



Development &
Planning Authority

Guernsey Technical Standard

Health, hygiene and water efficiency

The Building (Guernsey) Regulations, 2012

G

- G1 Cold Water supply
- G2 Water efficiency
- G3 Hot water supply and systems
- G4 Sanitary conveniences and washing facilities
- G5 Bathrooms
- G6 Food preparation areas
- G7 Habitable rooms

2012 edition
With May 2016 amendments

MAIN CHANGES MADE BY THE MAY 2016 AMENDMENTS

1. Text changes made to reflect the new structure of government post May 1st 2016. All references to Departments have been removed.

MAIN CHANGES MADE BY THE FEB 2013 AMENDMENTS

2. The general guidance on materials and workmanship and the Construction Products Directive has been edited to reflect the new EU Construction Products Regulation.
3. Clarification in relation to the provision of sanitary facilities for dwellings has been included.

MAIN CHANGES IN THE 2012 EDITION

4. This Guernsey Technical Standard which takes effect on 1st July 2012, is issued under the Building (Guernsey) Regulations, 2012. From this date all previous editions of documents approved under the Building Regulations, 1992 i.e. (the UK Approved Document G and sections G4 – G7 of the Guernsey Approved Documents 1993) will no longer be valid except in relation to building work carried out in accordance with full plans deposited with the States of Guernsey Building Control before that date.

Changes in the legal requirements

5. The main legal changes to the requirements are mentioned here and are also reproduced in the relevant text for ease of reference. In cases of doubt reference should be made to Part G of the 2012 Regulations itself.
6. Requirements G1 to G7 are significantly different from the former Part G requirements
 - G1 encompasses the previous Guernsey requirement G5 for the provision of wholesome and potable water for the purposes of drinking and food preparation and also includes requirements relating to the provision of wholesome water to washing facilities and water of a suitable quality to toilets.
 - Regulation 21 and G2 set out new water efficiency requirements for new dwellings.
 - G3 sets out enhanced and amended provisions on hot water supply and safety, applies safety provisions to all types of hot water systems (except certain systems used for industrial purposes) and includes new provision on the prevention of scalding.

- G4 sets out the requirements for sanitary conveniences and hand washing facilities and incorporates the previous Guernsey requirement G7 for the provision of sinks in buildings used as places of work in which at least 10 persons are employed to work at any one time.
 - G5 sets out requirements for bathrooms, which apply to dwellings and to buildings containing one or more rooms for residential purposes.
 - G6 contains a new provision requiring sinks to be provided in areas where food is prepared and also incorporates the previous Guernsey requirement G4.
 - G7 is the previous Guernsey requirement G6 simply renumbered.
7. The provisions on material change of use in regulation 7 of the 2012 Regulations have been amended to reflect the changes made to Part G. In particular, where there is a material change of use to create a new dwelling in an existing building, either by converting a non-domestic building or by the provision of a flat or flats in a building, the water efficiency requirements in Regulation 21 and G2 will apply as will the hot water safety requirement in G3(4).
 8. The requirements in G1 (cold water supply) and hot water supply and systems in G3 have been extended to domestic greenhouses, small detached buildings and extensions to buildings, in particular to conservatories.
 9. Building Control is unlikely to be able to give a completion certificate until it has received in respect of new dwellings a confirmation in writing that specifies the calculated potential consumption of wholesome water per person per day.

How this Guernsey Technical Standard G differs from the UK Approved Document G

9. In addition to the different legislative references reflecting Guernsey legislation, the main differences a non resident based applicant should note is additional functional requirements G4(2)(c) and G7.
10. The UK Building (Approved Inspectors, etc.) Regulations 2010 are not in force in Guernsey. Therefore approved inspectors are not recognised on the Island and all references have been removed.

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Introduction

This document has been approved and issued by the Development and Planning Authority to provide practical guidance on ways of complying with requirements G1 to G7 and regulations 11 and 22 of the Building (Guernsey) Regulations, 2012 (GSI 2012 No.11). The Building (Guernsey) Regulations, 2012 are referred to throughout the remainder of this document as ‘the Building Regulations’.

The intention of issuing Guernsey Technical Standards is to provide guidance about compliance with specific aspects of the Building Regulations in some of the more common building situations. They include examples of what, in ordinary circumstances, may be reasonable provision for compliance with the relevant requirement(s) of the Building Regulations to which they refer.

If guidance in a Guernsey Technical Standard is followed this may be relied upon as tending to show compliance with the requirement(s) covered by the guidance. Similarly a contravention of the standard may be relied upon as tending to establish a breach of the requirements. However, this is not conclusive, so simply following guidance does not guarantee compliance in an individual case or a failure to follow it meaning that there is necessarily a breach. It is also important to note that there may well be other ways of achieving compliance with the requirements. There is therefore no obligation to adopt any particular solution contained in this Guernsey Technical Standard if you would prefer to meet the relevant requirement in some other way. However, persons intending to carry out building work should always check with Building Control, that their proposals comply with Building Regulations.

The guidance contained in this Guernsey Technical Standard relates only to the particular requirements of the Building Regulations that the document addresses, (see ‘Requirements’ below). However, building work may be subject to more than one requirement of the Building Regulations and there may be an obligation to carry out work on a material change of use. In such cases the works will also have to comply with any other applicable requirements of the Building Regulations and work

may need to be carried out which applies where a material change of use occurs.

This document is one of a series that has been approved and issued for the purpose of providing practical guidance with respect to the requirements of the Building Regulations in particular of regulations 6, 8 and 11 and Schedule 1.

At the back of this document is a list of all the documents that have been approved and issued for this purpose.

Consideration of technical risk

In relation to the installation of new and replacement sanitation and hot water services, building work must satisfy all the relevant technical requirements set out in Schedule 1 to the Building Regulations. Attention should be paid in particular to the need to comply with Part A (Structure), Part B (Fire safety), Part C (Site preparation and resistance to contaminants and moisture), Part J (Combustion appliances and fuel storage systems), Part L (Conservation of fuel and power), as well as Part G.

How to use this Guernsey Technical Standard

In this document the following conventions have been adopted to assist understanding and interpretation:

- a. Texts shown against a yellow background are extracts from the Building Regulations, and set out the legal requirements that relate to compliance with the **health, hygiene and water efficiency** requirements of the Building Regulations. It should be remembered however that, as noted above, building works must comply with all the other applicable provisions of the Building Regulations.

- b. Key terms are defined in an annex D at the rear of this document.
- c. Details of technical publications referred to in the text of this document will be presented in ***italics*** and repeated in standards referred to as an annex at the rear of this document. A reference to a publication is likely to be made for one of two main reasons. The publication may contain additional or more comprehensive technical detail, which it would be impractical to include in full in this Document but which is needed to fully explain ways of meeting the requirements; or it is a source of more general information. The reason for the reference will be indicated in each case. The reference will be to a specified edition of the document. The Guernsey Technical Standard may be amended from time to time to include new references or to refer to revised editions where this aids compliance.

Where you can get further help

If you require clarification of any of the technical guidance or other information set out in this Guernsey Technical Standard and the additional detailed technical references to which it directs you, there are a number of routes through which you can seek further assistance:

- The States of Guernsey website:
www.gov.gg/planning
- If you are the person undertaking the building work you can seek advice from Building Control Surveyors to help ensure that, when carried out, your work will meet the requirements of the Building Regulations.
- Businesses registered with a competent person self-certification scheme may be able to get technical advice from their scheme operator. A full list of competent persons schemes are included as Schedule 3 of the Building Regulations.
- If your query is of a highly technical nature you may wish to seek the advice of a specialist, or industry technical body, in the area of concern.

