DISTRIBUTION, OPERATION and MAINTENANCE STRATEGY
ASSET MANAGEMENT
WORK INSTRUCTION
ISOLATION OF A WATER NETWORK

<table>
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<th>Work Instruction – Isolation of a Water Network</th>
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<tr>
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<td>DOM-WN-WIN-0000302</td>
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<tr>
<td>Version:</td>
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<tr>
<td>Date:</td>
<td>October 2013</td>
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<tr>
<td>Approved By:</td>
<td>Asset Management</td>
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<td>Title:</td>
<td>General Manager</td>
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Record of Changes and Amendments

<table>
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<tr>
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<th>Document / Section Title</th>
<th>Version Number</th>
<th>Amendment Date</th>
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<tr>
<td>1</td>
<td>Section 1</td>
<td>DOMS Training Guidelines</td>
<td>A</td>
<td>Oct 2013</td>
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<td>Section added with text in page 5</td>
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FOREWORD

Background

DOMS stands for 'Distribution Operation & Maintenance Strategy' and is being used by Scottish Water to:

- safeguard the quality of water to customers
- ensure that Scottish Water apply due diligence to their Scottish Water distribution network

The DOMS procedures and work instructions affect all functional staff who work on the network, which includes internal employees and employees of external organisations (i.e. planners, operators, delivery teams, Framework Contractors, or any other contractors).

Through the application of the DOMS principles in day-to-day network activities, Scottish Water and their approved contractors will operate and maintain their water distribution networks through operational 'best practice'. This will allow Scottish Water to meet the following objectives:

- to maintain water quality;
- to maintain continuity of supply;
- to maintain water supply hygiene;
- to undertake water quality incident management;
- to maintain a cost-effective water supply.
- to ensure a course of action for timely network intervention (Capex and/or Opex) to maintain statutory obligations and customer satisfaction.

Responsibility

The responsibility for adoption and implementation of all DOMS procedures and work instructions rest with Scottish Water General Managers and senior managers of external organisations. It is the responsibility of all Scottish Water employees and those of external organisations to comply with DOMS procedures and work instructions.

Document Control

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Change Request

A change to this document can be requested by completing a Change Request Form - refer to document ‘DISTRIBUTION OPERATION and MAINTENANCE STRATEGY GOVERNANCE (DOM-WN-GOV-00000001)’ for change request procedure.

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APPENDIX A – DOMS IMPACT RISK ASSESSMENT FORM .................................................... 9
1. **PREAMBLE**

1.1 **Instruction Objectives**

This work instruction details the process for isolating a section of the water network.

1.2 **Related Parent Documents**

- (DOM-WN-PRC-00000306) Work Procedure ‘Repair of Burst Mains’
- (DOM-WN-PRC-00000307) Work Procedure ‘Mains Fittings/Replacements’

1.3 **Related External Controlled Documents**

None.

1.4 **Related Internal Controlled Documents**

- (DOM-WN-PRC-00000303) Work Instruction ‘Hydrant Operation’
- (DOM-WN-PRC-00000306) Work Instruction ‘Valve Operation’
- (DOM-WN-PRC-00000317) Work Procedure ‘Mixing Water from Different Supplies’
- (DOM-WN-PRC-00000327) Work Procedure ‘Maintenance and Audit of Boundary Valves’
- Tool Box Talk Preparation and use of a Chlorine disinfectant solution
- Tool Box Talk Potable Water Sampling and sampling details, sample registration
- Tool Box Talk Prevention of Drips, Leaks and Spillages of Fuels, Oils and other Chemicals
- Tool Box Talk Protection of Controlled Waters
- Tool Box Talk DOMS IAF Guidance for the completion for access to Working on SW water Network
- Tool Box Talk Sampling repairs and New Mains Information for those taking samples
- Tool Box Talk Mains Flushing
- DOMS Impact Assessment Form
2. PLANNING CHECKLIST

Refer to risk assessment sheet for isolation of water network. Main issues are listed below. Complete health and safety risk assessment, including:

- Single man working.
- Traffic Safety of SW staff operating valves.

Water quality impact issues
- Creating an interruption to supply.
- Closing a valve quickly and causing a burst.
- Change of flow pattern causing discolouration.
- Flooded air valves.

Impact risk assessment
- Risk assessment and Isolation method statement produced and approved.
- Utilisation of recently calibrated network model
- Impact on surrounding network. Reduced pressures?
- Discharge of chlorinated water.

Risk mitigation/contingency plan
- Identification of alternative feed, where appropriate.
- Temporary supplies.

