



# Technical Guidance Document TGD-031.1

## Guidelines on Mains Water Distribution Systems in Post-Primary Schools

(1<sup>st</sup> Edition, June 2014)

**(THIS DOCUMENT SHALL BE READ IN CONJUNCTION WITH  
TGD-003, 005, 006, 021.3 026 & 031)**

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### PLANNING and BUILDING UNIT

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## 1. INTRODUCTION

- (a) The intention of this guidance document is to ensure that good quality water compliant with all required standards is available in all drinking taps and drinking water connections in post primary schools.
- (b) It should be used by Design Teams and school authorities to assist them in the design of the mains water installation in new post primary schools, extensions to existing primary schools and also on refurbishment and upgrade projects in schools involving the cold water services.
- (c) For projects currently in the design process they shall be implemented as follows:
  - **PROJECTS WHERE STAGE 1 IS IN PREPARATION:**  
TGD-031.1 shall be implemented and addressed in the design development of Stage 2a.
  - **PROJECTS WHERE STAGE 2A IS IN PREPARATION:**  
Where time allows and the implementation of these guidelines is not likely to contribute to delays in the preparation of a Stage 2a submission they should be incorporated into the stage submission.  
Otherwise a Stage 2a submission based on DoES [TGD-003, 005, 006 026, Addendum 1 \(TGD-026\)](#) and [TGD-031 Edition 1](#) shall be submitted and [TGD-031.1](#) shall be implemented and addressed in the design development of Stage 2b.
  - **PROJECTS WHERE STAGE 2B IS IN PREPARATION:**  
Where time allows and the implementation of these guidelines is not likely to contribute to delays in the preparation of a Stage 2b submission they should be incorporated into the stage submission.  
Otherwise a Stage 2b submission based on DoES [TGD-003, 005, 006 026, Addendum 1 \(TGD-026\)](#) and [TGD-031 Edition 1](#) shall be submitted and [TGD-031.1](#) shall be implemented and addressed before the project goes to tender.
  - **PROJECTS AT STAGE 3:**  
The project should proceed without any amendments to tender documentation. Some or all of DoES and [TGD-031.1](#) may be incorporated as post contract Change Orders.
  - **PROJECTS WHERE TENDERS HAVE BEEN AWARDED:**  
Once the contract is signed some or all of DoES [TGD-031.1](#) may be incorporated as post contract Change Orders.
- (d) Standards and Acts quoted are current at the time of writing: the prevailing versions of these shall be used at the time of design and installation

## 2. MAINS WATER SERVICE

### 2.1 WATER SUPPLY

- (e) The main water supply pipe feeding a school building shall be located at a minimum of 900mm below ground level and shall be maintained at that level until it has entered the boiler house. The water main shall rise from the floor towards the back of the boiler house and away from the entrance door to minimise the risks of freezing.
- (f) A test point shall be provided on the in-coming mains water supply pipe in the boiler house to allow water samples to be taken to verify the quality of water provided.
- (g) A dosing point shall be provided on the in-coming mains water supply pipe in the boiler house to facilitate commissioning and disinfection.
- (h) In some cases, in particular where a private water source supplies a school water treatment may be required on the mains water supply feeding the school. This should be taken into account in the design development of the mains water supply and provided in the boiler

house. However where mains water is provided by a local authority, treatment of the supply may not be required.

- (i) All mains water storage tanks shall be internal and located within the roof space. External tanks or tanks housed in enclosures mounted on the roof are not acceptable for health and safety reasons.
- (j) The mains water storage tank shall be fed via the mains water supply to a school.
- (k) Ball cocks only are to be used on the mains water inflow to a mains water storage tanks in the roof space. Motorised valves and float switches shall not be specified or used.
- (l) Mains water shall be provided as outlined in [Section 2.2.1 Design Considerations](#) below. Internal and external drinking points shall be provided as per [TGD-003 Mechanical & Electrical Building Services Engineering Guidelines for Primary School Buildings](#) and [TGD-031 Amendments to the Building Services Engineering Guidelines \(2004\)](#) [TGD-003 & ICT Infrastructure Guidelines TGD-005 for Post Primary Schools, Rev. 1 April 2014](#). Refer also to [Section 2.2.1 General Design](#) below.
- (m) The Design Team shall check the quality of the local water supply. Where considered necessary water softening installation and/or water treatment installation shall be provided on a cold water feed to the heating and hot water installations only in a school. This shall be detailed, designed and costed at Stage 2a together with indicative running costs including estimates of annual chemical consumption and cost.

