

Standard Conditions for Works Adjacent to Pipelines

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AMENDMENT SUMMARY

Amendment No. Date	Brief Description and Amending Action	Owner	Verifier
4 July 2026	Full review and updates throughout.	Owen Newton	Jim Tresnan
3.1 July 2015	'Easement Area' defined and legal clarifications made.	Neil Sixsmith	Jim Tresnan
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 discoloration	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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1. Scope and Introduction

This document sets out conditions for organisations undertaking works near to United Utilities' (UU) pipelines used for the conveyance of water and wastewater. In this document the term 'pipeline' collectively refers to, but is not limited to, aqueducts, trunk mains, distribution mains, pipelines, tunnels, culverts, sewers, rising mains and all related apparatus and structures such as chambers, cables etc. The requirements set out in this document represent best practice, but United Utilities does not accept any liability associated with them, and organisations undertaking works around United Utilities' pipelines should take all necessary measures to protect the pipeline and those affected by the works.

UU own and operate pipelines in the Northwest of England including Cumbria, Lancashire, Merseyside, Greater Manchester and Cheshire along with connected systems that cross into adjacent areas including North Wales, Shropshire, Yorkshire and Derbyshire.

UU reserves the right to supervise any work carried out near to UU pipelines and to recover the costs incurred.

Where an individual from UU is referred to in this document this shall be a person with adequate experience and responsibility to make decisions on behalf of UU. These will typically be Asset Managers, Risk Managers, Operations Managers or Project Managers (or those they delegate this duty to).

Should any damage occur to UU pipelines, the UU Control Centre shall be informed on Telephone Number: 0345 672 2723. In an emergency situation the UU Response Manager shall be informed immediately on 07713 887302. For the Mersey Valley Sludge Pipeline (MVSP) control room contact 01925 537900.

As set out in the Water Industry Act, United Utilities has a legal duty to provide water and wastewater services. Should any damage be caused to our pipelines which interrupts services and prevents this duty being carried out, UU will recover costs from the responsible party.

2. Application of The Conditions

These conditions shall apply whenever:

- Excavations, piling, blasting or other works are undertaken that could present a risk to pipelines and / or water quality. This includes any works that create significant vibration (in excess of 5mm/s Peak Particle Velocity (PPV)).
- Any access / plant crossings are planned that cause an increase in loading on the pipeline above normal conditions.
- Any tunnelling or trenchless construction work is to be undertaken beneath and adjacent to pipelines (refer to section 18)
- Utility installations are proposed within 0.3m of a pipeline up to 300mm or 1 x pipe diameter for pipelines > 600mm or within 1m of a pipe socket face or within any other restricted area set out in a deed of easement (refer to section 5).
- High risk utility installations such as Major Accident Hazard Pipelines (MAHPs), high and medium pressure gas mains or High Voltage (HV) cables are proposed in proximity to pipelines.
- Developments including, but not limited to, the following, are proposed;
 - Buildings and structures
 - Street furniture including charging points, planters, public realm features etc.
 - Sustainable drainage systems (SuDS)
 - Ground source heat collectors (shallow or deep)
 - Planting of trees
 - Landscaping and / or any change of ground level
 - Road / carriageways / pathways or other access tracks
 - Any other structure or permanent development

And the proposed developments are;

- within the easement widths set out in Tables 1 and 2 or within any other restricted area set out in a deed of easement (refer to section 5).
 - outside of easement widths wherever the development will affect the pipeline, for example through loading from foundations.
- Any other activities or developments are proposed or undertaken that could present a risk to the operation of United Utilities' pipelines.

Table 1: Easement Widths for Water Pipelines and Pressurised Sewers (Rising / Sludge Mains)

Note that the dimensions provided apply from the pipe centreline to the outside edge of the easement.

Diameter	Easement from centreline (m)
Up to 300mm	3m (6m overall)
Greater than 300mm	5m (10m overall)

Note 1: The above are standard widths, but specific widths may be set out in a deed of easement (refer to section 5).

Table 2: Easement Widths for Gravity Sewers

Note that the dimensions provided apply from the pipe centreline to the outside edge of the easement.

