinforced concrete raft (see figure 3).

c) Use of gross weight vehicles over 15 tonnes:

Vehicle crossing of the pipeline shall consist of a suspended crossing to bridge the pipeline.

3.6.3 Permanent Access

Each crossing of the pipeline shall be considered on an individual basis. Any permanent access crossing the easement width shall be designed and constructed to prevent any damage to the pipeline. All crossings shall be made in consultation with UU and work shall not commence without the express written approval from UU.

3.7 Protection

3.7.1 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.

3.7.2 Adequate 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.

3.7.3 UU reserves the right to supervise any work carried out on or within the easement width and to recover the costs incurred.

3.7.4 Persons or their contractors 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.

3.8 Easement Infringements

3.8.1 It is UU company policy not to allow any building over UU pipelines or water mains. Any such building 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.

3.8.2 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.

The options available to UU are:-

a) Notify owner of risks

b) Notify owner and consider mains diversion at owners cost

c) Mains diversion, or removal of property at 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 failure and likely consequences. These will vary with the pipeline material, diameter, depth below foundation, ground conditions and the operating regime of the pipeline.

3.8.3 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.

3.9 Mains Adjacent to Buildings in Streets

3.9.1 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 (see Figure 2: Required Depth of Footing/Foundation Adjacent to Pipeline Easements).

3.9.2 Similarly, a new main in an easement should not be laid nearer than 2.5m from the building.

3.9.3 Where the main is in a street and the street is immediately adjacent to a building, the main may be installed as near as 600mm to the building/foundation, provided there is still a total 5m working width for access. This would typically be the width of the pavement, plus part of the carriageway, as required.

3.9.4 For small diameter pipes, typically 63mm, and for short lengths requests shall be considered for a reduced working width, provided that the section of pipe is without joints, fittings, or service connections. Under no circumstances should the main be closer than 400mmm to the building/foundation.

3.9.5 If the pipework is private, then the requirements of Water Regulations and BSEN 805 shall apply. Briefly, the pipe should be at least 400mm from the building/foundation, and at least 400mm from other cables/pipes. Vertical separation at crossings should be minimum 200mm. The concepts of street and easement are not applicable to private pipes, but there is still a requirement for reasonable access.

3.10 Stopping Up Orders

3.10.1 UU has no objection to a stopping up order, provided that access remains for repair and maintenance of the network within the area affected.

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

3.10.3 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.

3.10.4 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.