Responsibility for compliance

It is important to remember that if you are the person (e.g. designer, builder, installer) carrying out building work to which any requirement of Building Regulations applies you have a responsibility to ensure that the work complies with any such requirement. The building owner or occupier will also have a responsibility for ensuring compliance with Building Regulation requirements and could be served with a compliance notice in cases of non-compliance or with a challenge notice in cases of suspected non-compliance.

Types of work covered by this Guernsey Technical Standard

Building work

Building work, as defined in regulation 5 of the Building (Guernsey) Regulations, 2012, includes the erection or extension of a building, the provision or extension of a controlled service or fitting, and the material alteration of a building or a controlled service or fitting. In addition, the Building Regulations may apply in cases where the purposes for which or the manner or circumstances in which, a building or part of a building is used change in a way that constitutes a material change of use.

Under regulation 6 of the Building Regulations, building work must be carried out in such a way that, on completion of work,

- i. the work complies with the applicable Parts of Schedule 1 of the Building Regulations,
- ii. in the case of an extension or material alteration of a building, or the provision, extension or material alteration of a controlled service or fitting, it complies with the applicable Parts of Schedule 1 to the Building Regulations and also does so as satisfactorily as it did before the work was carried out.

Work described in Part G concerns health, hygiene and water efficiency. Work associated with health, hygiene and water efficiency covered in these sections may be subject to other relevant Parts of the Building Regulations.

Material change of use

A material change of use occurs in specified circumstances in which a building, or part of a building that was previously used for one purpose will be used in future for another, or is converted to a building of another kind. Where there is a material change of use, the Building Regulations set requirements that must be met before the building can be used for its new purpose.

Regulation 7 of the Building Regulations specifies the following circumstances as material changes of use:

- a building is used as a dwelling where previously it was not,

- a building contains a flat where previously it did not,
- a building is used as an institution where previously it was not,
- a building is used as a public building where previously it was not,
- a building is not described in Classes I to V or VI of Schedule 2, where previously it was,
- a building contains a room for residential purposes where previously it did not,
- a building contains an office where previously it did not,
- a building is used as an hotel or guest house, where previously it was not,
- a building is an industrial building, where previously it was not,
- a building contains a shop, where previously it did not,
- a building is used for the sale of food or drink, to the public in the course of a business and for consumption in that building and where there is a maximum capacity of 15 or more persons seated or standing, where previously it was not so used,
- the building, which contains at least one room for residential purposes, contains a greater or lesser number of such rooms than it did previously,
- the building, which contains at least one dwelling, contains a greater or lesser number of dwellings than it did previously.

Parts G1, G3(1) to (3) and G4 to G6 will apply to all the material changes of use mentioned above. This means that whenever such changes occur the building must be brought up to the standards required by Parts G1 and G3(1) to (3) and G4 to G6.

Parts G2, G3(4) and regulation 23 will apply only to material changes of use where a building is used as a dwelling where previously it was not and where a building contains a flat where previously it did not.

In addition where the material change of use results in the creation of sleeping accommodation, G7 will apply.

Protected Buildings and Monuments

The types of building works covered by this Guernsey Technical Standard may include work on historic buildings. Historic buildings include:

- a. a building appearing on the protected buildings listing
- b. a building or other structure appearing on the protected monument listing

When exercising its functions under The Land Planning and Development Law, the States has duties under s30(1), 34, 35 and 38(1) of that Law, to secure so far as possible that monuments are protected and preserved, that the special characteristics of protected buildings are preserved and to pay special attention to the desirability of preserving and enhancing the character and appearance of a conservation area. Building Control will need to comply with these duties when considering any decisions in relation to such buildings or buildings in such areas.

Special considerations may apply if the building on which the work is to be carried out has special historic, architectural, traditional or other interest, and compliance with the **health, hygiene and water efficiency** requirements would unacceptably alter the fabric, character or appearance of the building or parts of it.

When undertaking work on or in connection with buildings with special historic, architectural, traditional or other interest, the aim should be to improve the **health, hygiene and water efficiency** where and to the extent that it is possible provided that the work does not prejudice the fabric, character or appearance of the host building or increase the long-term deterioration to the building's fabric or fittings.

In arriving at a balance between historic building conservation and the **health, hygiene and water efficiency** requirements advice should be sought from the historic building adviser.

Note: Any building which is a protected monument listed under Section 29 of The Land Planning and Development (Guernsey) Law 2005 is exempt from most Building Regulations requirements including those in Part A, (See regulation 13 and class V of Schedule 2 to the Building Regulations) unless the proposed works constitute a material change of use.

Notification of work

In almost all cases of new building work it will be necessary to notify Building Control in advance of any work starting. The exception to this: where work is carried out under a self-certification scheme listed in Schedule 3 or where works consist of emergency repairs.

Competent person self-certification schemes under Schedule 3

Under regulations 14(4), 17(4) and 19 of the Building Regulations it is not necessary to deposit plans or notify Building Control in advance of work which is covered by this Guernsey Technical Standard if that work is of a type set out in column 1 of Schedule 3 to the Regulations and is carried out by a person registered with a relevant self-certification (competent persons) scheme as set out in column 2 of that Schedule. In order to join such a scheme a person must demonstrate competence to carry out the type of work the scheme covers, and also the ability to comply with all relevant requirements in the Building Regulations. These schemes may change from time to time, or schemes may change name, or new schemes may be authorised under Schedule 3; the current list on the States's website should always be consulted. Full details of the schemes can be found on the individual scheme websites.

Where work is carried out by a person registered with a competent person scheme, regulation 19 of the Building Regulations requires that the occupier of the building be given, within 30 days of the completion of the work, a certificate confirming that the work complies with all applicable Building Regulation requirements. There is also a requirement that Building Control be given a notice that this has been done, or the certificate, again within 30 days of the completion of the work. These certificates and notices are usually made available through the scheme operator.

Building Control is authorised to accept these certificates as evidence of compliance with the requirements of the Building Regulations. However, inspection and enforcement powers remain unaffected, although they are normally used only in response to a complaint that work may not comply.

Exemptions

Schedule 2 to the Building Regulations sets out a number of classes of buildings which are exempt from all Building Regulations requirements. However, the exemption has been removed in respect of some requirements of Part G where hot or cold water supply systems are shared with other buildings. This is to help ensure that the whole hot or cold water system is safe. In particular:

- i. the requirements of Parts G 1, G3(2) and G3(3) will apply to any greenhouse which receives a hot or cold water supply from a source shared with or located inside a dwelling; and
- ii. the requirements of Parts G1, G3(2) and G3(3) will apply to any small detached building falling within Class IV of Schedule 2 and any extension falling within Class V of Schedule 2 (which includes conservatories under 20m² in area) which receives a hot or cold water supply shared with or located inside any building that is subject to the Regulations.

Please note that the Regulations do not require the provision of hot or cold water systems to such exempt buildings, but if such systems are provided they must meet the minimum hygiene and safety requirements in those Parts.

All other Classes of buildings within Schedule 2 retain their exemption from compliance with Part G.