Depth to Invert of Sewer (m)	Sewer Diameter / Size (mm)										For Box Culverts, the greater of;
	<150	150-299	300-449	450-600	601-749	750-924	925-1000	1001-1124	1125-1399	≥1400	
<3.0	3.0	3.0	3.0	3.5	3.5	4.0	5.0	5.0	5.0	5.0	4.0m from centreline or 2.0m from the outside edge
3.0 - 4.0	3.0	3.0	3.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0m from centreline or 2.0m from the outside edge
4.0 - 5.0	4.0	4.0	4.0	5.0	5.0	5.0	6.0	6.0	6.5	6.5	6.0m from centreline or 2.5m from the outside edge
5.0 - 6.0	5.0	5.0	5.0	6.0	6.0	6.5	6.5	6.5	6.5	6.5	6.0m from centreline or 2.5m from the outside edge
6.0 - 7.5	6.0	6.0	6.0	6.0	6.0	6.5	6.5	6.5	6.5	6.5	6.0m from centreline or 2.5m from the outside edge
7.5 or greater*	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0	6.0	6.0m from centreline or 2.5m from the outside edge

Note 1: The above are standard widths, but specific widths may be set out in a deed of easement (refer to section 5).

Note 2: The term Sewer includes disposal / outfall mains.

Note 3: * Repair, maintenance or renewal by open-cut methods is not anticipated.

3. Before Works Begin

Before carrying out any work the following steps shall be followed:

1. Search maps of our networks to determine the proximity of any pipelines. Even if UU pipelines are not identified, precautions in accordance with section 7 should be observed.
2. Contact UU to discuss the next steps if UU pipelines are present. Please note that we may require up to 6 weeks' notice.
3. Trial holes may be required to prove the location of pipelines (refer to section 7). Prior consent is needed from UU.

Note: Organisations working on or within the pipeline easements may 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.

Further details, including contact details, are available on our website www.unitedutilities.com. See building and development.

4. UU Pipeline Network Plans / Maps

All information set out in plans provided by UU, or from our staff, regarding the size, material, depth and position of our pipelines is approximate. In some cases UU pipelines or related apparatus such as cables may not be shown on our records. For example, service connections and formerly private sewers that were transferred to UU may not be shown.

The pipeline diameters stated in these conditions relate to the internal diameter of the pipeline. Pipeline materials, diameters and positions are shown on UU network plans, but these should be used with caution and it may be necessary to prove these with trial holes.

Every possible precaution shall be taken to avoid damage to UU pipelines. You or your contractor must ensure the safety of our pipelines and shall be responsible for the cost of repairing any damage caused.

5. Pipeline Easements

For the purposes of this document, easements are deemed to be strips of the land above pipelines that are required by UU for protection of pipelines, access and maintenance.

The conditions in this document apply to the easement widths set out in Tables 1 and 2. Note that additional conditions may apply to pipelines in private land. UU must be contacted in accordance with section 3 to establish whether any such additional restrictions apply.

Deviations from the conditions set out in this document may be agreed with UU in certain circumstances i.e. where pipelines may be tunnelled and access is not required from the surface or where it may be feasible to offset the easement.

6. Depth of Pipelines

Note that the depth of existing pipelines can vary greatly and may not conform to current standards.

7. Excavations / Trial Holes

Excavations, including trial holes, near to UU pipelines should be undertaken in accordance with the Health & Safety Executive (HSE) guidance HSG47 'Avoiding danger from underground services'. Additional restrictions may apply for strategic or high risk pipelines.

Note: Prior consent from UU is required in advance of excavations / trial holes being undertaken in accordance with section 3.

Backfill to excavations should be suitable and adequately compacted (without presenting a risk of damage to the pipeline) in accordance with UUCESWI.

Note some pipelines such as the Mersey Valley Sludge Pipeline (MVSP), the West East Link Main (WELM) and West Cumbria aqueducts may have cables present alongside the pipeline. Care must be exercised to ensure that any such cables are not damaged.

Where excavation of trenches is undertaken adjacent to any UU pipelines, care must be taken not to affect support. If required, temporary support must be provided to the satisfaction of UU. Water mains and some sewers are pressurised and can fail if excavation removes support to thrust blocks to bends and other fittings. 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.

Where a trench is excavated crossing beneath or parallel to the line of any UU pipeline, the backfill shall be suitable and adequately compacted to prevent any settlement which could subsequently cause damage to the pipeline. In special cases, it may be necessary to provide permanent support to UU pipelines which have been exposed over a length of the excavation before backfilling and reinstatement is carried out. There shall be no concrete backfill in contact with UU pipelines. Refer to sections 17 and 20 regarding requirements for the laying of utilities / permanent works.