## 2.2 DISTRIBUTION SERVICE

### 2.2.1 DESIGN CONSIDERATIONS

- (a) The incoming mains water supply shall feed outlets in the following locations:
  - A drinking water tap at the Home School/Community Liaison Room sink
  - A drinking water tap at each Home Economics Room sink
  - A drinking water tap at the Staff Room sink
  - Connection to the water boiler in the Staff Room
  - A drinking water tap at the Meeting Room sink
  - A drinking water tap at the First Aid Room sink
  - A drinking water tap at the GP Area Kitchenette sink
  - Connection to the Water Boiler in GP Area Kitchenette
  - A drinking water tap at the sink unit in each classroom in a Special Educational Needs Unit (SNU).
  - Internal drinking points at suitable locations within the a building i.e. one per 150 pupils up to a maximum of 6 outlets
  - External drinking points in the play area i.e. one per 150 pupils up to a maximum of 4 outlets

The drinking water tap shall be in addition to the mixer tap at sink units.

- (b) A minimum flow rate of 0.036 litres per second or 2.25 litres per minute is required at each drinking water outlet. This flow rate is considered reasonable and will fill a 300ml cup in 8 seconds.
- (c) The minimum flow rate in the Staff Room and GP Area Servery should be 0.15 litres per second.
- (d) In the design development of the Mains Water Distribution System in a school the Building Services Consulting Engineer should:
  - Assess the quality and characteristics of the water supply feeding the school as well as the service conditions

- Take into account the current Irish Standard [IS EN 806: 2005: Specifications for installations inside buildings conveying water for human consumption, S.I. No. 122 of 2014](#) titled “[European Union \(Drinking Water\) Regulations 2014](#)” as well as the reduction in the Maximum Acceptable Concentration (MAC) level for Lead i.e. from 25 µg per litre to 10 µg per litre on Dec 25th 2013.
- (e) The Building Services Consulting Engineer should consult and liaise with Uisce Eireann (Irish Water), the Water Utility or any other party providing a mains water supply to a school at an early stage in the design process and evaluate the quality of the mains water supply. Where water is provided from a school’s own source e.g. a well on site, it must be tested in order to properly inform the design.
- (f) The selection of pipe work, fittings, valves, meters, and taps must take into account the material used in manufacture, and the potential for Lead, Copper, Nickel and other metals, to leach into the drinking water, particular during periods of stagnation. This potential for leaching is influenced by the quality of mains water supply feeding a school in particular its pH and Hardness.
- (g) In order to reduce the risk of metallic exceedances in a mains water supply feeding drinking water outlets, in particular Lead and Copper, a complete non-metallic pipe work solution should be provided on a Mains Water Distribution System only in schools.
- (h) Drinking taps which do not have any metal in contact with mains water should be considered on the Mains Water Distribution System in schools. They must also be selected with care. In particular having regard to their potential to leach metals after periods of stagnation. Bronze or brass taps may contain up to 8% Lead and there is therefore a risk of an exceedance of the maximum allowed level for Lead. Taps selected should be of Low Lead make up, with no more than 0.25% Lead. If Nickel is used in tap manufacture or make up it may also lead to a risk of an exceedances of this parameter
- (i) All drinking water taps must be labelled permanently and unambiguously with an engraved label in order to distinguish them from hot and cold water services
- (j) The Mains Water Distribution System distribution pipe work must be labelled appropriately to ensure that it is not inadvertently connected to other Water Services e.g. drinking water taps will be provided in vicinity of hot and cold water supplies serving blended taps in the sink units.

## 2.2.2 DISTRIBUTION SYSTEM

- (a) All drinking water outlets shall be fed from the Mains Water Distribution System in a school.
- (b) The pipe work should serve each drinking water tap sequentially from the boiler house to the final connection to the mains water storage tank in the roof space. This in order to promote water turnover and reduce stagnation in the distribution system.
- (c) The design of the distribution system shall ensure that no drinking water tap is located at the end of a long pipe run.
- (d) Final connection to each drinking water tap should be via a short “dead leg”.
- (e) Drinking water taps should be located over the sink units and labelled as outlined in [Section 2.2.1 Design Considerations](#) above.

## 2.2.3 COMMISSIONING, TESTING & OPERATION

- (a) Prior to handover of the building the Building Contractor shall arrange to have mains water from a drinking water tap sampled and tested for compliance with [S.I. No. 122 of 2014](#) titled “[European Union \(Drinking Water\) Regulations 2014](#)” by an NSAI accredited test laboratory. The original copy of the results and report must be forwarded to the Employer’s Representative (ER). The time required for testing and submission of acceptable results must be factored into the Building Contractor’s Programme of Works.
- (b) All test results must be in compliance with [S.I. No. 122 of 2014](#) titled “[European Union \(Drinking Water\) Regulations 2014](#)”.