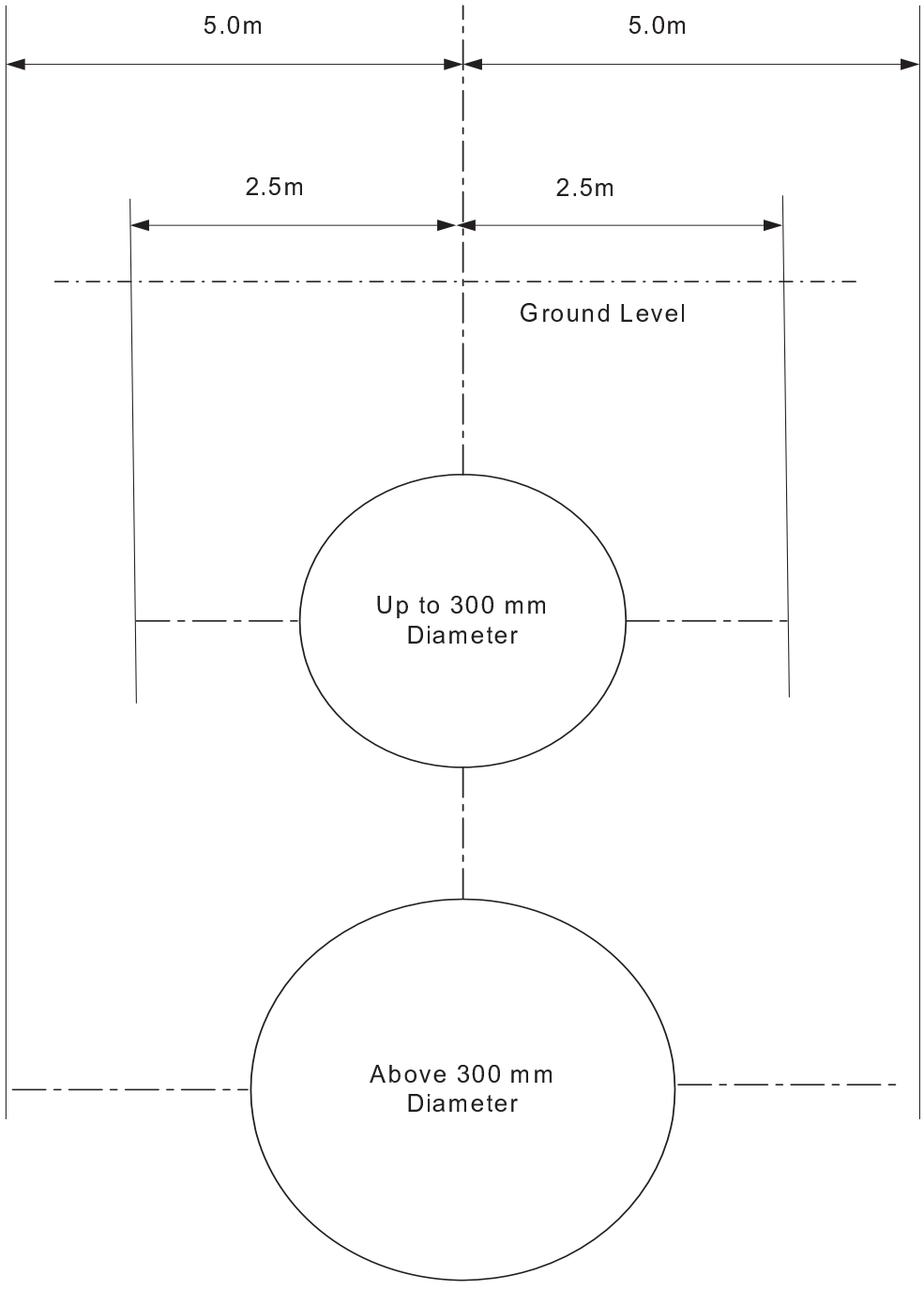
3.10.5 The following is specifically not permitted in relation to easements.

- Any alteration to ground level which leaves the water main at a depth less than 900mm (750mm for PE pipes), or more than 1200mm.
- Any building over the main, or within the easement width, such that an excavation of the main would threaten the stability of the building.

- 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.

