



Standards Programme

Topic E. Water – supply outside buildings

1. Details of objectives

Long Term Objectives for Topic – see Project Plan below for details	Responsible Water UK Policy Advisory Group and contact
E.1: To ensure any water main is built in such a way that water companies can cost effectively manages those assets.	Drinking Water – Jim Marshall Customers – Rob Wesley
E.2: To ensure water companies are able to specify and purchase components of suitable performance.	Drinking Water - Jim Marshall
E. 3: To ensure meters used by the water industry are accurate, cost-effective and designed for the purposes for which they are to be employed.	Drinking Water – Jim Marshall Customers – Rob Wesley
E.4: To identify best approach/approaches adapted to companies' individual circumstances for the future of areas where current practice is divergent.	Drinking Water – Jim Marshall Customers – Rob Wesley

Topic	Water – supply outside buildings	Sub-topics	Mains, services, design, civil engineering works, asset condition, rehabilitation, leakage/ detection metering/meters/ telemetry, maintenance products
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The topic can be divided into the following key stages:

Planning	Regulatory requirements, Self-lay v Requisitioning, Pressure requirements, Contaminated land, Service Standards, demand management – household demand
Design including product selection	Effect of materials on WQ, Product performance, Pressure/Hydraulic/sizing, Materials selection. Fire service requirements. Service Pipes. Dead legs. Design criteria.
Construction	Civil engineering works, M&E Works, hygiene, jointing, installation, pressure testing, bedding/backfill/cover, meters, meter boxes.
Operational maintenance	Disinfection, cleaning, pressure management, telemetry, metering (DMA/household), leakage, leak detection, pipeline location, effect of metering on demand

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Rehabilitation	Asset condition, rehabilitation options
Data Communications	Electronic data gathering, wireless systems,

Current UK practice

Planning

- Network requirements determined by planned development and ongoing customer demand
- Network analysis (sizing of mains etc), demand requirements
- Meeting service standards
- Development scheme planning - Code of Practice for Self-Laying of Water Mains.
- GIS and network recording

Design

- Design criteria (civil, M&E) - Civil Engineering Specification for the Water Industry, Self-Laying of Water Mains and Services, BS EN 805
- Design methods – Pipe Materials Selection Manual plus BS EN 1295
- Materials selection – no national guidance (PMSM outdated), selection of materials for use on contaminated land in UKWIR booklets
- Fire Service Requirements – National guidance documents on provision of water for fire fighting and provision of water for sprinkler systems. New version in preparation (Water UK).
- Products – Water Industry, British & European Standards with mixture of 3rd party approvals and individual water company assessment. New work in ISO starting on chemical resistance of plastics pipes and code of practice for PVC pipe. ISO documents for PE pressure pipe and multiplayer pipe in preparation. Detailed UK guidance for some products e.g. PE and PVC manuals.
- Water Industry Mechanical & Electrical Specifications – managed by the Pump Centre and sponsored by individual Water Companies – *see wastewater treatment topic*
- Water Industry Telemetry Standards group – owned by water industry and Environment Agency - producing an 'open' standard for regional telemetry
- Demand management and impact of metering
- *Water reuse (rainwater or grey water): dual infrastructure – see Water supply inside buildings topic*
- *Effect of materials on water quality – see water quality topic*

Construction

- Civil Engineering Specification for the Water Industry, Self-Laying of Water Mains and Services, plus BS 8010.
- Pressure testing – no standard UK method (WRc guidance and individual water companies), covered by BS EN 805.
- Hygiene - UK Water Industry 'Principles of water supply hygiene' and individual company documents, request by DWI for update.
- Jointing – WIS 4-32-08, will feed into new ISO work item
- Installation – BS 8010 with limited guidance in PE and PVC manuals
- Bedding/backfill/cover – WIS and IGN
- Health and Safety e.g. location in highways

Operational maintenance

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- Disinfection & cleaning – ‘Golden tap’ document, request by DWI for update
- Pressure management – no common method of implementing or reporting pressure management activities
- Leakage & leak location – individual water company procedures for dealing with and calculating economic levels of leakage based on ‘Managing Leakage’ series
- Pipeline location – EPSRC project ongoing “Mapping the Underworld”

Rehabilitation

- EN Plastics pipes products standards for rehabilitation being converted to ISO standards.