Sensitive and key account customer issues
- Risk assessment to identify
- Liaison Key account managers
- Dialysis patients

Communication plans
- Update Ops log.
- Notify affected customers
3. DESCRIPTION

DOMS TRAINING GUIDELINES – EVIDENCE OF DOMS TRAINING

In 2007, Scottish Water set the goal that all staff working on the water network receives the relevant DOMS training by the end of the year. The result - over 9,000 people have currently completed DOMS training to support their network activities since it has been introduced within SW.

All staff, both internal and external, who work on the water network, **MUST** complete the relevant Distribution, Operation and Maintenance Strategy (DOMS) training associated with their specific network activities and as a result **MUST** carry two cards which confirm their training.

DOMS training is available through a number of approved Training Providers and the registration of the training units taken by individuals is administered through EU Skills.

The first card relates to training given around the Hygiene Code of Practice (HCoP) and the card usually coloured light blue, confirms the cardholder has completed this element, which includes a health screening questionnaire.

The second card, usually coloured white, relates to training given around DOMS and the training units shown on the back of the card detail the type of DOMS related site activities that the cardholder can undertake.

Both cards detail the name of the cardholder, along with their picture, which will allow confirmation that the cardholder is the person holding the card.

Scottish Water staff may and will challenge all internal and external staff working on the water network at anytime to produce both their cards to ensure that cardholder has the relevant training and understanding of DOMS Procedures and Work Instruction for the specific task that they are undertaking.

The following guidelines should be followed for deciding the course of action to take when either internal or external staff were found to be working on the water network, or any infrastructure that will be connected to our network, without the requisite HCoP/DOMS cards confirming training.

1) **New starts** - expectation that they will have their necessary HCoP/DOMS training organised by their employer within the first 4 weeks of them joining their company. They will not be allowed to work on the water network without the HCoP/DOMS training, even though they are being supervised by a person who has gone through the training. There is a minimal health risk here, which the health questionnaire, completed during the HCoP training, will confirm as acceptable or unacceptable.

2) **Completed HCoP/DOMS Training but no card issued by EU Skills** - staff in this situation can work on the water network as long as they can demonstrate that they have a 'cover note' issued by training providers. If a 'cover note' is produced, then the person challenging can ensure that 'cover note' refers to the actual person by checking the EU Skills web site against name or reference number.

   This will be done in conjunction with the relevant DOMS Working Group representative.

3) **Person challenged on site and person has no HCoP/DOMS relevant training** - if this scenario occurs then the person who has made the challenge will remove the person from working on the water network and contact the relevant business unit DOMS Working Group representative as the first point of contact. Together, the site contact and the DOMS Working Group representative will make the decision on whether work can or cannot continue after discussions with the employee’s relevant organisation.
4) Person challenged on site and cannot produce HCoP/DOMS relevant training cards, but claims to have undergone training - if no cards can be produced, then the person challenging cannot confirm that the person has had the relevant training by checking the EU Skills web site against name or reference number. This will be done in conjunction with the relevant DOMS Working Group representative.

5) Person challenged on site; DOMS CARD EXPIRED.

If a DOMS card has expired and the person is waiting to attend a SW DOMS training course, a signed and dated cover note, with the course reference confirmation number and Registration Status clearly shown, must be issued by the person’s line manager, in order to allow access to the network.

The person must present this cover note on site.

(Failure to provide cover note will result in the individual being removed from working on the network until a cover note is issued, or the individual is retrained and re-registered with EUSR).

The cover note will only be valid for 3 months after the original card expiry date. After 3 months has elapsed, if the person has not re-registered and is NOT in possession of a new card or a cover note stating the person is awaiting delivery of a new card, then access to work on the network will be refused.

All internal and external staff working on the water network must have completed the relevant training. If the site challenges are made by SW staff (and on occasions the DWQR) for all those working on the network, the message will be sent clearly that

**IF YOU HAVEN’T HAD THE TRAINING – YOU CANNOT WORK ON OUR NETWORK OR ANY INFRASTRUCTURE THAT WILL BE CONNECTED TO OUR NETWORK.**

While we all want to be balanced and professional in our company approach to this matter, water quality and customer satisfaction in our product is our paramount concern.

Finally, can all Scottish Water staff note that for out-of-hours advice on public health issues, a representative from the Public Health Team can be contacted 24/7 through the ICC.