4 DRAWINGS

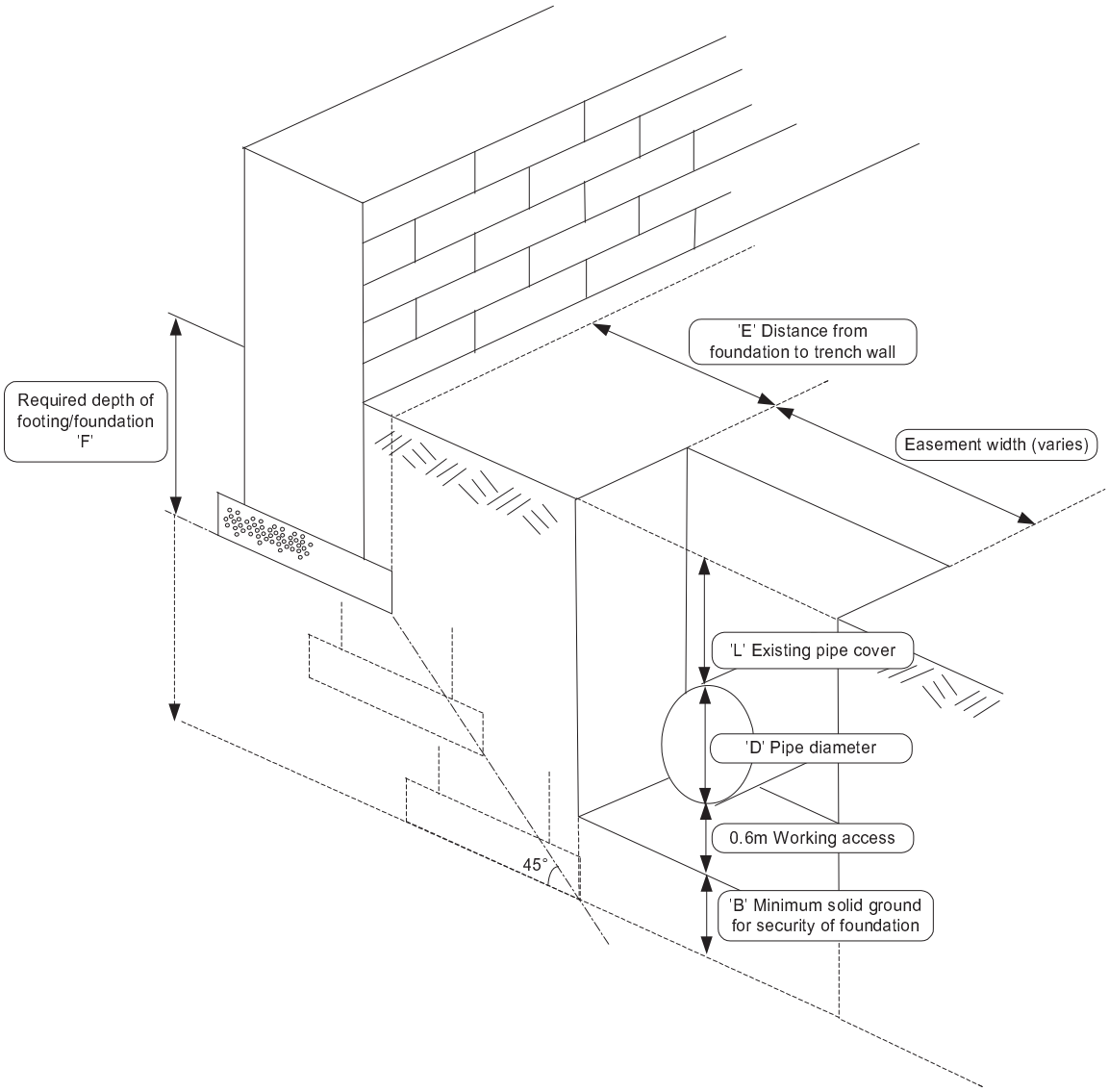
Figure 1: Easement Widths for Single Pipes



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

In the case of aqueducts and trunk mains the easement may be offset to accommodate access due to local conditions e.g. 7.0m one side and 3.0m on the other side e.g. allowing access for an excavator.