Materials and workmanship

Any building work within the meaning of the Building Regulations should, in accordance with regulation 11, be carried out with proper materials and in a workmanlike manner.

You may show that you have complied with regulation 11 in a number of ways. These include the appropriate use of a product bearing CE marking in accordance with the Construction Products Regulation (305/2011/EU-CPR) as or a product complying with an appropriate technical specification (as defined in those Regulations), a British Standard or an alternative national technical specification of any state which is a contracting party to the European Economic Area which in use is equivalent, or a product covered by a national or European certificate issued by a European

Technical Approval issuing body, and the conditions of use are in accordance with the terms of the certificate.

You will find further guidance in the Guernsey Technical Standard on materials and workmanship that provides practical guidance on regulation 11 on materials and workmanship.

Supplementary guidance

Building Control occasionally issues additional material to aid interpretation of the guidance in Guernsey Technical Standards. This material may be conveyed in official letters to relevant agents and/or posted on the States website accessed through: www.gov.gg/planning

Technical specifications

Standards and technical approvals are relevant guidance to the extent that they relate to health, safety or water efficiency considerations in the Building Regulations. They may also address other aspects of performance such as serviceability, or aspects that, although they relate to health and safety, are not covered by the Building Regulations.

When a Guernsey Technical Standard makes reference to specific standards or documents, the relevant version of the standard is the one listed at the end of the publication. However, if this version of the standard has been revised or updated by the issuing standards body, the new version may be used as a source of guidance provided that it continues to address the relevant requirements of the Building Regulations.

Where it is proposed to work to an updated version of the standard instead of the version listed at the end of the publication, this should be discussed with Building Control in advance of any work starting on site.

The appropriate use of a product, which complies with a European Technical Approval as defined in the Construction Products Directive, (89/106/EEC) as amended, repealed or replaced will meet the relevant requirements.

Independent schemes of certification and accreditation

Much of the guidance throughout this document is given in terms of performance.

Since the performance of a system, product, component or structure is dependent upon satisfactory site installation, testing and maintenance, independent schemes of certification and accreditation of installers and maintenance firms will provide confidence in the appropriate standard of workmanship being provided.

Confidence that the required level of performance can be achieved will be demonstrated by the use of a system, material, product or structure which is provided under the arrangements of a product conformity certification scheme and an accreditation of installer scheme.

Third party accredited product conformity certification schemes not only provide a means of identifying materials and designs of systems, products and structures which have demonstrated that they reach the requisite performance, but additionally provide confidence that the systems, materials, products and structures are actually provided to the same specification or design as that tested or assessed.

Third party accreditation of installers of systems, materials, products and structures provides a means of ensuring that installations have been conducted by knowledgeable contractors to appropriate standards, thereby increasing the reliability of the anticipated performance.

Many certification bodies that approve such schemes are accredited by the **United Kingdom Accreditation Service**.

Certification of products, components, materials or structures under such schemes may be accepted as evidence of compliance with the relevant standard. Similarly the certification of installation or maintenance of products, components, materials and structures under such schemes as evidence of compliance with the relevant standard may be acceptable. Nonetheless Building Control will wish to establish in advance of the work, that any such scheme is adequate for the purpose of the Building Regulations.

Interaction with other legislation

This Guernsey Technical Standard makes reference to other legislation, including those listed below, the requirements of which may be applicable when carrying out building work. All references are to legislation as amended or repealed and replaced.

Note: All Laws, Ordinances and Statutory instruments can be accessed at;

www.guernseylegalresources.gg/

The Water Byelaws (Guernsey) Ordinance, 2003

applies to any water fitting installed or used, or to be installed or used, in premises to which water is or is to be supplied by Guernsey Water. They make provision for preventing contamination, waste, misuse and undue consumption.

The Health and Safety at Work (General) (Guernsey) Ordinance, 1987

made under the Health and Safety at Work etc. (Guernsey) Law, 1979 and the Health, Safety and Welfare of Employees Law, 1950 applies to any workplace or part of a workplace. It applies to the common parts of flats and similar buildings if people such as cleaners, wardens and caretakers are employed to work in these common parts.

Food and Drugs (Food Hygiene) Order, 1976

made under the Food and Drugs (Guernsey) Law, 1970 as amended and includes provision relating to premises where food (including drink) are prepared and facilities at such premises. The provision of washbasins and sinks is relevant to Guernsey Technical Standard G.

The Health and Safety (Gas) (Guernsey)

Ordinance, 2006 made under the Health, Safety and Welfare of Employees Law, 1950 and the Health and Safety at Work etc. (Guernsey Law), 1979 extend to all dangers arising from the transmission, distribution, supply or use of gas conveyed from a gas storage vessel and includes requirements relating to the installation of gas fittings. The installation of gas heated water systems is relevant to Guernsey Technical Standard G.

The Requirement G1

This Guernsey Technical Standard deals with the following requirements from Part G of Schedule 1 to the Building Regulations.

<i>Requirement</i>	<i>Limits on application</i>
Cold water supply	
<p>G1. (1) There must be a suitable installation for the provision of wholesome water to:</p> <ul style="list-style-type: none"> (a) any place where drinking water is drawn off; (b) any washbasin or bidet provided in or adjacent to a room containing a sanitary convenience; (c) any washbasin, bidet, fixed bath or shower in a bathroom; and (d) any sink provided in any area where food is prepared. <p>(2) There must be a suitable installation for the provision of water of suitable quality to any sanitary convenience fitted with a flushing device.</p>	

Performance

Requirement G1(1) will be met if:

- a. the water supplied is wholesome;
- b. the pressure and flow rate is sufficient for the operation of sanitary appliances planned in the building;
- c. the supply is reliable; and
- d. the installation conveys wholesome water to the sanitary appliances and locations specified in the Requirement without waste, misuse, undue consumption or contamination of water.

The water will be wholesome if it is provided by Guernsey Water.

Requirement G1(2) will be met if:

- a. the water supplied is either wholesome or of suitable quality having regard to the risks to health;
- b. the pressure and flow rate is sufficient for the operation of the sanitary appliances;
- c. the supply is reliable; and
- d. the installation conveys water to sanitary appliances and locations specified in the Requirement without waste, misuse, undue consumption or contamination of wholesome water.

Guidance

Wholesome water

1.1 Water supplied to the building by Guernsey Water through an installation complying with the requirements of the Water Byelaws (Guernsey) Ordinance 2003, may be assumed to be wholesome water. Attention is drawn to the requirements of the Water Byelaws (Guernsey) Ordinance 2003 which make provision for preventing contamination, waste, misuse and undue consumption and the fitting of water fittings.

1.2 Where a building is supplied with water from a source other than Guernsey Water, the water shall be considered to be wholesome if it does not contain any micro-organism, parasite or substance, alone or in conjunction with any other substance, at a concentration or value that would constitute a potential danger to human health and it complies with the concentrations or values as calculated below:

$$\frac{\text{nitrate (mg/l)}}{50} + \frac{\text{nitrate (mg/l)}}{3} < 1$$

Alternative sources of water

1.3 Water treated to the high standards necessary for wholesome water is not essential for all of the uses that water is put to in and about buildings, e.g. toilet flushing, irrigation. A variety of alternative sources are available for water. These include:

- a. water abstracted from wells, springs, bore-holes or water courses;
- b. harvested rainwater;
- c. reclaimed greywater; and
- d. reclaimed industrial process water.