Data communications

- Relies heavily on proprietary systems to gather electronic data.
- Use of wireless systems is mostly confined to fixed telemetry links using licensed and some unlicensed radio spectrum.
- The licensed part of the spectrum is managed for the Water Industry by TAUWI (Telecommunication Association of the UK Water Industry), but they are not involved in other wireless standards activity.
- There is some use of short-range links on unlicensed bands using proprietary protocols.
- There are some open protocols in widespread use such as MODBUS but this does not have the status of a standard in the industry.
- There is limited use of fieldbus systems for instrumentation communications but no agreement on standards.
- WITS (Water Industry Telemetry Standards), which is working on a standard for data communications between telemetry master stations and outstations. EA/Water Industry initiative. The choice of an existing open protocol has been made and the initiative is moving forwards to detailed testing and implementation.
- WASP (Wireless Acquisition Standard Protocol) is a standard for short range communications generally within a site and uses unlicensed radio.

Current issues and pressures

- Design methodology – varies around Europe, need to promote practical approach
- Concern over accuracy of meters (household and DMA)
- Verification of large supply meters - new work proposal for auditing standard approved by BSI.
- New ISO working groups on remote reading of water meters - communication and data transfer. Input / output protocols and electronic interfaces for water meters.
- Smart metering and customer interface systems being introduced by manufacturers – issue of interchangeability.
- Metering – New standards have been published in CEN and ISO – will change designations A, B, C, D. Impact on the specification and procurement of water meters. BSi committee (CPI 30/7/1) dominated by manufacturers, no Water Industry representation. EN has been adopted by UK. CEN document includes requirements of the Measuring Instruments Directive (MID). Consultation currently underway on implementation of Directive in UK.
- Large meters – ISO working group looking at Standard for electromagnetic flowmeters. Current WG dominated by manufacturers, no Water Industry representation.
- Development of Environment Agency MCERTS scheme for self monitoring and inspections (e.g. flow discharges)

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- Wireless systems offer the possibility of collecting more data at lower cost than is currently possible and are very likely to expand, particularly for network monitoring and more detailed asset monitoring. This features large in practically every foresight and futures review of the industry.
- Asset monitoring using wireless access digital cameras.
- Increasing pressure on radio spectrum and the need for proactive effort to lobby for the industry.
- Revision of Public Procurement Directives – see Regulation topic
- CE marking, product certification and environmental product declarations – see Regulation topic
- Hydraulic modelling
- Repair couplings – rationalisation.
- WRAS vs Regulation 31 approvals.
- Misconnections.
- Lead pipe replacement/lining.

Long-term objectives

Objective E.1: To ensure any water main is built in such a way that water companies can cost effectively manages those assets.

Protect the current design, construction and operational performance by ensuring:

- Commonality between UK guidance/practice and EN 805;
- A common set of functional requirements in European Standards;
- UK practice is encompassed in guidance documents;
- Guidance documents reflect best/modern practice and apply across water industry where appropriate/possible.

Objective E.2: To ensure water companies are able to specify and purchase components of suitable performance

Protect the current product performance by ensuring:

- Functional requirements for water supply products reflect functional requirements
- Policing of development of product standards to reflect functional requirements (rather than having detailed input to each standard);
- Clear guidance on specifying to standards is available;
- UK Good Practice documents are aligned with guidance;
- Suitable briefing of procurement staff on guidance.

Objective E.3: To ensure meters used by the water industry is accurate, cost-effective and designed for the purposes for which they are to be employed

Protect the current product performance by ensuring:

- Functional requirements for metering products reflect functional requirements
- Policing of development of metering product standards to reflect functional requirements (rather than having detailed input to each standard);
- Clear guidance on specifying to standards is available;
- UK Good Practice documents are aligned with guidance;
- Suitable briefing of procurement staff on guidance.

Objective E.4: To identify best approach/approaches adapted to companys' individual circumstances for the future of areas where current practice is divergent

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Benchmark UK and European company practice to identify a best approach for the future for:

- Pressure management
- Leakage reporting and calculation of ELL
- Polyethylene jointing
- Structural pipeline design (rigid and flexible pipes)

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2. Project plan to deliver each long-term objective