8. Damage to Pipelines

Where any UU pipeline is damaged (including the exterior coating), even to a minor extent, UU must be notified immediately and the trench left open until the damage has been inspected and the necessary repairs have been carried out.

In the event of a release of water, sewage or sludge all precautions necessary to prevent the release from flowing into rivers, ditches, streams, drains, manholes or any other watercourse or duct must be taken by the organisation undertaking the works.

Note: Sewage and sludges may contain substances injurious to health and care shall be taken not to come into physical contact with any spillage.

In the case of any material damage to UU pipelines causing leakage, weakening of the mechanical strength of the pipe or corrosion-protection damage, the necessary remedial work will be recharged.

9. Plant Crossings

Plant, such as vehicles, machines or other equipment shall not cross, or be placed on UU pipelines without prior agreement from UU where any of the following apply:

- Plant is proposed to be used that is over 6 tonnes MGW or that will result in a load exceeding 8.5kN/m² (excluding soil load) at the crown of the pipeline in fields / other non-highway land.
- Plant is proposed to be used in fields / other non-highway land when ground conditions are poor leading to, or having the potential to lead to, the formation of ruts.
- Plant is proposed to be used in fields / other non-highway land where pipelines are shallow or are positioned in an embankment or are above ground.
- Plant is proposed to be used on highways that will create loading significantly above that reasonably expected under normal conditions.

Note: Refer to section 11 for material storage and section 20 for proposed permanent crossings.

UU will work with you to determine the acceptability of crossings and whether any protection measures are required through the following:

1. Structural assessment of the proposed loading on the pipeline shall be undertaken in accordance with BS 9295. This only applies where sufficient information is available for the pipe material, pipe condition, depth and bedding. If information is not available for any of these parameters the conservative assumptions as set out in Appendix C shall be used, unless acceptance in writing is otherwise obtained from United Utilities.
2. Where a structural assessment is not possible, or the assessment indicates the loading is unacceptable, protection measures shall be designed such that the surcharge load from plant creates a suitably factored bearing pressure of not more than 8.5kN/m² at the crown of the UU pipeline (excluding the existing soil load). 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. Alternatively, a higher bearing pressure may be accepted if it can be reasonably demonstrated that the pipeline is routinely subject to a higher load i.e. in a highway.

Protection measures may include substantial timber baulks, reinforced concrete slabs or proprietary ground protection systems. 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.

Crossing points and protection measures should not be used as working platforms.

The construction and removal of any protection measures should not result in damage to the pipeline or any undue loading or vibration. Any protection measures installed should be removed upon completion of the works unless otherwise agreed with UU.

It shall be the responsibility of the organisation proposing works near to UU pipelines to undertake any assessments required and install any necessary protection measures at no cost to UU.

Where plant will cross the line of UU pipelines in fields or other non-highway locations, specific crossing points must be agreed with UU, along with any necessary protection measures. These crossing points should be clearly marked and crossing of the line of UU pipelines at other locations must be prevented through fencing or other control measures.

Where plant needs to travel along the line of UU pipelines and crossing points are not practical e.g. abnormal loads (or similar) on highways UU must be consulted.

10. Ground Vibration

No works which induce significant ground vibration should be undertaken near to pipelines 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. Such works include, but are not limited to, the following:

- Explosive blasting including quarrying and demolition
- Mechanical Demolition
- Piling
- Tunnelling
- Ground treatment / compaction

UU will work with you to determine the acceptability of such works through the following:

1. Assessment of the anticipated vibration levels
2. Accurate location of the pipelines
3. Agreement of any mitigation, protection, control and monitoring measures to be implemented

It shall be the responsibility of the organisation proposing the works to undertake any assessments required along with any surveys, necessary control, protection and monitoring measures at no cost to UU.