1.4 The design of treatment systems for water from alternative sources should incorporate measures to minimise the impact on water quality of:

- a. failure of any components;
- b. failure to undertake any necessary maintenance;

- c. power failure where appropriate; and
- d. any other measures identified in a risk assessment.

1.5 Guidance on the marking of pipework conveying water from alternative sources can be found in the *WRAS Information & Guidance Note No. 9-02-05* Marking and identification of pipework for reclaimed (greywater) systems and in *BS 8515:2009* Rainwater harvesting systems – Code of Practice.

1.6 Guidance on installing, modifying and maintaining reclaimed water systems can be found in the *WRAS Information and Guidance Note No. 9-02-04* Reclaimed water systems and in *BS 8515:2009* Rainwater harvesting systems. Code of practice.

1.7 Information on the technical and economic feasibility of rainwater and greywater can be found in *MTP (2007)* Rainwater and greywater: technical and economic feasibility.

1.8 Information on the specification of rainwater and greywater systems can be found in *MTP (2007)* Rainwater and greywater: a guide for specifiers.

1.9 Guidelines for rainwater and greywater systems, in relation to water quality standards, can be found in *MTP (2007)* Rainwater and greywater: review of water quality standards alternatives and recommendations for the UK.

1.10 Water from alternative sources may be used in dwellings for sanitary conveniences, washing machines and irrigation, provided the appropriate risk assessment has been carried out. A risk assessment should ensure that the supply is appropriate to the situation in respect of the source of the water and the treatment of it, and not likely to cause waste, misuse, undue consumption or contamination of wholesome water.

1.11 Any system/unit used to supply dwellings with water from alternative sources should be subject to a risk assessment by the system designer and manufacturer, and appropriate testing carried out to demonstrate that any risks have been suitably addressed. A risk assessment should include consideration of the effect on water quality of system failure and failure to carry out necessary maintenance.

The Requirement G2

This Guernsey Technical Standard deals with the following requirement from Part G of Schedule 1 and regulation 23 to the Building Regulations.

<i>Requirement</i>	<i>Limits on application</i>
<p>Water efficiency</p> <p>G2. Reasonable provision must be made by the installation of fittings and fixed appliances that use water efficiently for the prevention of undue consumption of water.</p>	<p>Requirement G2 applies only when a dwelling is—</p> <ul style="list-style-type: none"> (a) erected; or (b) formed by a material change of use of a building within the meaning of regulation 7(a) or (b).

Attention is drawn to the following extracts from the Building (Guernsey) Regulations, 2012

Water efficiency of new dwellings.

23. (1) The potential consumption of wholesome water by persons occupying a dwelling, to which this regulation applies, must not exceed 125 litres per person per day calculated in accordance with the methodology set out in the Water Efficiency Calculator for New Dwellings, as revised from time to time, published by the Department.

(2) This regulation applies to a dwelling which is –

- (a) erected, or
- (b) formed by a material change of use of a building within the meaning of regulation 7(a) or (b).

Wholesome water consumption calculation.

24. (1) Where regulation 23 applies, the person carrying out the work must give the Department a notice which specifies the potential consumption of wholesome water per person per day calculated in accordance with the methodology referred to in that regulation in relation to the completed dwelling.

(2) The notice must be given to the Department not later than five days after the work has been completed.

Guidance

Performance

Regulation 23 and requirement G2 will be met for new dwellings if:

- a. the estimated consumption of wholesome water resulting from the design of cold and hot water systems (calculated in accordance with the guidance set out in this Guernsey Technical Standard and taking into account the use of any alternative sources of water provided in accordance with G1(2)) is not greater than 125 litres/head/day of wholesome water;
- b. all relevant requirements of Part G, the provisions for which are covered by this GTS are taken into account by the manner in which sanitary appliances and white goods used in the design calculation undertaken to demonstrate compliance with paragraph a are provided and installed in the dwelling.
- c. the manner in which any alternative sources of water used in the design calculation undertaken to demonstrate compliance with paragraph a, are supplied to the dwelling, takes account of other provisions in this Guernsey Technical Standard;
- d. a record of the sanitary appliances and white goods used in the water consumption calculation and installed in the dwelling is provided to the owner or occupier of the building along with sufficient other information enabling building owners or occupiers to maintain the building and its services so as to maintain the water efficiency of the building. In this context, relevant white goods are washing machines and dishwashers;
- e. a record of the alternative sources of water used in the water consumption calculation and supplied to the dwelling is provided to the owner or occupier of the building along with sufficient other information enabling building owners or occupiers to maintain the building and its services so as to maintain the water efficiency of the building.

Where a building consists of more than one dwelling (such as a block of flats) it should be designed so that the potential consumption of

wholesome water resulting from the design of the cold and hot water systems for each individual dwelling is no greater than the limit referred to above.

Where it can be demonstrated that a dwelling meets the water efficiency standard in the Code for Sustainable Homes produced by the Communities and Local Government (CLG), the dwelling may be presumed to meet requirement G2.

General

2.1 The water used by sanitary appliances and relevant white goods in a new dwelling should be calculated using the manufacturer's declared value for water consumption of each of those appliances and white goods.

2.2 The potential water consumption of a new dwelling must be calculated in accordance with the methodology set out in the Technical Information Note "Water Efficiency Calculator for New Dwellings".

2.3 The potential consumption of wholesome water of a new dwelling should be not more than 125 litres per head per day (l/h/d). This includes a fixed factor of water for outdoor use of 5 l/h/d.

2.4 Where alternative sources of water are to be used in the dwelling design, this should be reflected in the estimate of water use.

Notification of water efficiency calculation to Building Control

Where regulation 23 applies, regulation 24 of the Building Regulations requires that a notice specifying the calculated potential consumption of wholesome water per person per day relating to the dwelling as constructed be given to Building Control.

- This notice must be given to Building Control not later than five days after the completion of the building work.
- Building Control will be unable to give a completion certificate for the building until the notice required under regulation 23 of the Building Regulations has been received.

The Requirement G3

This Guernsey Technical Standard deals with the following requirement from Part G of Schedule 1 to the Building Regulations.

<i>Requirement</i>	<i>Limits on application</i>
Hot water systems and supply	
<p>G3. (1) There must be a suitable installation for the provision of heated wholesome water to:</p> <ul style="list-style-type: none"> (a) any washbasin or bidet provided in or adjacent to a room containing a sanitary convenience; (b) any washbasin, bidet, fixed bath or shower in a bathroom; and (c) any sink provided in any area where food is prepared. <p>(2) A hot water system, including any cistern or other vessel that supplies water to or receives expansion water from a hot water system, must be designed, constructed and installed so as to resist the effects of temperature and pressure that may occur either in normal use or in the event of such malfunctions as may reasonably be anticipated, and must be adequately supported.</p> <p>(3) A hot water system that has a hot water storage vessel must incorporate precautions to:</p> <ul style="list-style-type: none"> (a) prevent the temperature of the water stored in the vessel at any time exceeding 100°C; and (b) ensure that any discharge from safety devices is safely conveyed to where it is visible but will not cause a danger to persons in or about the building. <p>(4) The hot water supply to any fixed bath must be so designed and installed as to incorporate measures to ensure that the temperature of the water that can be delivered to that bath does not exceed 48°C.</p>	<p>Requirement G3(3) does not apply to a system which heats or stores water for the purposes only of an industrial process.</p> <p>Requirement G3(4) applies only when a dwelling is—</p> <ul style="list-style-type: none"> (a) erected; or (b) formed by a material change of use within the meaning of regulation 7(a) or (b).

