Technical Bulletin 97/19

Water supply - reducing consumption, losses and costs

SUBJECT CONTACT POINT:
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INTRODUCTION

1. The increasing legislation surrounding water supply and wastage, together with environmental considerations, require a greater impetus to be given to water infrastructure management. At present leak detection and analysis is contained within DEO Specification 005 Item 566, as an EWC Task. This has DOE/PSA Technical Instruction - Civil Engineering Serial 99 (TICE 99) as its basis. This Technical Instruction is one of over 300 retained PSA Standards, which are being reviewed.

2. As a matter of urgency, measures must be taken by Property Managers and Budget Holders to improve MOD's position regarding water losses, wastage and value for money (VFM) for water supplied by a water services company (WSC). This applies equally to water supplied from an MOD source.

REDUCING CONSUMPTION

WATER CONSERVATION

3. Methods for reducing the quantity of water consumed on a site should be carefully reviewed. This should include the use of cistern flow regulators (Cisternmisers), spring-loaded taps, hand triggers on hoses, prompt repair of dripping taps and leaks, good practice in kitchens and maximum recycling of water used for vehicle and aircraft washing.

4. All personnel on site should be made aware of water conservation requirements through education by leaflets, posters and lectures.

REDUCING LOSSES

WATER LOSS REDUCTION

5. Recent studies have shown MOD's water leakage to be generally greater than that of the Water Industry. There is a need to increase awareness of this problem and take appropriate actions.

6. The strategic placing of meters and sub-meters is necessary to monitor areas of the site for consumption and also to identify and locate leakage.

7. All non-standard valves (those which close anti-clockwise) and those that do not fully shut-off flow must be replaced through the Property Management process. Once completed, this will permit iterative closure procedures to identify leaks in particular sections of the water distribution system.
8. A programme to locate and rectify leaks can then be pursued with leak detection specialists using electronic and acoustic methods for locating the exact position of a leak. Details are available through DEO(W) SCG5.

9. Large leaks will naturally be identified first and repaired; the procedure repeated to identify medium sized leaks again followed by repair, then smaller sized leaks, which have been masked by the "noise" of relatively larger leaks can be found and remedied.

10. Leakage levels will need to be monitored before and after repair/replacement programmes to confirm improvements and to give a leakage baseline for continued monitoring purposes.

11. Routine monitoring procedures should operate continually, but specific leakage searches will need to repeated on a regular basis (maximum 6 monthly) depending on several factors. These include the quantity of water used on the site, the condition/age of the water main, and financial savings made by comparing the cost of the water loss with the cost of the loss investigation.

12. The Property Manager should consult with the relevant Budget Holder so that the costs of leakage and repairs can be scrutinised and the optimum cost effectiveness maintained. Environmental concerns about wastage should also be considered.

13. A suitable water main replacement programme(s) will need to be scoped and costed by the Property Manager's EWC to see if it is below the Property Management limit. If the PROM/EWC needs specialist technical policy advice this is available from DEO(W) SCG5. Normally, an Option Study should be carried out using a DEO(W) specialist Consultant to ensure the optimum technical solution and VFM.

14. It should be noted that like-for-like replacement of water mains on a site is rarely technically correct and cost effective. Change of site use, alterations to the estate, or the number of personnel, and the position of the supply point from the WSC will have an impact. The present WSC policy of reducing their supply pressure, current MOD fire requirements, and variation of consumption density around the site since the original water distribution system was installed may also have a significant effect. To achieve the best solution it is usual to carry out a network analysis to provide an optimally sized distribution system. These factors will all be considered during an Option Study.

REDUCING COSTS

BULK METERING CHARGES

15. To obtain VFM, normal and bulk metering rates from the appropriate WSC which supplies the site, should be established with the appropriate WSC Department (see Annex A). In the Army, Logistic Support staffs deal with water contracts and related bill paying, whilst in both the Navy and RAF contracts and payments are dealt with by their individual site Energy Managers.

16. The rates and methods of charging vary considerably between WSCs, utilising the amount of water used, the number of meters supplying the site, the size of the meter(s), free installation and/or free meter, setting up of annual agreements etc.

17. The appropriate size of meter for the amount and range of flows required by the site should be installed. This may be smaller than the diameter of the main on which it is fixed. Water for fire fighting purposes is normally supplied through a by-pass around the meter. Annual standing charges are paid for the meter even if no water is used, so it is important that a technical assessment is made.
18. Any MOD property, which is at present charged for water on a rateable value basis should be closely examined to see if the installation of a meter(s) could reduce water costs. Substantial cost reductions can be obtained.

19. It should be noted that WSC meter charges do not apply if the site has a private water supply, eg borehole, river or spring source etc. However, a separate abstraction charge is usually payable to the appropriate Environment Agency in whose area the site is located, based upon the volume of water extracted.