**Isolating a Section of the Mains Network**

- Complete a DOMS impact assessment (see Appendix A), which must consider the following:
  - Isolation method statement.
  - Potential or actual Impacts to SW OPA score with ITS Interruptions To Supplies
  - Utilisation of recently calibrated network model, where one exists.
  - Boundary valves / Strategic Valves
    - If any of the isolating valves are boundary valves the boundary valve procedure must be followed with the valve operator contacting Control 24 Hour Telephone Number 0845 602 4172 and advise of BV's Current status change.
    - If any of the isolating valves are temporarily open boundary valves or valves, which will affect a large area or population, then these valves must be operated by a Customer Service Delivery Staff.
    - Refer To DOMS Doc SCOTTISH WATER ACCESS TO LIVE NETWORK
    - Refer To SW DOMS TBT No 2 - Boundary Valves Management
  - Water quality effects.
  - Customers affected - Key, sensitive, general.
  - Any temporary alternative supply arrangements wherever possible.
  - Pressure changes in adjacent areas.
  - Identify potential areas of contamination risk - air valves, farm troughs, etc.
  - Safe method of discharging chlorinated water.
* Refer To SW DOMS TBT No 13 Protection of Controlled Waters
* Scour valves - availability, condition and discharge points.
* Fire Hydrants - availability, condition and discharge area.

- Obtain approval to proceed.
- Complete health and safety risk assessment.
- Check fittings on-site, which will affect process: isolating valves, air-valves, scour valves and fire hydrants.
  - Are air valve chambers flooded? Potential contamination risk.
- Complete customer notification.
  - Customers not connected to the isolated section of main must be notified, where the quality or pressure of their supply will be noticeably altered.
- Update operation log with any water quality issues and or the start / stop time of ITS event and populate ITS proforma on IMS device or Manual Proforma and submit into CDR Corporate Data Repository.
- Establish any temporary alternative to supplies for maintaining supplies.
- Establish any temporary supplies e.g. dialysis patient.
- If there are concerns over the effects of isolating a section of main(s) on the adjacent network, establish pressure gauges at suitable elevated locations to monitor the effects of the closure.
- Close the property stopcocks, where the nature of the work on the isolated section of main(s) necessitates that action.
- (DOM-WN-PRC-00000306) Slowly close and sound downstream valve(s) in line with “Valve Operation” work instruction.
- (DOM-WN-PRC-00000306) Slowly close and sound upstream valve(s) in line with “Valve Operation” work instruction.
- Empty the isolated section of main in a controlled manner. Refer to:
  - (DOM-WN-PRC-00000303) Work Instruction ‘Hydrant Operation’

- Bacteriological sampling must be carried out for ALL MAINS BURST REPAIRS & INTERVENTIONS Unless after recharging and flushing the main, if the Responsible Person is confident the main has remained under pressure throughout the repair and if an Impact Assessment Form has been completed and the excavation has remained free from contamination, there is no need to take samples for bacteriological examination. If there is any doubt that the main has remained under pressure during the repair bacteriological samples must be taken. Samples need not be taken from repairs on service pipes below 50 mm diameter. Refer to: SW Water Supply Hygiene Code of Practice (HCOP1)

- All staff who take samples of potable water from any part of the Treatment or Distribution processes must receive training to take samples and this tool box talk as a reminder of procedures. The information included must also be used by any line managers of the above staff and would be useful to anyone working on drinking water systems. Samples will be monitored by Scientific Services to ensure that the sampler is on a list of trained staff. Where this is not the case the sampler’s line management will be informed. All initial sampling training must be complete by 1st July 2009 and training can be requested by contacting Scientific Services email ScientificServices.businessSupport@scottishwater.co.uk.
Samples taken by untrained staff after this date will be analysed but may need to be re-sampled to validate the result. In order to assess your training status Scottish Water staff will have training records on Quest and non Scottish Water staff will require to get their EURS Skills card updated after training and will need to supply their Card Number when they submit a sample. This can be put onto the Sample Registration form.

Any audit of the repair / sampling process will regard samples taken by untrained staff as a Major Non-Compliance.

- Refer to: SW Water Supply Hygiene Code of Practice
- After Mains repairs or Mains tie ins are completed the main should be flushed clear or for up to an hour and if required the sample should then be taken. If the main is still discoloured at this time still take the sample and then follow this up with another sample up to 24 hours later.
- Please refer to the following tool box talks for further guidance.
  - DOM-WN-TBT-00000016 Mains Flushing

Please Refer to Tool Box Talk
DOM-WN-TBT-00000014 DOMS Impact Assessment Form

Guide for Completion for Access to working on the SW Water Network for completion of the new Impact Assessment Form
### Network Activity Non Complex Right Details

<table>
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<th>Title of Valve(s) to be Operated</th>
<th>Rate of Closing Valve(s) to be Operated</th>
<th>Rate of Opening Valve(s) to be Operated</th>
<th>Rate of Maximum to be Operated</th>
<th>Rate of Maximum to be Operated</th>
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### Monitoring Support

- All Values checked & closed out to designate of work please list yes/no
- Are Values not closed or closed out not assessed by communities, officers required, sign off required