Guidance

Performance

Requirement G3(1) will be met if:

- a. the installation conveys hot water to the sanitary appliances and locations specified in the requirement without waste, misuse or undue consumption of water; and
- b. the water supplied is heated wholesome water.

Requirement G3(2) will be met if all components of the hot water system including any cistern that supplies water to, or receives expansion water from the hot water system continues to safely contain the hot water:

- a. during normal operation of the hot water system;
- b. following failure of any thermostat used to control temperature; and
- c. during operation of any of the safety devices fitted in accordance with paragraph G3(3).

Requirement G3(3) will be met for a hot water storage system that has a vented storage vessel if:

- a. the storage vessel has a suitable vent pipe connecting the top of the vessel to a point open to the atmosphere above the level of the water in the cold water storage cistern and over it;
- b. in addition to any thermostat, either the heat source, or the storage vessel is fitted with a device that will prevent the temperature of the stored water at any time exceeding 100°C; and
- c. the hot water system has pipework that incorporates a provision for the discharge of hot water from the safety devices to an appropriate place open to the atmosphere where it will cause no danger to persons in or about the building.

Requirement G3(3) will be met for a hot water system that has an unvented storage vessel if:

- a. the storage vessel has at least two independent safety devices such as those that release pressure and so prevent the temperature of the stored water at any time exceeding 100°C in addition to any thermostat; and

- b. the hot water system has pipework that incorporates a provision for the discharge of hot water from safety devices to be visible at some point and safely conveys it to an appropriate place open to the atmosphere where it will cause no danger to persons in or about the building.

Requirement G3(4) will be met if:

the hot water outlet temperature is appropriate for the appliance being served, and any device to limit the maximum temperature that can be supplied at the outlet can not be easily altered by building users.

General

3.1 The delivered hot water can be considered as heated wholesome water where:

- a. the cold water supply to the hot water system is wholesome; and
- b. the installation complies with the requirements of the Water Byelaws (Guernsey) Ordinance 2003.

3.2 Attention is also drawn to the requirements of the *Health and Safety (Gas) (Guernsey) Ordinance 2006* for all gas installation work.

3.3 Electrical work associated with hot water systems should be carried out in accordance with *BS7671:2008 Requirements for electrical installations (IEE Wiring Regulations 17th Edition)*, and inspection as necessary, by Guernsey Electricity.

3.4 For workplaces and premises controlled in connection with a trade, business or other undertaking, attention is also drawn to the *Health and Safety Commission (HSC) document Legionnaires' Disease: Control of Legionella Bacteria in Water Systems. Approved code of practice and guidance. L8, Health and Safety Commission 2000. ISBN 0 7176 1772 6.*

3.5 Pipework should be designed and installed in such a way as to minimise the transfer time between the hot water storage system and hot water outlets.

3.6 Guidance for the safe provision of hot water systems used solely for supplying water for industrial processes is contained in the *UK Health and Safety Executive document Code of Practice L122 HSE Books 2000. ISBN 0 7176 1767 X.*

Provision of hot water supply

3.7 The Requirement G3 only requires the provision of a hot water supply to:

- a. any washbasin provided in association with a sanitary convenience in accordance with G4(2);
- b. any washbasin, bidet, fixed bath or shower in a bathroom in a dwelling or provided for rooms for residential purposes, provided in accordance with G5;
- c. any sink in a food preparation area, provided in accordance with G6.

There is no requirement under the Building Regulations to provide hot water to other washing facilities, but there may be such requirements under other legislation (see paragraphs 4.3, 4.4 and 6.4).

Design and installation of directly or indirectly heated hot water storage systems

General

3.8 Hot water storage systems should be designed and installed in accordance with *BS 6700:2006 + A1:2009 Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages* or *BS EN 12897:2006 Water supply. Specification for indirectly heated unvented (closed) storage water heaters.*

3.9 Hot water storage vessels should conform to *BS 853-1:1996 Specification for vessels for use in heating systems. Calorifiers and storage vessels for central heating and hot water supply*, *BS 1566-1:2002 Copper indirect cylinders for*

domestic purposes. Open vented copper cylinders. Requirements and test methods, or BS 3198:1981 Specification for copper hot water storage combination units for domestic purposes or other relevant British national standards as appropriate.

Vented hot water storage systems

3.10 Vented hot water storage systems should incorporate a vent pipe of an adequate size, but not less than 19mm internal diameter, connecting the top of the hot water storage vessel to a point open to the atmosphere above and over the level of the water in the cold water storage cistern.

3.11 In addition to the vent pipe referred to in 3.10 and any thermostat provided to control the temperature of the stored water to a desired temperature, vented hot water storage systems should incorporate either:

- a. for all direct heat sources, a non-self-resetting energy cut-out to disconnect the supply of heat to the storage vessel in the event of the storage system overheating; and,
for all indirect heat sources, an overheat cut-out to disconnect the supply of heat to the storage vessel in the event of the stored water overheating so that the temperature of the stored water does not exceed 100°C; or
- b. an appropriate safety device, for example, a temperature relief valve or a combined temperature and pressure relief valve to safely discharge the water in the event of significant over heating.

3.12 Vent pipes should discharge over a cold water storage cistern conforming to *BS 417-2:1987 Specification for galvanized low carbon steel cisterns, cistern lids, tanks and cylinders. Metric units*; or *BS 4213:2004 Cisterns for domestic use. Cold water storage and combined feed and expansion (thermoplastic) cisterns up to 500 litres. Specification*; as appropriate.

3.13 The cold water storage cistern into which the vent pipe discharges should be supported on a flat, level, rigid platform which is capable of safely withstanding the weight of the cistern when filled with water to the rim and fully supporting the

bottom of the cistern over the whole of its area. The platform should extend a minimum of 150mm in all directions beyond the edge of the maximum dimensions of the cistern.

Note: Where an existing metal cistern is replaced, or a plastic cistern is replaced by one with larger dimensions, the existing support should be upgraded, as necessary, with one in accordance with paragraph 3.13.

3.14 The cistern should be accessible for maintenance, cleaning and replacement.

Unvented hot water storage systems – all systems

3.15 To minimize the danger from excessive pressure, unvented hot water storage systems should incorporate a minimum of two independent safety devices. These shall be in addition to any thermostat provided to control the desired temperature of the stored water. The selection of safety devices should take account of the physical location of the devices, and the design, configuration, location of components and performance characteristics of the system to which they are attached.

3.16 An acceptable approach might consist of:

- a. a non self-resetting energy cut-out to disconnect the supply of heat to the storage vessel in the event of the storage system over-heating; and
- b. a temperature relief valve or a combined temperature and pressure relief valve to safely discharge the water in the event of serious over-heating.

Alternative approaches to this are acceptable provided that they provide an equivalent degree of safety.

Note: See 3.33 for suitability of devices for primary thermal stores

3.17 Water heaters with a capacity of 15 litres or less that have appropriate safety devices for temperature and pressure will generally satisfy the requirement set out in G3(3).

Unvented hot water storage systems – systems up

to 500 litres capacity and 45kW power input

3.18 Paragraphs 3.19 to 3.22 are in addition to the provisions of 3.15 above.

3.19 If an indirect supply of heat to an unvented hot water storage system incorporates a boiler, the energy cut-out may be on the boiler.