Where agreed with UU, vibration (seismic) monitoring may be required to measure and control vibration from works. Such monitoring should be undertaken by competent persons as part of a safe system of works. Vibration shall be measured in terms of peak particle velocity (PPV) and the organisation undertaking the works shall employ suitable methods of construction such that the PPV does not exceed 5mm/s. Vibration monitoring at the surface is permitted with a corresponding uplift in the vibration limit to account for the reduction associated with ground cover (typically 40% for utilities at 1m cover equating to a PPV limit of 8.3mm/s at the surface)¹. If the measured PPV does exceed 5mm/s (or 8.3mm/s at the surface) then work shall cease immediately and a review of the monitoring data shall be undertaken between the organisation and UU.

¹ United States Bureau of Mines (USBM RI 9523 & USBM RI 89369)

The PPV limit of 5mm/s has been established by UU to avoid the potential for discolouration from water pipelines. This limit has been proven to present a low risk of discolouration based on monitored results from actual events. UU may consider relaxing this limit where there is no discolouration risk or where the discolouration risk is low. In this case reference should be made to BS 5228-2 'Code of practice for noise and vibration control on construction and open sites – Vibration'.

Where UU identifies that there is a risk of discolouration for a potable or raw water supply, the organisation undertaking the works shall not excavate within 1m of the Pipeline(s) in any plane. In this case it may be more economical for directional drilling or another form of trenchless technique to be considered.

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. The position of monitors, sampling intervals, trigger thresholds and action measures along with respective responsibilities shall be agreed between UU and the organisation undertaking the works. If UU deem it necessary, joint visibility of turbidity values and monitoring actions may be agreed. If the turbidity levels measured in the main are very close to or exceeding the trigger thresholds (linked to regulatory standards) then work shall cease immediately and a review of the monitoring data shall be undertaken.

11. Material Storage

Materials including spoil shall not be placed on or stored within pipeline easements or adjacent to it where load may be transferred onto the pipelines that exceeds the values set out in section 9.

Control measures must be put in place by the organisation undertaking the works to avoid spillage of fuels, oils, paints, solvents or any other substance, which may damage the pipeline or its protection.

12. Protection of Water Quality / Prevention of Pollution

Materials that could present a risk to water quality or present a risk of pollution shall not be installed or stored in a position where any release or run-off could come into contact with a pipeline.

This includes, but is not limited to, chemicals, fuels, oil, fertiliser, manure, lime, paper pulp, sanitary waste, septic tanks, sludge cake etc and shall apply to all water mains, raw water systems, pressurised sludge and sewer mains (rising mains) or gravity sewers.

13. Water Connections / Standpipes

Water must not be taken from any pipeline unless approved by UU in accordance with our requirements for new connections or use of licensed standpipes. Refer to the UU website for details.

14. Wastewater Connections / Discharges

Any discharge to the sewer network, whether permanent or temporary, must not be made unless approved by UU in accordance with our requirements for new connections or consent to discharge. Refer to the UU website for details.

15. Access

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

16. Hot works near Sludge Mains

Hot works such as welding or any activity involving a naked flame may only take place at a safe distance from sludge pipelines to the satisfaction of United Utilities. Such activities shall not take place on the easement without the express written acceptance of United Utilities and in the presence of a United Utilities representative.

17. Laying of Utilities

Within non-highway land, buried utilities (cables, pipes etc.) shall not be laid along the line of UU pipelines within the easements widths set out in Tables 1 and 2 irrespective of clearance without prior written acceptance from UU. Above ground apparatus must not be located within the distances set out

in Tables 1 and 2, without prior written acceptance from UU. No manhole or chamber shall be built over or around any UU pipeline.

In highways land Utilities should be laid in accordance with the Streetworks UK Guidelines.

A minimum radial clearance of 300 millimetres should be allowed between utilities being installed and existing UU pipelines. 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 minimum 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) unless otherwise agreed. In addition, a minimum of 1m clearance should be provided to the face of pipe socket or at least 300mm behind it as shown in Appendix A. UU reserves the right to increase these distances where strategic pipelines are affected.

Utilities shall cross as near as possible to 90 degrees to the pipeline and in no case shall any crossing be made at an angle of less than 45 degrees. The design of multiple or staggered crossings shall be considered to ensure access to pipelines is not impeded.

Any pipes, drains, electricity cables or sewers crossing over or under the pipeline shall be laid in an appropriate duct, ideally unjointed and self-supporting unless otherwise agreed. The duct should extend well outside of the easement.