Figure 2: Required Depth of Footing/Foundation Adjacent to Pipeline Easements

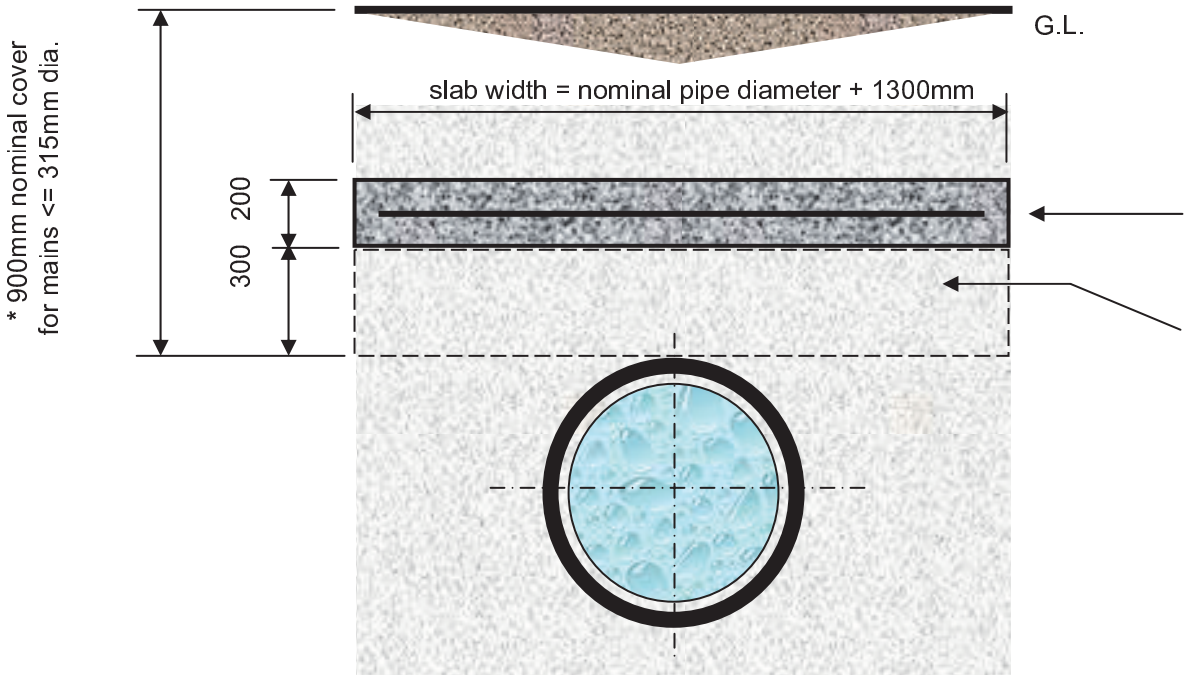


'**E**' is the distance from the edge of the easement to the foundation edge of proposed construction.

The required depth below normal working access '**B**' equals (**L** + **D** + **0.6**)/**3** or **1.0 m**, whichever is the greatest.

The minimum required depth of footing/foundation '**F**' equals **L** + **D** + **0.6** + **B** - **E**.

Figure 3: Concrete Slab Protection for Pipelines



Grade C35 concrete protective slab, with 1 layer A142 mesh reinforcement.

Area of excavated material between pipeline and slab MUST be replaced with granular material (see UUCESWI for details)

NOTE (1) Maximum length of pipeline to be exposed for construction of slab is 3 metres.

* Mains are generally laid at 900mm nominal cover, but this may vary to suit site conditions and/or larger pipe diameters. Therefore, all water mains and pipelines and apparatus should be located by hand digging prior to the use of mechanical excavation.

** Please follow this company's general conditions and precautions when excavating near to our water mains and apparatus.

Drawing Title:	CONCRETE SLAB PROTECTION FOR PIPELINES				
Drawing Number:	WMD/001	Version:	1	Scale:	NTS
Designer:	I.Cole	Date:	18/11/03		

United Utilities North West
Haweswater House
Lingley Mere Business Park
Warrington WA5 3LP
Telephone No. 01925 234000

APPENDIX 1 Planting near to Pipelines

Tree Name	Safe to plant at 2m	Safe to plant at 3m	Safe to plant at 6m	Safe to plant at 10m	Root Barrier required if planted closer than 6m	Comments
Blackthorn, Broom, Cotoneaster, Elder, Hazel Laurel Privet, Quickthorn, Snowberry, Most ornamental flowering shrubs	Yes (within the easement 2 metres from either side of the pipe)	✓	✓	✓	✗	Hedges to be kept at a maximum height of 1.5 metres
Raspberries, Gooseberries, Blackcurrants	Yes (within the easement 2 metres from either side of the pipe)	✓	✓	✓	✗	
Dwarf apple stocks, Christmas trees (dwarf)	✗	Subject to being maintained as dwarf species (not being allowed to revert to tree size)	Subject to being maintained as dwarf species (not being allowed to revert to tree size)	Subject to being maintained as dwarf species (not being allowed to revert to tree size)	✗	Subject to being maintained as dwarf species
Shallow rooted shrubs	✗	Subject to being maintained as dwarf species (not being allowed to revert to tree size)	Subject to being maintained as dwarf species (not being allowed to revert to tree size)	Subject to being maintained as dwarf species (not being allowed to revert to tree size)	✗	Subject to being maintained as dwarf species

✓ = Yes

✗ = No

Tree Name	Safe to plant at 2m	Safe to plant at 3m	Safe to plant at 6m	Safe to plant at 10m	Root Barrier required if planted closer than 6m	Comments
Ash, Beech, Elm, Horse Chestnut, Lime, Maple Oak, Sycamore, Apple, Pear, Those trees of similar size to the trees above, Most (full size) conifers	✗	✗	As individual trees or single row	Dense mass planted	✗	See comments re planting at 6m
Almond, Cherry, Hibiscus, Ebony, Juniper, Pampas Grass	✗	✗	✗	✓	✓	
Spruce, Walnut, Laburnum	✗	✗	✗	✓	✓	
Jasmine, Holly, Privet, Willow, Poplar, Aspens, Bamboo, Pine	✗	✗	✗	✗	✓	
Crab apple	✗	✗	As individual trees or single row	✗	See comments re planting at 6m	

✓ = Yes

✗ = No