3.20 Any unvented hot water storage system up to 500 litres and less than 45kW should be in the form of a proprietary hot water storage system unit or package. The package and components should be appropriate to the circumstances in which they are used and should satisfy an appropriate standard that will ensure the requirements of requirement G3(2) and G3(3) will be met (*e.g. BS EN 12897:2006 Water Supply. Specification for indirectly heated unvented (closed) hot water storage systems or BS 6700:2006 + A1:2009 Design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages*).

3.21 Any unvented hot water storage system unit or package should be indelibly marked with the following information:

- a. the manufacturer's name and contact details;
- b. a model reference;
- c. the rated storage capacity of the storage water heater;
- d. the operating pressure of the system and the operating pressure of the expansion valve;
- e. relevant operating data on each of the safety devices fitted; and
- f. the maximum primary circuit pressure and flow temperature of indirect hot water storage system units or packages.

3.22 In addition, the warning on the following page should be indelibly marked on the hot water storage system unit or package so that it is visible after installation:

WARNING TO USER

- a. Do not remove or adjust any component part of this unvented water heater; contact the installer.
- b. If this unvented water heater develops a fault, such as a flow of hot water from the discharge pipe, switch the heater off and contact the installer.

WARNING TO INSTALLER

- a. This installation is subject to the Building (Guernsey) Regulations, 2012.
- b. Use only appropriate components for installation or maintenance.

Installed by:

Name

Address

Tel. No.....

Completion date

Unvented hot water storage systems – systems over 500 litres capacity or over 45kW power input

3.23 Paragraph 3.24 and 3.25 are in addition to the provisions of 3.15 above.

3.24 Systems over 500 litres capacity will generally be bespoke designs for specific projects and as such are inappropriate for approval by a third party accredited product conformity certification scheme. Where this is the case, the unvented hot water storage system should be designed to the safety requirements in 3.15 by an appropriately qualified engineer.

3.25 Any unvented hot water storage system having a power input of more than 45kW, but a capacity of 500 litres or less should be in the form of a proprietary hot water storage system unit or package. The package and components should be appropriate to the circumstances in which they are used and should satisfy an appropriate standard that will ensure the compliance of requirements G3(2) and G3(3) will be met (*e.g. BS EN 12897:2006 Water Supply. Specification for indirectly heated unvented (closed) hot water storage systems or BS 6700:2006 + A1:2009 Design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages*).

Safety devices

Non-self-resetting energy cut-outs

3.26 Non-self-resetting energy cut-outs may only be used where they would have the effect of instantly disconnecting the supply of energy to the storage vessel.

3.27 Non-self-resetting energy cut-outs should conform to:

- a. *BS EN 60335-2-73:2003 Specification for safety of household and similar electrical appliances. Particular requirements. Fixed immersion heaters and BS EN 60730-2-9:2002 Automatic electrical controls for household and similar use. Particular requirements for temperature sensing control; or*
- b. *BS EN 257:1992 Mechanical thermostats for gas-burning appliances.*

3.28 Where a non self-resetting energy cut-out operates indirectly on another device (see paragraph 3.16) to interrupt the supply of heat (e.g. it is wired up to a motorised valve or some other suitable device to shut off the flow to the primary heater), the energy cut-out should comply with the relevant European Standard

(see paragraph 3.27) or the supplier or installer should be able to demonstrate that the device has equivalent performance to that set out in relevant standards.

3.29 Where an electrical device is connected to the energy cut-out, such as a relay or motorised valve, the device should operate to interrupt the supply of energy if the electrical power supply is disconnected.

3.30 Where there is more than one energy cut-out (see paragraph 3.33), each non-self-resetting energy cut-out should be independent (e.g. each should have a separate motorised valve and a separate temperature sensor).

3.31 Where an energy cut-out is fitted as set out in paragraphs 3.11 a or 3.16, each heat source should have a separate non self-resetting energy cut-out.

Temperature and pressure relief devices

3.32 Where relevant, appropriate pressure, temperature or temperature and pressure-activated safety devices should be fitted in addition to a safety device such as an energy cut-out.

3.33 Temperature relief valves and combined temperature and pressure relief valves should not be used in systems which have no provision to automatically replenish the stored water (e.g. unvented primary thermal storage vessels). In such cases there should be a second non-self-resetting energy cut-out independent of the one provided in accordance with paragraph 3.16 a.

3.34 Temperature relief valves should conform to relevant British national standards such as *BS 6283-2:1991 Safety and control devices for use in hot water systems. Specifications for temperature relief valves for pressures from 1 bar to 10 bar*. Combined temperature and pressure relief valves should conform to *BS EN 1490:2000 Building valves. Combined temperature and pressure relief valves. Tests and Requirements*.

3.35 Temperature relief valves (see paragraph 3.18) should be sized to give a discharge rating at least equal to the total power input to the hot water storage system, when measured in accordance with Appendix F of *BS 6283-2:1991* or *BS EN 1490:2000*.

3.36 Temperature relief valve(s) or combined temperature and pressure relief valve(s) (see paragraph 3.16) should be located directly on the storage vessel, such that the stored water does not exceed 100°C.

3.37 In hot water storage system units and packages, the temperature relief valve(s) (see paragraph 3.16) should be:

- a. factory fitted and should not be disconnected other than for replacement; and
- b. not relocated in any other device or fitting installed.

3.38 The safety and performance of an unvented system is dependent on the choice of system and safety devices appropriate for the location and correct installation of the system. Building owners and occupiers should therefore take care to choose installers who have the necessary skills to carry out this work. These skills can be demonstrated for example, by registration with a competent person scheme for this type of work or by the holding of a current registered operative skills certification card for unvented hot water systems.

3.39 The installation of an unvented system is notifiable building work which must be notified to Building Control before work commences. Building Control may then check to make sure the work is safe and meets current energy efficiency requirements.

3.40 If the installer is registered with a competent person scheme for the installation of unvented hot water systems it will not be necessary for the work to be notified in advance to Building Control. Installers registered with such schemes will self-certify that the work complies with all relevant requirements in the Building Regulations and the building owner/occupier will be given a building regulations certificate of compliance which is usually issued by the competent person scheme operator.

Electric water heating

3.41 Electric fixed immersion heaters should comply with the provisions of *BS EN 60335-2-73:2003 Household and similar electrical appliances. Safety. Particular requirements for fixed immersion heaters.*

3.42 Electric instantaneous water heaters should comply with the provisions of *BS EN 60335-2-35:2002 Specification for safety of household and similar electrical appliances.*

3.43 Electric storage water heaters should comply with the provisions of *BS EN 60335-2-21:2003 Household and similar electrical appliances. Safety. Particular requirements for storage water heaters.*

Solar water heating

3.44 Factory-made solar water heating systems should comply with the provisions of *BS EN 12976-1:2006 Thermal solar systems and components. Factory made systems. General requirements.*

3.45 Other solar water heating systems should comply with the provisions of *prEN/TS 12977-1:2008 Thermal solar systems and components. Custom built systems. General requirements for solar water heaters and combi systems, or BS 5918:1989 British Standard Code of Practice for Solar heating systems for domestic hot water as appropriate.* Further guidance is available in *CIBSE Guide G, Public Health Engineering and CIBSE technical guide Solar Heating Design and Installation.*

3.46 Where solar water heating systems are used, an additional heat source should be available.

Note: The additional heat source should be used, when necessary, to maintain the water temperature to restrict microbial growth.