Open cut excavations beneath pipelines should not be undertaken where it is possible to use a trenchless technique, subject to UU's acceptance. Where open cut is required, it shall be demonstrated that the pipeline is adequately supported and protected to UU's acceptance. Open cut crossing must not be made under pipeline joints and the position of joints will need to be located in the planning of the works.

18. Settlement / Heave

Where settlement or heave is a risk it shall be demonstrated that the predicted and actual ground settlement or heave at the level of the invert of the pipeline has no adverse effect on the pipeline. UU reserves the right to impose zero settlement or heave for strategic or higher risk pipelines, particularly fragile mains and / or those with lead run joints.

19. Cathodic Protection of Pipelines

Where cathodic protection is proposed for works, or where it exists in connection with UU's pipeline, the organisation undertaking the works 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 organisation undertaking the works on the proposed apparatus, interference tests shall be carried out on completion of the works at the organisation's expense. Where such tests indicate that UU's pipeline may be at risk, then the organisation, at their 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.

20. Permanent Works / Developments Near Pipelines

20.1 Build overs

The construction of buildings or other structures over water mains or pressurised sewers (rising mains) and sludge mains is not permitted.

Refer to the UU website (building and developing) for details regarding building over gravity sewers.

20.2 Buildings and Structures

Permanent buildings and structures shall not be constructed within or over pipeline easements.

Where construction of a new structure / building is proposed at the edge of a pipeline easement, 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.

20.3 Fencing

Fences or other boundaries structures crossing the Easement Area or 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 45 degrees. Proposals for any new fences or other boundary structures shall be submitted in writing to UU for acceptance. Where necessary a lockable gate shall be provided for UU for their sole use.

20.4 New Roads, Footways, Cycleways, Communal Parking and Driveways

Any proposed crossing of a pipeline shall be considered on an individual basis. Any such crossing shall be designed and constructed to prevent any damage to the pipeline and not to unreasonably impede United Utilities access to the pipeline.

Where the alignment of a proposed road intersects with an existing pipeline, and protection measures are required, suitable foundations may be constructed parallel to and on either side of the pipeline. A structurally engineered reinforced concrete slab (or an alternative approved load distribution system) shall span across the foundations to bridge over the pipeline. At no stage shall the pipeline be encased within, or come into direct contact with, any concrete backfill material.

The organisation undertaking the works shall submit the design of the proposed crossing point to UU for acceptance. Crossings 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 45 degrees. Work to construct the permanent crossing point shall not commence without prior express written consent from UU.

No alteration to the surface use of the Easement for the purpose of constructing a road, footway, cycleway, communal parking, private driveways or similar shall be made without prior written consent being obtained from UU.

20.5 Highway Maintenance Works

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, shall apply to pipelines in addition to those set out in these conditions.

Where it may be necessary to resurface, work around, reset or adjust the finished level of any surface boxes which may fall within your proposed construction, these shall not be damaged, buried or otherwise rendered inaccessible and all stop taps, valves, hydrants, etc. must remain accessible and operable. Reduction in existing levels may result in conflict with apparatus such as valve spindles or tops of hydrants housed under the surface boxes. Checks during site investigations should ascertain the level of such apparatus in order to determine any necessary alterations in advance of the works.

For boxes/covers that are not to standard but that do not present a safety hazard then details can be sent to S81boxes@uuplc.co.uk. For boxes/covers that may present a **safety hazard** and which require urgent attention, the Support Services Team shall be contacted on 01925 235859.

20.6 Street Furniture

Street furniture including traffic lights, streetlights, bollards, posts, EV charging units, associated chambers etc. should not be installed within pipeline easements wherever possible. As an absolute minimum sufficient working room should be provided to enable future excavations onto pipelines, however this is subject to written acceptance from UU.

20.7 Landscaping / Earthworks

No alteration to the existing ground levels or surface use of the pipeline corridor shall be made without prior consent from UU. 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 and impede access.

20.8 Sustainable Drainage Systems (SuDS)

UU welcomes the development of SuDS to help manage rain water and to improve water quality, but careful consideration is required to ensure that the creation of SuDS features does not present a risk to, or limit access to, pipelines.

The acceptability criteria for SuDS within pipeline easements are set out in Table 3 and any deviation from these requirements shall be subject to written acceptance from UU.

Wastewater assets shall not be laid longitudinally along a rain garden due to ingress risk. For water mains this should be assessed on a case-by-case basis with key characteristics of the proposal required to make an assessment.

