



Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites

(Report Reference Number 10/WM/03/21)



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3.1 Pipe Materials

1. The Water Company has a statutory duty to provide 'wholesome water' as defined by the Water Supply (Water Quality) Regulations. Therefore, the Water Company will require an audit trail covering the selection of materials from specification, purchase, through to delivery and use on site. Where the Water Company is not satisfied that the proposed material adequately protects the quality of water, it may require a more conservative threshold value (see Appendix F) or an alternative material to be used.
2. All materials, substances and products in contact with water intended for human consumption need to comply in all aspects with the provisions of Regulation 31 of the Water Supply (Water Quality) Regulations. Materials complying with these regulations are listed on the Approved List published by the Drinking Water Inspectorate (www.dwi.gov.uk/drinking_water_products/index.htm) or the Scottish Government (www.scotland.gov.uk/Publications/2008/03/04152957/0).

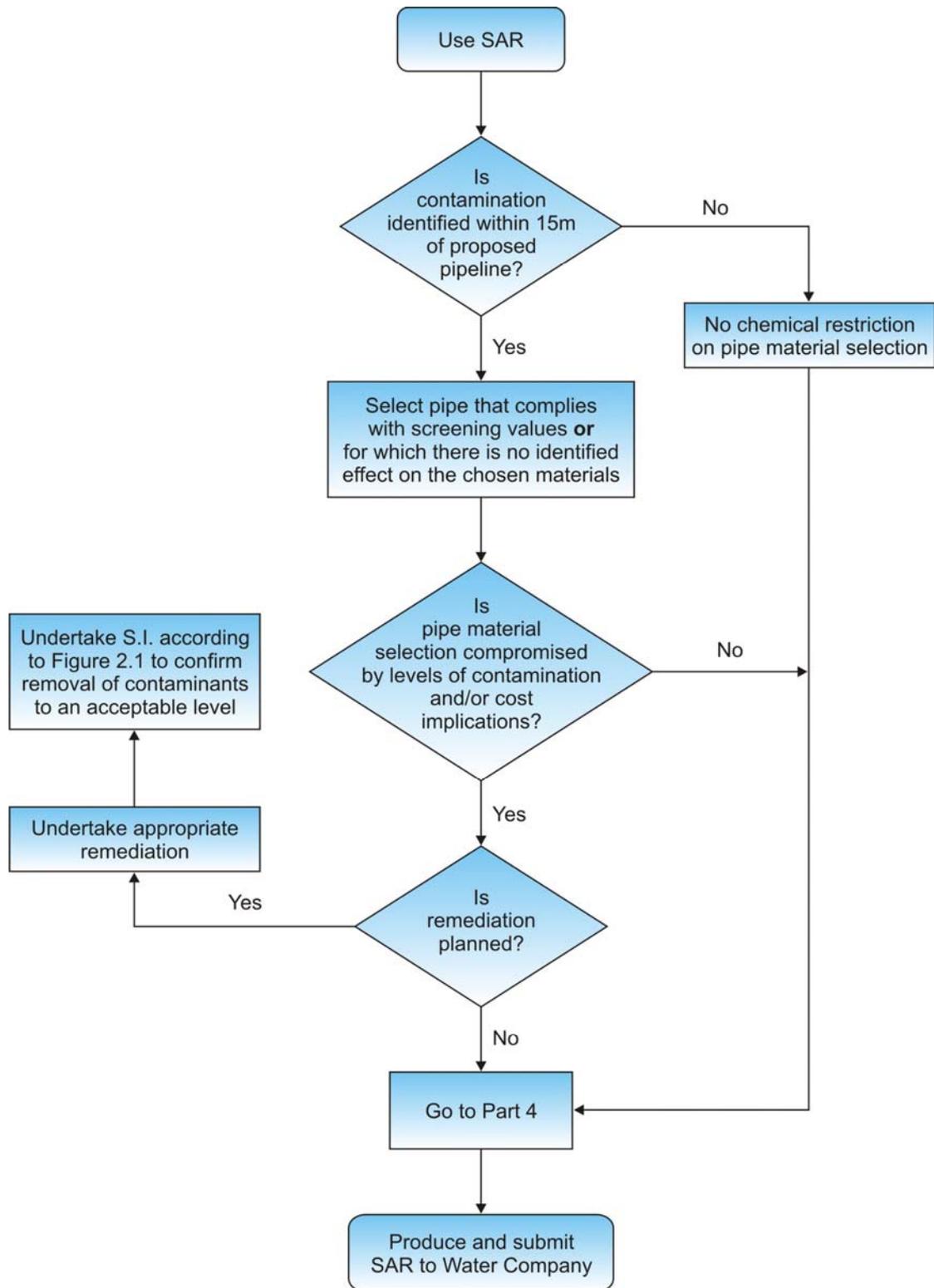
Note: This also covers the Water Supply (Water Quality) Regulations (Northern Ireland), the Water Supply (Water Quality) (Scotland) Regulations and any amendments.