Objective/ Project	Potential collaborators	Topic Advisor, PAG and Contact	Project Activity	Specific activity in 2010/11 including Water UK Networks
Objective E.1: To ensure any water main is built in such a way that water companies can cost effectively manages those assets.				
E.1.1 Common set of functional requirement s in European Standards		Mike Shepherd Ian Whittaker Drinking Water Jim Marshall	Attend CEN TC 164 (Water supply) + BSI Committee B/504 Continue active participation.	Influence new work items & scope plus early warning of activities.
			Attend CEN TC 164/WG1 (General rules for systems and components outside buildings) Reps - Haydn White Geoff Miller + BSI Committee B/504/1. Retain water industry chairmanship.	Maintain contact and influence design methodology to support functional requirements and UK Water Industry guidance
			Attend CEN TC138/SC4/WG6 butt fusion welding of PE pipes used for water and gas distribution Rep - Edward Ingham	Influence work item to ensure UK perspective/ best practice is included
E.1.2 Ensure commonalit y between CESWI and Code of practice for self-laying of water mains		Mike Shepherd Ian Whittaker Drinking Water Customers Jim Marshall Rob Wesley	Maintain technical consistency between CESWI and CoP for self-lay	Through Water Distribution Infrastructure and Customers Networks , review uptake of self-lay and need for revision to UKWIR Code. Self-lay review being done 2008/09, due for release 2009/10. CESWI review being done 2010/11, due for release 2011.

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Objective/ Project	Potential collaborators	Topic Advisor, PAG and Contact	Project Activity	Specific activity in 2010/11 including Water UK Networks
E.1.3 Ensure commonality between UK guidance/practice and EN 805		Mike Shepherd Ian Whittaker Drinking Water Jim Marshall	Attend CEN TC 164/WG1 (General rules for systems and components outside buildings) + BSI Committee B504/1	Through Water Distribution Infrastructure Network , discuss whether EN805 meets needs of UK Water Industry. Identify way forward to next revision (due in 2011). British Standard B504/1 will provide guidance to EN805.
E.1.4 UK practice is contained in guidance documents		Mike Shepherd Ian Whittaker Drinking Water Jim Marshall	Water Industry Specifications/ Information and Guidance notes	Review WIS and IGNs to ensure currency and alignment with best practice.
			Principles of hygiene and technical guidance notes.	Allocated to DWI Practitioners network: Review document and need for revision.
E.1.5 Guidance documents reflect best/modern practice and apply across water industry where appropriate/possible		Mike Shepherd Ian Whittaker Drinking Water Jim Marshall	WIMES Group	<i>Covered by wastewater – sewerage topic</i>
			Metering – Auto meter reading.	Keep up to date and monitor any emerging standards. Check UKWIR roadmap and identify standards items. http://www.ukwir.org/files/UKWIR/R%26D%20Roadmap%20-%202018-06-07.pdf
Objective E.2: To ensure water companies are able to specify and purchase components of suitable performance				
E.2.1 Functional requirements for water supply products reflect functional requirements	SBWWI Product manufacturers	Mike Shepherd Ian Whittaker Drinking Water Jim Marshall		

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Objective/ Project	Potential collaborators	Topic Advisor, PAG and Contact	Project Activity	Specific activity in 2010/11 including Water UK Networks
E.2.2 Policing of development of product standards to reflect functional requirements	SBWWI Product manufact'ers	Mike Shepherd Ian Whittaker Drinking Water Jim Marshall	Attend CEN TC 164/WG1 (Water Supply) + BSI Committee B/504/1 Reps - Haydn White Geoff Miller Attend PRI/88 (plastic pipes), and ISO TC 138/SC2 (plastic pipes and fittings). Rep - Edward Ingram Attend PRI/88/4 (plastics pipes test methods) Rep - Edward Ingham and ISO TC 138/SC5 (test methods). Attend PSE/10 (iron pipes), PSE/7/3 (valves), FSH/17/1 (hydrants) and only if required FSH/17 (fire brigade equipment).	Review extent to which existing standards and drafts meet functional requirements. Identify way forward. Attend PRI/88/2/P1 (PE pressure pipes). Attend ISO TC 138/SC2 working groups 3 & 4 (PVC, PE) until level of activity is identified. Review use of steel pipes in UK Water Industry and attend ISE/16/10 and ISE/16/11 only until level of activity is identified. [Monitor] Review use of reinforced pipes in UK Water Industry and attend TC 155/WG14 and PRI/88/2/P5 only if GRP pipe standard is likely to be developed and adopted by UK. Review proposed product standards to ensure functional requirements are being followed. (PE and PVC only.)
		Mike Shepherd Ian Whittaker Drinking Water Jim Marshall	Attend ISO TC138/SC6/ WG12 (Rehabilitation) (No Rep), CEN TC 155/WG17 + PRI/88/3 Rep - Edward Ingham	Influence new work items & scope of developing standards.