Table 3: SuDS within Pipeline Easement - Acceptability Criteria

SuDS Type ²	Acceptability	
	Water Mains	Sewers
Filter strips	Yes, subject to cover to main being maintained	Yes, subject to cover to sewer being maintained
Filter drains	Yes where 45-90 degrees to main	Yes - apart from above brick sewers or others with risk of infiltration
Dry Swales with impermeable lining preventing infiltration.	No - ground level changes likely to be unacceptable	Yes - subject to subject to cover to sewer being maintained
Dry Swales with permeable or no lining preventing infiltration.	No	Yes - subject to ground level changes being acceptable and apart from brick sewers or others with risk of infiltration
Wet Swales	No	No
Bioretention Systems / Rain gardens with impermeable lining preventing infiltration with drainage	Yes - corrosion protection may be required to ferrous mains if located within rain garden	Yes
Bioretention Systems / Rain gardens with permeable lining or no lining or drainage	No	Yes - apart from brick sewers or others with risk of infiltration
Trees / Tree Pits	No	No
Pervious pavements	Yes – provided main is below construction	Yes – provided sewer is below construction
Attenuation Storage Tanks	No	No
Detention Basins	No	No
Ponds and wetlands	No	No

Note: The acceptability criteria above do not remove the obligations set out elsewhere in these conditions relating to protecting pipelines from damage, vibration, maintaining access for maintenance etc.

20.9 Ground Source Heat Recovery

Ground source heat recovery systems (shallow or deep) should not be installed within pipeline easements unless otherwise agreed with UU.

20.10 Planting near to Pipelines

² As set out in the CIRIA publication: The SuDS Manual (C753F)

Written consent must be obtained from UU before any tree or shrub planting is carried out. Any consent 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.

Selection and planting of tree species should be in accordance with BS 8545 Trees: from nursery to independence in the landscape. Recommendation.

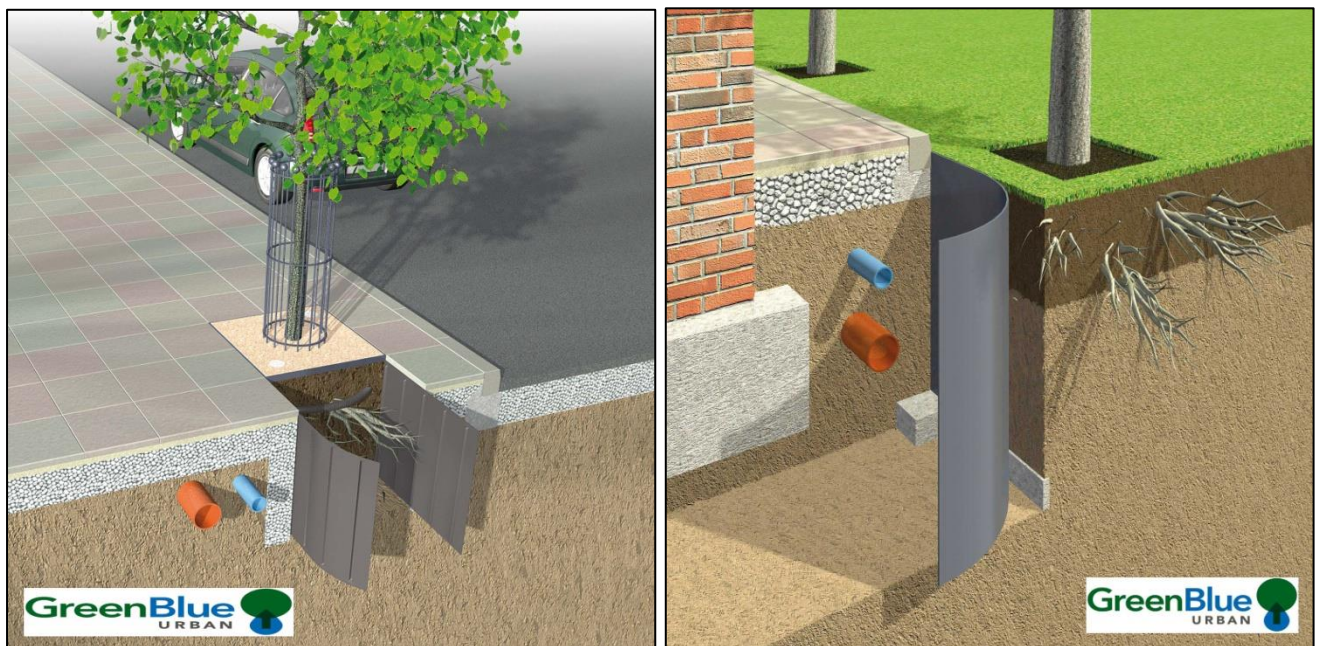
Planting of shallow rooted hedge plants, domestic soft fruiting bushes and ornamental shrubs shall be permitted however these shall not be permitted to develop as shrub trees and shall be maintained by the organisation / owner to a maximum height of 1.5m.