3. Downstream of the communication pipe, the supply pipe and any fittings used on the water main or service pipe should comply with the requirements of the Water Supply (Water Fittings) Regulations (or Scottish Water Byelaws). Pipes and fittings which have WRAS Approval, if installed in accordance with any installation conditions, will meet these requirements. A list of WRAS Approved products is available in the Water Fittings and Materials Directory at www.wras.co.uk/Directory.
4. Where European Standards refer to requirements for the effect of materials on potable water quality, National Regulations currently apply.
5. The Civil Engineering Specification for the Water Industry (CESWI) provides details of the European Standards, British Standards or other specifications for pipeline products including pipes, fittings and valves. Additional information needed for the correct specification of water supply pipes for use in brownfield sites is in Part 4 of this guidance.

3.2 Methodology

1. The purpose of the selection procedure is to identify the pipe materials that are suitable for use in the brownfield site. These options can then be used, in conjunction with the Water Company's preferred materials list, to select a cost-effective pipe solution for the site.
2. Pipe integrity should be maintained throughout the intended design life of the pipe to ensure a provision of a safe public water supply.
3. The various steps in the pipe selection process are detailed in Figure 3.1.
4. Where it can be demonstrated through the Preliminary Risk Assessment (PRA) that contamination is not present within fifteen metres of the proposed pipeline, there is no restriction due to contamination on the choice of pipe materials. However, the Water Company may require additional sampling in these cases.
5. If specific data exists which supports the use of a particular combination of pipe material and contaminants, it could be used in place of the data presented in this guidance with the acceptance of the Water Company.
6. If pipe material selection is compromised by the levels of contamination and/or cost implications then remediation of the land or re-routing of the pipeline is an option, but the appropriateness of the new route would need to be confirmed by a site investigation.
7. If remediation is undertaken after the production of the Site Assessment Report (SAR), the developer should show that a site investigation has been undertaken to confirm the removal of all pertinent contaminants (refer to Part 2).

Figure 3.1: Selection procedure for water supply pipes



3.3 Procedure and update of Site Assessment Report

1. Using the information collated in Table 2.2, compare the maximum concentrations reported for each chemical group with the threshold values for each pipe material in Table 3.1.
2. Identify those pipe materials where the concentration exceeds the threshold and record this in a summary table using the example provided in Table 3.2.
3. This record of the evaluation from Part 3 should be presented in the Site Assessment Report (SAR).

Note: If any of the parameter groups have not been reported in the SAR, the chemical analysis should be repeated to generate this information.

4. Once completed, an overall summary of the suitability of each pipe material should be made at the base of the summary table.

Note: For a pipe material to be suitable it needs to have all 'ticks' or a 'pass'. The presence of a specific contaminant parameter may preclude the use of a pipe material.