20. Any options which will achieve better VFM should be implemented for all sites without delay, to ensure that the most economic charging regime is being obtained by the site.

21. All WSCs will provide a list of meter charges on request and these should be carefully inspected to ensure that the best rate(s) is used for the current situation on the site.

22. Changes in the number of personnel on a site and industrial or other processes, which cause variations in water consumption, need to be kept under constant review to obtain the minimum charging regime for the water used.

23. Telephone enquiries to the WSC normal enquiry points may not reveal the full scope of savings available. They deal largely with domestic or small meters and may not be aware of the bulk user rates available to the larger MOD sites or high consumers. It is recommended that any initial telephone contact is followed by written application or request for information to the WSC HQ (Annex A).

**AUDIT OF BILLS**

24. Water/sewerage bills from a WSC should be carefully checked and audited to ensure that correct payments have been made. For Army sites this is an ASU responsibility, whilst for other services it is dealt with by the Energy Manager. The way in which a meter(s) supplies a particular area should be studied to ensure that MOD pays only for water consumed, and not that supplied to a third party off site, nor payment made twice when meters are incorrectly operating in series.

25. Sewerage changes are normally based on processing 90-95% of the water supplied that has been recorded on the WSC meter.

26. In some cases it may be possible to reclaim overpaid sewerage WSC bills (usually up to six years). This may be possible if all the following conditions are met:

   - the WSC supplies water and receives sewage effluent from the site.
   - where water leakage is a significant percentage of that supplied by the WSC.
   - where the extent of water loss has been clearly documented and substantiated (the WSC incoming supply meter being the accepted figure for payment of the original bill).

   When this occurs the appropriate service organisation should make an approach to the WSC to obtain a refund.

**ALTERNATIVE WATER SOURCES**

27. The cost of water supplied by a WSC is substantial. It is recommended that alternative sources of supply, eg from a borehole, river, or other suitable source, are considered and costed by an Option Study.
SCOPE

28. The requirements of this Technical Bulletin apply to all MOD sites. The situation should be reviewed by the Property Manager and EWC by the end of March 1997, and then with the Budget Holder to inform the LTC process. Responsibilities of all units and agencies on a site are to be considered and reported appropriately.

ENQUIRIES

29. Enquiries concerning this Technical Bulletin or requests for specialist technical support/advice and access to a specialist consultant should be addressed to SCG5, Water and Environmental Engineering at Sutton Coldfield (Telephone 0121 311 2146, Mil 742 2146 : Fax 0121 311 3636, Mil 742 3636).

References:


2. "Water Leakage in England and Wales", OFWAT *


* Office of Water Services, Centre City Tower, 7 Hill Street, Birmingham, B5 4AU. Telephone 0121 625 1300.

Bulletin Authorised By:

C T CAIN
Director of Defence Estate Organisation
(Technical Standards)
Annex A

WATER AND SEWERAGE SERVICE COMPANIES AND AUTHORITIES

ENGLAND AND WALES

**ANGLIAN WATER SERVICES LIMITED**
Compass House
Chivers Way
Histon
Cambridgeshire CB4 4ZY

Telephone: (01223) 372000
Fax: (01223) 372271

**SOUTHERN WATER SERVICES LTD**
Headquarters
Southern House
Yeoman Road, Worthing
West Sussex BN13 3NX

Telephone: (01903) 264444

**DWR CYMRU WELSH WATER**
Plas-y-Ffynnon
Cambrian Way
Brecon
Powys LD3 7HP

Telephone: (01874) 623181
Fax: (01874) 624167

**SOUTH WEST WATER SERVICES LIMITED**
Peninsula House
Rydon Lane
Exeter EX2 7HR

Telephone: (01392) 446688
Fax: (01392) 434966

**NORTHUMBERIAN WATER LTD**
Abbey Road
Pity Me
Durham
DH1 5FJ

Telephone: 0191 383 2222
Fax: 0191 384 1920

**THAMES WATER UTILITIES LIMITED**
Customer Services Centre
PO Box 436, Swindon L
Wilts SN38 1TU

Telephone: (0645) 200800

**NORTH WEST WATER GROUP PLC**
Dawson House
Great Sankey
Warrington WA5 3LW

Telephone: (01925) 234000
Fax: (01925) 233360
Telex: 628642

**WESSEX WATER PLC**
Wessex House
Passage Street
Bristol BS2 0JQ

Telephone: 0117 929 0611
Fax: 0117 929 3137

**SEVERN TRENT WATER LIMITED**

**YORKSHIRE WATER SERVICES LTD**
SCOTLAND

WEST OF SCOTLAND WATER AUTHORITY
419 Balmore Road
Glasgow G22 6NU

Telephone: 0141 (355 or 347) 5333
Fax: 0141 355 5146

NORTH OF SCOTLAND WATER AUTHORITY
Cairngorm House
Beechwood Park North
Inverness IV2 3ED