Planting of Populus spp. or Salix spp. shall not take place within 10 metres of a pipeline.

Restrictions apply to all Easement Areas and Easement Widths – refer to Appendix B for details. This includes a non-exhaustive list of trees and recommended planting distances.

United Utilities will consider the provision 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. Refer to 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 BS 8545.

A useful publication that can assist with planting near to utilities is the document titled 'NJUG Guidelines for the Planting, Installation and Maintenance of Utility Apparatus in Proximity to Trees'.



Images supplied by GreenBlue Urban

21. Easement Infringements

UU acknowledges that there are situations where structures have been erected either directly above the pipeline, or within an Easement Area or Easement Width. 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 owner's cost with any required legal documentation to be entered into
- c) UU may take legal action to obtain a court order to instruct removal of the structure at the owner's cost.

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

- a) Security of supply / service
- 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

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.

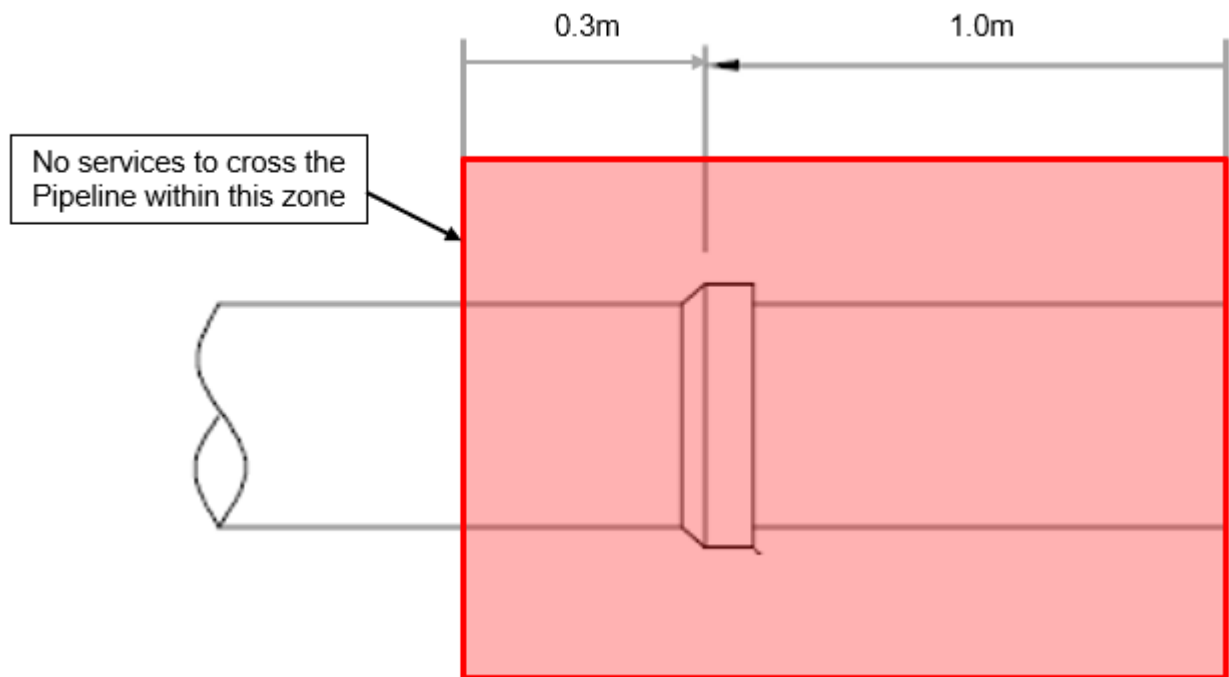
In the case of structures of a temporary or easily removable character consent to such structures may, after consideration, be given by UU strictly on a case-by-case basis with the decision of UU being final. UU's access to any Easement should not be obstructed or impeded in any way.