5. A preferred pipe selection can then be identified.
6. The evaluation undertaken in Part 3 is used to update the SAR and provides the starting point for Part 4: Specification of Water Supply Pipes. A proforma detailing the expected data presentation format for the SAR is provided in Appendix A.
7. Where it is proposed that pipe joints and fittings containing elastomeric rings or gaskets are to be used, seek advice from the manufacturer on the most suitable elastomeric material for use with the levels of contamination reported for each chemical group.
8. The Developer should now take into account the considerations in Part 4 and consult the Water Company to ensure compatibility of the proposed materials with those currently used by the Water Company as they *may* issue a preferred list of materials and sizes.

Table 3.1: Pipe selection table

		Pipe material					
		All threshold concentrations are in mg/kg					
	Parameter group	PE	PVC	Barrier pipe (PE-Al-PE)	Wrapped Steel	Wrapped Ductile Iron	Copper
1	Extended VOC suite by purge and trap or head space and GC-MS with TIC	0.5	0.125	Pass	Pass	Pass	Pass
1a	+ BTEX + MTBE	0.1	0.03	Pass	Pass	Pass	Pass
2	SVOCs TIC by purge and trap or head space and GC-MS with TIC (aliphatic and aromatic C5 - C10)	2	1.4	Pass	Pass	Pass	Pass
2e	+ Phenols	2	0.4	Pass	Pass	Pass	Pass
2f	+ Cresols and chlorinated phenols	2	0.04	Pass	Pass	Pass	Pass
3	Mineral oil C11-C20	10	Pass	Pass	Pass	Pass	Pass
4	Mineral oil C21-C40	500	Pass	Pass	Pass	Pass	Pass
5	Corrosive (Conductivity, Redox and pH)	Pass	Pass	Pass	Corrosive if pH < 7 and conductivity > 400µS/cm	Corrosive if pH < 5 , Eh not neutral and conductivity > 400µS/cm	Corrosive if pH < 5 or > 8 and Eh positive
Specific suite identified as relevant following Site Investigation							
2a	Ethers	0.5	1	Pass	Pass	Pass	Pass
2b	Nitrobenzene	0.5	0.4	Pass	Pass	Pass	Pass
2c	Ketones	0.5	0.02	Pass	Pass	Pass	Pass
2d	Aldehydes	0.5	0.02	Pass	Pass	Pass	Pass
6	Amines	Fail	Pass	Pass	Pass	Pass	Pass

Table 3.2: Example data summary table

	Mandatory list of contaminant to ask developers to answer	Pipe material					
		All threshold concentrations are in mg/kg					
	Parameter group	PE	PVC	Barrier pipe (PE-Al-PE)	Wrapped Steel	Wrapped Ductile Iron	Copper
1	Extended VOC suite by purge and trap or head space and GC-MS with TIC	✓	✓	✓	Pass	Pass	Pass
1a	+ BTEX + MTBE	x	x	Pass	Pass	Pass	Pass
2	SVOCs TIC by purge and trap or head space and GC-MS with TIC (aliphatic and aromatic C5 - C10)	x	x	Pass	Pass	Pass	Pass
2e	+ Phenols	✓	✓	Pass	Pass	Pass	Pass
2f	+ Cresols and chlorinated phenols	✓	✓	Pass	Pass	Pass	Pass
3	Mineral oil C11-C20	✓	Pass	Pass	Pass	Pass	Pass
4	Mineral oil C21-C40	✓	Pass	Pass	Pass	Pass	Pass
5	Corrosive (Conductivity, Redox and pH)	Pass	Pass	Pass	✓	x	✓
Specific suite identified as relevant following Site Investigation							
2a	Ethers	✓	✓	Pass	Pass	Pass	Pass
2b	Nitrobenzene	✓	✓	Pass	Pass	Pass	Pass
2c	Ketones	✓	x	Pass	Pass	Pass	Pass
2d	Aldehydes	✓	✓	Pass	Pass	Pass	Pass
6	Amines	Fail	Pass	Pass	Pass	Pass	Pass
	Pipes that pass chemical thresholds	x	x	✓	✓	x	✓
	Preferred selection			✓			