Telephone: 01463 245 400
Fax: 01463 245 405

EAST OF SCOTLAND WATER AUTHORITY
Pentland Gait
597 Calder Road
Edinburgh EH11 4HJ

Telephone: 0131 453 7500
Fax: 0131 453 7558

NORTHERN IRELAND

WATER EXECUTIVE
DOE NI
Northland House
3 Frederick Street
Belfast BT1 2NS

Telephone: 01232 244711
Fax: 01232 354888
## WATER ONLY SERVICE COMPANIES

### BOURNEMOUTH & WEST HAMPSHIRE WATER PLC
- George Jessel House
- Francis Avenue
- Bournemouth BH11 8NB
- Telephone: (01202) 591111
- Fax: (01202) 599333

### EAST SURREY WATER PLC
- London Road
- Redhill RH1 1LJ
- Telephone: (01737) 772000
- Fax: (01737) 766807

### BRISTOL WATER HOLDINGS PLC
- PO Box 218
- Bridgewater Road
- Bristol BS99 7AU
- Telephone: (0117 9) 665881
- Fax: (0117 9) 634576
- Telex: 44932 BWWCO G

### ESSEX & SUFFOLK WATER
- Hall Street
- Chelmsford
- Essex CM2 0HH
- Telephone: (01245) 491234
- Fax: (01245) 212345

### CAMBRIDGE WATER COMPANY
- Rustat Road
- Cambridge CB1 3QS
- Telephone: (01223) 403000
- Fax: (01223) 214052

### FOLKESTONE AND DOVER WATER SERVICES LIMITED
- Cherry Garden Lane, Folkestone
- Kent CT19 4QB
- Telephone: (01303) 276951
- Fax: (01303) 276712

### CHESTER WATERWORKS COMPANY
- Aqua House
- 45 Boughton
- Chester CH3 5AU
- Telephone: (01244) 302501
- Fax: (01244) 316102

### HARTLEPOOL WATER PLC
- 3 Lancaster Road
- Hartlepool
- Cleveland TS24 8LW
- Telephone: (01429) 274405
- Fax: (01429) 278961

### CHOLDERTON & DISTRICT WATER COMPANY
- Estate Office
- Cholderton
- Salisbury
- Wilts SP4 0DR
- Telephone: (01980) 629203
- Fax: (01980) 629307

### MID KENT WATER PLC
- High Street
- Snodland
- Kent ME6 5AH
- Telephone: (01634) 240313
- Fax: (01634) 242764

### CORBY (NORTHANTS) AND DISTRICT WATER COMPANY
- Geddington Road
- Corby NN18 8ES
- Telephone: (01536) 40298/40299
- Fax: (01536) 404699

### MID SOUTHERN WATER PLC
- Primsley Green
- Camberley
- Surrey GU16 6HZ
- Telephone: (01252) 835031
- Fax: (01252) 836066
Annex A

MID SUSSEX WATER PLC
14 Upperton Road
Eastbourne
East Sussex BN21 1EP

Telephone: (01323) 411411
Fax: (01323) 411412

THREE VALLEYS WATER PLC
Registered Office
Bishops Rise, Hatfield
Herts AL10 9HL

Telephone: (01707) 268111
Fax: (01707) 277333

NORTH EAST WATER
PO Box 10
Allendale Road
Newcastle-upon-Tyne NE6 2SW

Telephone: 0191 265 4144
Fax: 0191 276 6612

TENDING HUNDRED WATER SERVICES LTD
Mill Hill, Manningtree
Essex CO11 2AZ

Telephone: (01206) 392155

NORTH SURREY WATER LTD
Millis House
The Causeway
Staines
Middlesex TW18 3BX

Telephone: (01784) 455464
Fax: (01784) 451260

WREXHAM WATER PLC
Packsaddle
Wrexham Road
Rhostyllen, Wrexham
Clwyd LL14 4DS

Telephone: (01978) 846946
Fax: (01978) 846888

PORTSMOUTH WATER PLC
PO Box 8
West Street
Havant
Hants PO9 1LG

Telephone: (01705) 499888
Fax: (01705) 453632

THE YORK WATERWORKS PLC
Lendal Tower
York
YO1 2DL

Telephone: (01904) 622171
Fax: (01904) 611667

SOUTH STAFFORDSHIRE WATER PLC
Green Lane
Walsall WS2 7PD

Telephone: (01922) 38282
Fax: (01922) 725542

SOUTH EAST WATER LIMITED
14 Upperton Road
Eastbourne
East Sussex BN21 1EP

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Annex A

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