### Risks to the Network

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<th>Risk to Network</th>
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<th>Action to Avoid or Lessen Impact</th>
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## Scottish Water DMS Impact Assessment Form MOL 2020

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<td>Company Name or Business Location</td>
<td>CS PHONE</td>
<td>Project Name</td>
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<td>Valve Operator Name</td>
<td>Valve Operator Contact Number</td>
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### NETWORK ACTIVITY COMPLEX DEPTH DETAILS

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<th>Actual Number of Properties Affected</th>
<th>YES</th>
<th>NO</th>
<th>Potential Number of Properties Affected</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Supervision Required</td>
<td>Please validate</td>
<td>YES</td>
<td>NO</td>
<td>Without BFA/Request</td>
<td>Please check other yes</td>
<td>NO</td>
<td>Configuring Plan Required</td>
<td>Please refer to yes or NO ensure please enter other</td>
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<td>Information &amp; Administration</td>
<td>Land Use Issues</td>
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<td>YES</td>
<td>NO</td>
<td>YES</td>
<td>NO</td>
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### Monitoring Details

- Please refer to any Alternative Supply / Baseline in the event of any V & D issues.

### Desk Feed

- Desk Feed Required
- Desk Feed Unavailable

<table>
<thead>
<tr>
<th>Job/Task No of Valves to be Operated</th>
<th>No of Control Valves To be Operated</th>
<th>No of Secondary Valves to be Operated</th>
<th>No of Hydrants to be Operated</th>
<th>No of Wasteways to be Operated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset ID</td>
<td>Asset Description</td>
<td>Asset Location</td>
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</thead>
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<tr>
<td>Loss of Supply</td>
<td>EXAMPLES (Unscheduled loss of supply to customer's premises. Possible shut the valves else where the network out with damage shut off. PA calling)</td>
<td>Schedule valves released before commencing work on site. Pressure and flow checks on network out with shut down to ensure only customers within the shut are only affected. Overland supplies or Tapping operations implemented if available. PRU Monitoring</td>
</tr>
<tr>
<td>Contamination</td>
<td>EXAMPLES (Possible contamination backwash or only water meter reading during shut down. Care taken with meter readings. Damaged sewer / Overflow etc. Rolling in known contaminated area)</td>
<td>EXAMPLES (Possible contamination backwash or only water meter reading during shut down. Care taken with meter readings. Damaged sewer / Overflow etc. Rolling in known contaminated area)</td>
</tr>
<tr>
<td>Break</td>
<td>EXAMPLES (Possible additional break / main with air in the system from main LCW. Pressure restored to quarter. Demand to pressure with air or mains being operated)</td>
<td>EXAMPLES (Possible additional break / main with air in the system from main LCW. Pressure restored to quarter. Demand to pressure with air or mains being operated)</td>
</tr>
<tr>
<td>Disconnection</td>
<td>EXAMPLES (Possible additional break / main with air in the system from main LCW. Pressure restored to quarter. Demand to pressure with air or mains being operated)</td>
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</tr>
<tr>
<td>Reduced Pressure</td>
<td>EXAMPLES (Reduced or increase in pressure with air or PRU operated)</td>
<td>EXAMPLES (Reduced or increase in pressure with air or PRU operated)</td>
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</table>

Other | Site Specific | Site Specific | Site Specific | Site Specific |

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### PRE WORK NOTIFICATION

<table>
<thead>
<tr>
<th>Personnel / Team Notified</th>
<th>Have You Contacted?</th>
<th>Date / Time</th>
<th>Comments</th>
</tr>
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**Contact Centre**

- **Customer Description**
- **Date / Time**

**Water Sampling Details**

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<th>Have You Contacted?</th>
<th>Date / Time</th>
<th>Comments</th>
</tr>
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<tbody>
<tr>
<td>Yes / No</td>
<td></td>
<td></td>
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</table>

### POST OPERATIONAL REVIEW

Most Operational Review models encountered and are organized for either operational activity on the water network, i.e., planned interruptions to supply or water quality issues. In addition, other Operational Review models should be considered for any potential critical events.

**Complex Shut Criteria** is any shut off required which meets any of the following criteria.

1. Is a strategic Main going to be affected?
2. Is a strategic Valve going to be affected?
3. Is a strategic Valve being repaired in another area?
4. Is a strategic Valve being repaired in another area?
5. Is a strategic Valve going to be changed?
6. Are any Key Customers, Customers or Interventions going to be affected?

### Key Terms

- **Strategic Main**: Any main which is critical to the supply of water to an area. This includes those previously referred to as trunk mains but are less than 125mm in diameter.
- **Critical Main**: Any main which is unique to a geographic feature (e.g., railway, river, bridge, buildings, etc.), which might cause difficulty of access to affect a speedy repair and the consequences of failure & evacuation levels.