- (c) In ensuring the highest quality in the Mains Water Distribution System, the commissioning and sign off of the system must include the following:
- “As Installed Drawings” with, in particular, the total Mains Water Distribution System volume noted i.e. from the boiler house to the mains storage tank in the roof space
  - Appropriate certification of the Mains Water Distribution System, including a record of the materials used and a copy of the official EU approval of their use with mains water and drinking water systems
  - A record of the commissioning and disinfection of the Mains Water Distribution System, including a record of the disinfection chemicals used and a copy of the official EU approval for their use with mains water as well as drinking water systems
  - A copy of the water sampling and analysis report outlined in (a) above,
- (d) A second identical test to that described in (a) above shall be undertaken at Month 9 of the Defects Liability Period to verify that the quality of the water is still in compliance with [S.I. No. 122 of 2014 titled “European Union \(Drinking Water\) Regulations 2014](#).
- (e) Failure of any sample to meet the drinking water standards outlined in [S.I. No. 122 of 2014 titled “European Union \(Drinking Water\) Regulations 2014](#) if attributable to the School’s mains water and drinking water system, including drinking water taps/connections to water boilers etc, will require remediation by the Contractor before the issue of the Final Certificate on the building contract.
- (f) Post primary schools are open for 167 days each year and closed at weekends and during holiday periods. While there is no scientifically grounded explicit guidance in relation to flushing out mains water distribution system after periods of stagnation the DoES would offer the following advice and guidance to schools.
- Consideration should be given to flushing one volume of the Mains Water Distribution System after periods of significant stagnation where there has been little if any circulation in the system e.g. school holiday periods
  - For completeness each drinking water tap should also be opened in order to replace the stagnant water in the tap and “dead leg” with fresh water.
- (g) The Building Services Consulting Engineer should brief the school at the official Hand Over of the completed building on the following:
- Operation and Maintenance of the Mains Water Distribution System
  - The importance of draining the Mains Water Distribution System after periods of closure during the school year to remove stagnant water
  - The DoES advice and guidance on avoiding stagnation in Mains Water Distribution System in schools

These should also be fully and properly detailed in the [Operations & Maintenance Manual](#).

## **APPENDIX A: MAINS WATER DISTRIBUTION SYSTEM HANDOVER & COMPLETION RECORD SHEET (MAY 2014)**

## MAINS WATER DISTRIBUTION SYSTEM

### HANDOVER & COMPLETION RECORD SHEET (MAY 2014)

<b>SCHOOL NAME:</b>	<b>ROLL No:</b>
<b>ADDRESS:</b>	
<b>PROJECT:</b>	
The Mains Water Distribution System has been designed and installed in accordance with prevailing national and international standards with a specific focus on the prevention of Legionella in the water systems.	<b>SIGNATURES &amp; DATE</b>
Information with regard to the prevention of Legionella through regular maintenance of the Mains Water Distribution System was explained to the school at the hand over talks and has been included in both the Operation & Maintenance Manual and the Safety File issued to the school by the main contractor.	
A DVD recording of the formal handover talks, training and demonstration of the Mains Water Distribution System has been provided by the Contractor and is included in the Operating and Maintenance Manuals.	
<p>The following information has been included in the Operating and Maintenance Manuals:</p> <ul style="list-style-type: none"> <li>“As Installed Drawings” with, in particular, the total Mains Water Distribution System volume noted i.e. from the boiler house to the mains storage tank in the roof space</li> <li>Appropriate certification of the Mains Water Distribution System, including a record of the materials used and a copy of the official EU approval of their use with mains water and drinking water systems</li> <li>A record of the commissioning and disinfection of the Mains Water Distribution System, including a record of the disinfection chemicals used and a copy of the official EU approval for their use with mains water as well as drinking water systems</li> </ul>	
<p>The Building Services Consulting Engineer has satisfied himself that:</p> <ul style="list-style-type: none"> <li>The Mains Water Distribution System has been installed as per the DoES TGD-031.1</li> <li>Drinking water samples were taken and tested as per DoES TGD-031.1 and found to be in compliance with <a href="#">S.I. No. 122 of 2014</a> titled “European Union (Drinking Water) Regulations 2014</li> </ul>	



<p>The school representative i.e. Principal/Caretaker has been advised of :</p> <ul style="list-style-type: none"> <li>• Operation and Maintenance of the Mains Water Distribution System</li> <li>• The importance of draining the Mains Water Distribution System after periods of closure during the school year to remove stagnant water</li> </ul> <p>The DoES advice and guidance on avoiding stagnation in MWDS in schools</p>		
<p>Guidance on the Operation &amp; Maintenance of the Mains Water Distribution System as well as the DoES advice and guidance on avoiding stagnation in Mains Water Distribution System in schools has been included in the Operation &amp; Maintenance Manuals handed over to the school.</p>		
<p><b>CONFIRMATION OF THE ABOVE ELEMENTS:</b></p> <p>We the undersigned confirm that all of the above elements have been concluded as noted.</p>		
<p><b>BUILDING SERVICES CONSULTING ENGINEERS (COMPANY NAME):</b></p>		
<p><b>NAMES: (PRINTED)</b></p> <p>(i)</p> <p>(ii)</p>	<p><b>SIGNED:</b></p>	<p><b>DATE:</b></p>
<p><b>SCHOOL PRINCIPAL</b></p>		
<p><b>NAME: (PRINTED)</b></p>	<p><b>SIGNED:</b></p>	