22. Stopping up Orders

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

1. If the proposed development will impede clear access, then the pipeline must be abandoned or diverted at the applicants cost.
2. Typically, there would be no objection if the pipeline 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. 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
4. 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 pipeline, or within the Easement.
 - c) Planting of large trees (detailed information available in Appendix B). 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.

APPENDIX A: Service Crossing Restrictions in relation to Pipeline Sockets



APPENDIX B: 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
<i>Acer campestre</i>	Field Maple	Yes	Yes	Yes	Yes
<i>Aesculus hippocastanum</i>	Horse chestnut	No	No	No	Yes
<i>Carpinus betulus</i>	Hornbeam	Yes	No	No	Yes
<i>Castanea sativa</i>	Sweet Chestnut	No	No	No	Yes
<i>Corylus avellana</i>	Hazel	Yes	Yes	Yes	Yes
<i>Crateagus monogyna</i>	Hawthorn	Yes	Yes	Yes	Yes
<i>Fagus sylvatica</i>	Beech	Yes	No	No	Yes
<i>Ilex aquifolium</i>	Holly	Yes	Yes	Yes	Yes
<i>Larix decidua</i>	Larch	No	No	No	Yes
<i>Ligustrum vulgare</i>	Privet	Yes	Yes	Yes	Yes
<i>Malus domestica</i>	Apple	No	Yes	Yes	Yes
<i>Malus sylvestris</i>	Crab Apple	No	Yes	Yes	Yes
<i>Pinus nigra</i>	Black pine	No	No	No	Yes
<i>Pinus sylvestica</i>	Scots Pine	No	No	No	Yes
<i>Platanus acerifolia</i>	London Plane	No	No	No	Yes
<i>Prunus avium</i>	Wild Cherry	No	Yes	Yes	Yes
<i>Prunus cerasifera</i>	Plum	No	Yes	Yes	Yes
<i>Prunus lusitanica</i>	Laurel	Yes	Yes	Yes	Yes
<i>Prunus padus</i>	Bird Cherry	No	Yes	Yes	Yes
<i>Prunus spinosa</i>	Blackthorn	Yes	Yes	Yes	Yes
<i>Pyrus communis</i>	Pear	No	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
<i>Sambucus nigra</i>	Elder	Yes	Yes	Yes	Yes
<i>Sorbus aria</i>	Whitebeam	No	No	No	Yes
<i>Sorbus aucuparia</i>	Rowan	No	No	Yes	Yes
<i>Taxus baccata</i>	Yew	Yes	No	No	Yes
<i>Tilia cordata</i>	Lime	No	No	No	Yes
<i>Ulmus glabra</i>	Wych Elm	No	No	Yes	Yes

APPENDIX C: BS 9295:2020 Design Assumption

Rigid Pipes

Figure 15 - Assume “wide” trench conditions for all scenarios.

Table 3 - Assume a Spangler Modulus value for the native soil of 3MN/m^2 .

Assume Bedding Construction Class D or N for vitrified clay pipes and Bedding Class B/S for concrete pipes.

Flexible Pipes

Table 13 - Assume a Spangler Modulus value for the native soil of 3MN/m^2 .

Table 14 - Assume pipe embedment is as-dug material (S4) with a compacted density of 85%, i.e. Embedment Soil Modulus value of 3MN/m^2 , Deflection Lag Factor of 1.5 and Strain Factor of 5.5 (based on a pipe ring stiffness of 2.5kN/m^2).

Table 16 - Assume an initial deflection value of 4.75% (based on Installation Control Type C and a pipe ring stiffness of 2.5kN/m^2).

Semi-Rigid Pipes

Table 25 - Assume pipe embedment is as-dug material (S5) with a compacted density of 85%, i.e. Embedment Soil Modulus value of 1MN/m^2 , Deflection Lag Factor of 3.0 and Strain Factor of 4.0 (based on a pipe ring stiffness of 15kN/m^2).

Table 27 - Assume a Spangler Modulus value for the native soil of 3MN/m^2 .