3.47 As some solar hot water systems operate at elevated temperatures and pressures, the components should be rated to the appropriate temperatures and pressures.

Discharge pipes from safety devices

Discharge pipe D1

3.48 Safety devices such as temperature relief valves or combined temperature and pressure relief valves (see paragraphs 3.11 or 3.16) should discharge either directly or by way of a manifold via a short length of metal pipe (D1) to a tundish.

3.49 The diameter of discharge pipe (D1) should be not less than the nominal outlet size of the safety device, e.g. temperature relief valve.

3.50 Where a manifold is used it should be sized to accept and discharge the total discharge from the discharge pipes connected to it.

3.51 Where valves other than a temperature and pressure relief valve from a single unvented hot water system discharge by way of the same manifold that is used by the safety devices, the manifold should be factory fitted as part of the hot water storage system unit or package.

Tundish

3.52 The tundish should be vertical, located in the same space as the unvented hot water storage system and be fitted as close as possible to, and lower than, the safety device, with no more than 600mm of pipe between the valve outlet and the tundish (see Diagram 1).

Note: To comply with the Water Bylaws (Guernsey) Ordinance 2003, the tundish should incorporate a suitable air gap.

3.53 Any discharge should be visible at the tundish. In addition, where discharges from safety devices may not be apparent, e.g. in dwellings occupied by people with impaired vision or mobility, consideration should be given to the installation of a suitable safety device to warn when discharge takes place, e.g. electronically operated.

Discharge pipe D2

3.54 The discharge pipe (D2) from the tundish should:

- have a vertical section of pipe at least 300mm long below the tundish before any elbows or bends in the pipework (see Diagram 1); and
- be installed with a continuous fall of at least 1 in 200 thereafter.

3.55 The discharge pipe (D2) should be made of:

- metal; or
- other material that has been demonstrated to be capable of safely withstanding temperatures of the water discharged and is clearly and permanently marked to identify the product and performance standard (e.g. as specified in the relevant part of *BS 7291-1:2006 Thermostatic pipes and fittings for hot and cold water for domestic purposes and heating installations in buildings. General requirements*).

3.56 The discharge pipe D2 should be at least one pipe size larger than the nominal outlet size of the safety device unless its total equivalent hydraulic resistance exceeds that of a straight pipe 9m long, i.e. for discharge pipes between 9m and 18m the equivalent resistance length should be at least two sizes larger than the nominal outlet size of the safety device; between 18 and 27m at least 3 sizes larger, and so on; bends must be taken into account in calculating the flow resistance. See Diagram 1, Table 1 and the worked example.

Note: An alternative approach for sizing discharge pipes would be to follow Annex D, section D.2 of *BS 6700:2006 + A1:2009 Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages*.

Diagram 1 Typical discharge pipe arrangement

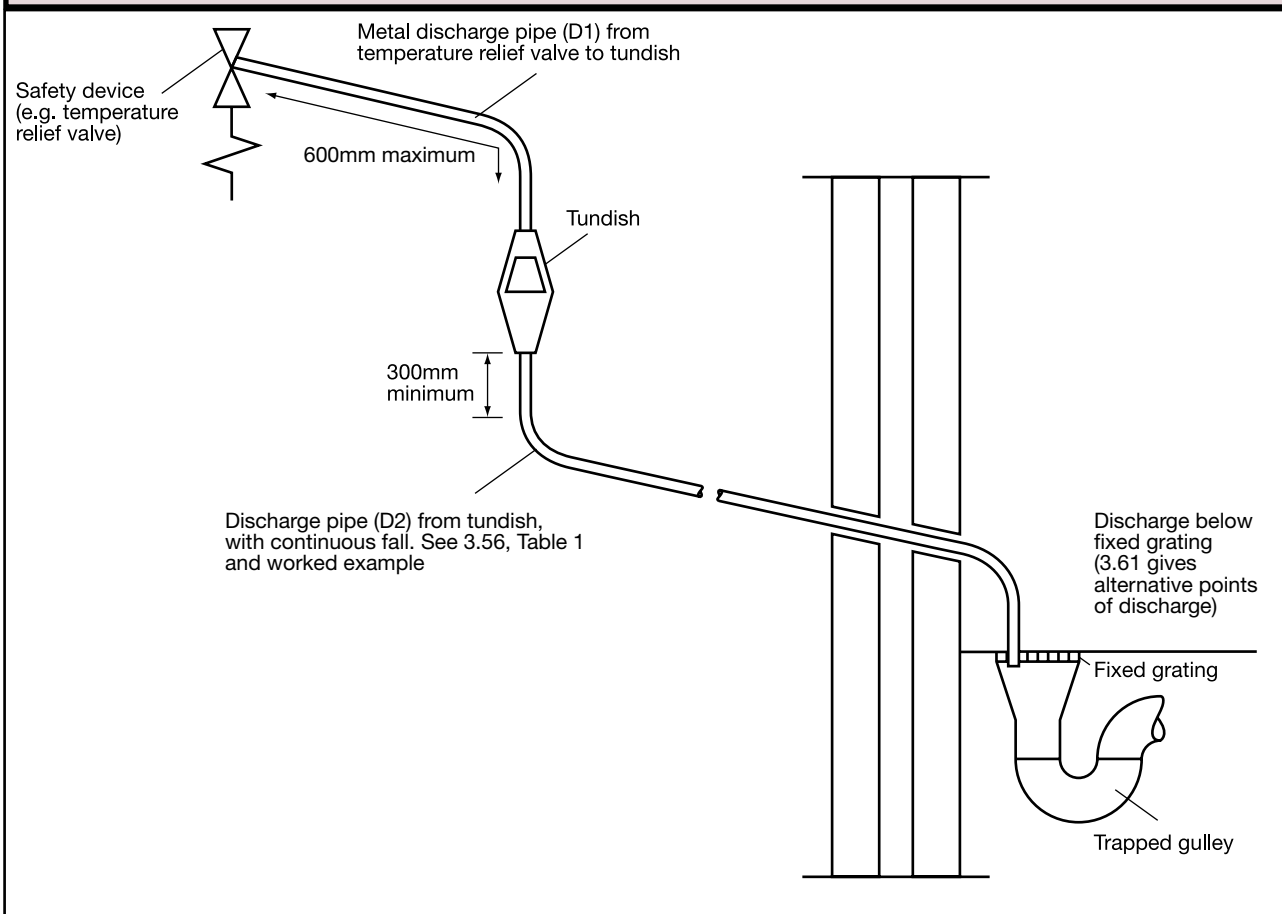


Table 1 Sizing of copper discharge pipe 'D2' for common temperature relief valve outlet sizes

Valve outlet size	Minimum size of discharge pipe D1*	Minimum size of discharge pipe D2* from tundish	Maximum resistance allowed, expressed as a length of straight pipe (i.e. no elbows or bends)	Resistance created by each elbow or bend
G½	15mm	22mm 28mm 35mm	Up to 9m Up to 18m Up to 27m	0.8m 1.0m 1.4m
G¾	22mm	28mm 35mm 42mm	Up to 9m Up to 18m Up to 27m	1.0m 1.4m 1.7m
G1	28mm	35mm 42mm 54mm	Up to 9m Up to 18m Up to 27m	1.4m 1.7m 2.3m

*see 3.51 and 3.58 and Diagram 1

Note: The above table is based on copper tube. Plastic pipes may be of different bore and resistance.