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Objective/ Project	Potential collaborators	Topic Advisor, PAG and Contact	Project Activity	Specific activity in 2010/11 including Water UK Networks
E.2.3 Clear guidance on specifying to standards is available	Product manufact'ers OGC	Mike Shepherd Ian Whittaker Drinking Water Jim Marshall		Work with product manufacturers to prepare clear guidance document.
E.2.4 UK Good Practice documents are aligned with guidance	HBF	Mike Shepherd Ian Whittaker Drinking Water Jim Marshall		Review key documents (CESWI to ensure alignment with 2.3 above. Identify actions for amendment or revision (ongoing).
E.2.5 Suitable briefing of procurement staff on guidance	OGC	Mike Shepherd Ian Whittaker Drinking Water Jim Marshall		
Objective E. 3: To ensure meters used by the water industry are accurate, cost-effective and designed for the purposes for which they are to be employed				
E.3.1 Functional requirements for metering products reflect functional requirements	SBWWI Product manufact'ers	Mike Shepherd Ian Whittaker Drinking Water Customers Jim Marshall Rob Wesley		No current actions identified. Check UKWIR Roadmap for future items. http://www.ukwir.org/files/UKWIR/R%26D%20Roadmap%20-%202018-06-07.pdf
E.3.2 Policing of development of metering product standards to reflect functional requirements	SBWWI Product manufact'ers	Gordon Hall Drinking Water Customers Jim Marshall Rob Wesley	Attend TC92 and TC92/WG1 and CPI/30/7/1	Review extent to which existing standards and drafts meet functional requirements. Identify way forward. Identify representation if required. Review need for representation on committees for boundary boxes and manifold meters.

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Objective/ Project	Potential collaborators	Topic Advisor, PAG and Contact	Project Activity	Specific activity in 2010/11 including Water UK Networks
			Attend ISO TC30/SC5/WG5 (electromagnetic meters). CPI/30/7/1	Influence content of new standard for electromagnetic meters Identify representation if required.
E.3.3 Clear guidance on specifying to metering standards is available	Product manufact'ers	Drinking Water Customers Jim Marshall Rob Wesley		Action on Procurement Network : Work with metering product manufacturers to prepare clear guidance document
E.3.4 UK Metering Good Practice documents are aligned with guidance	Product manufact'ers	Drinking Water Customers Jim Marshall Rob Wesley		Activity required by Charging Effects Network : Review key documents to ensure alignment with 3.3 above. Identify actions for amendment or revision.
E.3.5 Suitable briefing of procurement staff on guidance for meter purchases		Drinking Water Customers Jim Marshall Rob Wesley		Activity required by Charging Effects Network : Brief procurement staff.
E.3.6 Measure the effects of the Measuring Instruments Directive.		Drinking Water Customers Jim Marshall Rob Wesley		Activity required by Charging Effects Network : Watching brief
Objective E.4: To identify best approach/approaches adapted to companies' individual circumstances for the future of areas where current practice is divergent.				
E.4.1 Pressure manage'nt		Mike Shepherd Ian Whittaker Drinking Water Customers Jim Marshall Rob Wesley	-	Activity allocated to Leakage Network : Prepare briefing paper on need for common guidance for implementing and reporting activities

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Objective/ Project	Potential collaborators	Topic Advisor, PAG and Contact	Project Activity	Specific activity in 2010/11 including Water UK Networks
E.4.2 Leakage reporting and calculation of ELL		Mike Shepherd Ian Whittaker Drinking Water Jim Marshall		Activity allocated to Leakage Network: Review 'Managing Leakage' series and identify need for alignment with or development of best practice. Note: current work by OFWAT and EA on future ways to calc ELL.
E.4.3 Polyethy'ne jointing		Mike Shepherd Ian Whittaker Drinking Water Jim Marshall		Activity allocated to Leakage Network: Identify issues that need to be addressed in relation to leakage. Current UKWIR project in this area.
E.4.4 Structural pipeline design (rigid and flexible pipes)		Mike Shepherd Ian Whittaker Drinking Water Jim Marshall		Activity allocated to Water Distribution Infrastructure Network: Identify issues that need to be addressed.