Sizes and maximum lengths of plastic should be calculated using data prepared for the type of pipe being used.

Worked example:

The example below is for a G½ temperature relief valve with a discharge pipe (D2) having 4 No. 22mm elbows and length of 7m from the tundish to the point of discharge.

From Table 1:

Maximum resistance allowed for a straight length of 22mm copper discharge pipe (D2) from a G½ temperature relief valve is: 9.0m

Subtract the resistance for 4 No. 22mm elbows at 0.8m each
= 3.2m

Therefore the maximum permitted length equates to 5.8m which, is less than the actual length of 7m therefore calculate the next largest size.

Maximum resistance allowed for a straight length of 28mm copper discharge pipe (D2) from a G½ temperature relief valve is: 18m

Subtract the resistance for 4 No. 28mm elbows at 1.0m each = 4m

Therefore the maximum permitted length equates to: 14m

As the actual length is 7m, a 28mm (D2) copper pipe will be satisfactory.

3.57 Where a single common discharge pipe serves more than one system, it should be at least one pipe size larger than the largest individual discharge pipe (D2) to be connected.

3.58 The discharge pipe should not be connected to a soil discharge stack unless it can be demonstrated that the soil discharge stack is capable of safely withstanding temperatures of the water discharged, in which case, it should:

- contain a mechanical seal, not incorporating a water trap, which allows water into the branch pipe without allowing foul air from the drain to be ventilated through the tundish;
- be a separate branch pipe with no sanitary appliances connected to it;
- if plastic pipes are used as branch pipes carrying discharge from a safety device, they should be either polybutalene (PB) or cross-linked polyethylene (PE-X) complying with British national standards such as *Class S of BS 7291-2:2006* or *Class S of BS 7291-3:2006* respectively; and
- be continuously marked with a warning that no sanitary appliances should be connected to the pipe.

Notes:

1. Plastic pipes should be joined and assembled with fittings appropriate to the circumstances in which they are used as set out in *BS EN ISO 1043-1:2002 Plastics. Symbols and abbreviated terms. Basic polymers and their special characteristics*.
2. Where pipes cannot be connected to the stack it may be possible to route a dedicated pipe alongside or in close proximity to the discharge stack

Termination of discharge pipe

3.59 The discharge pipe (D2) from the tundish should terminate in a safe place where there is no risk to persons in the vicinity of the discharge.

3.60 Examples of acceptable discharge arrangements are:

- a. to a trapped gully with the end of the pipe below a fixed grating and above the water seal;
- b. downward discharges at low level; i.e. up to 100mm above external surfaces such as car parks, hard standings, grassed areas etc. are acceptable providing that a wire cage or similar guard is positioned to prevent contact, whilst maintaining visibility; and,
- c. discharges at high level: e.g. into a metal hopper and metal downpipe with the end of the discharge pipe clearly visible or onto a roof capable of withstanding high temperature discharges of water and 3 m from any plastic guttering system that would collect such discharges.

3.61 The discharge would consist of high temperature water and steam. Asphalt, roofing felt and non-metallic rainwater goods may be damaged by such discharges.

Prevention of excessive temperatures

3.62 Where the operating temperature of domestic hot water in the storage vessel in a dwelling is capable of exceeding 80°C under normal operating conditions (a situation that may occur in vessels used as heat stores and those connected to solar heat collectors or solid fuel

boilers that do not have intervening controls between the boiler and the vessel containing the hot water) the outlet from the storage vessel should be fitted with a device, such as an in-line hot water supply tempering valve in accordance with *BS EN 15092:2008 Building Valves*. In-line hot water tempering valves, to ensure that the temperature supplied to the domestic hot water distribution system does not exceed 60°C.

Prevention of scalding

3.63 The hot water supply temperature to a bath should be limited to a maximum of 48°C by use of an in-line blending valve or other appropriate temperature control device, with a maximum temperature stop and a suitable arrangement of pipework.

3.64 The acceptability of in-line blending valves can be demonstrated by compliance with the relevant European Standard such as *BS EN 1111:1999 Sanitary tapware. Thermostatic mixing valves (PN 10). General technical specification or BS EN 1287:1999 Sanitary tapware*. Low pressure thermostatic mixing valves. General technical specifications to demonstrate that the maximum temperature of 48°C cannot be exceeded in operation and that the product will fail-safe (i.e. not discharge water above the maximum temperature). Such valves should not be easily altered by building users.

3.65 In-line blending valves and composite thermostatic mixing valves should be compatible with the sources of hot and cold water that serve them.

3.66 The length of supply pipes between in-line blending valves and outlets should be kept to a minimum in order to prevent the colonisation of waterborne pathogens. If intermittent use of the bath is anticipated, provision should be made for high temperature flushing to allow pasteurisation of the pipes and outlet fittings. Such events should be managed to prevent the risk associated with inadvertent use.

Notes:

1. Further guidance on the use of in-line blending valves can be found in Building Research Establishment (BRE) Information paper IP14/03 Preventing hot water scalding in bathrooms: using TMVs (Temperature Mixing Valve).
2. In some buildings, e.g. care homes, in-line blending valves would need to meet the additional performance standards set out in *National Health Service (NHS) Estates Model specification D 08*.

Installation

3.67 Good workmanship is essential. Workmanship should be in accordance with appropriate standards such as *BS 8000–15:1990 Workmanship on Building Sites Code of practice for hot and cold water services (domestic scale)*.

Commissioning of fixed building services

3.68 Water heaters require the input of energy to raise the temperature of water. It is therefore necessary to ensure their efficiency by proper installation and commissioning.

3.69 Fixed building services, including controls, should be commissioned by testing and adjusting as necessary to ensure that they use no more fuel and power than is reasonable in the circumstances.

3.70 Commissioning means the advancement of these systems from the state of static completion to working order to achieving compliance with Part L. For each system it includes setting-to-work, regulation (that is testing and adjusting repetitively) to achieve the specified performance, the calibration, setting up and testing of the associated automatic control systems, and recording of systems and the performance test results that have been accepted as satisfactory.

3.71 Not all fixed building services will need to be commissioned. For example, with some systems it is not possible as the only controls are 'on' and 'off' settings. In other cases commissioning would be possible but in the specific circumstances would have no effect on energy use.

3.72 Where commissioning is carried out it must be done in accordance with a procedure approved

by Building Control. For new and existing dwellings the approved procedure for hot water systems is set out in the *Domestic Heating Compliance Guide; for buildings other than dwellings in CIBSE Commissioning Code M*.

3.73 Commissioning must be carried out in such a way as not to prejudice compliance with any applicable health and safety requirements.

3.74 Commissioning is often carried out by the person who installs the system. Sometimes it may be carried out by a subcontractor or by a specialist firm. It is important that whoever carries it out follows the relevant approved procedure in doing so.

Notice of completion of commissioning

3.75 The Building Regulations (regulation 27) require that the person carrying out the work shall give a notice to Building Control that commissioning has been carried out, unless testing and adjustment is not possible, or would not affect the energy efficiency of the fixed building service.

3.76 Where the installation of fixed building services, that requires commissioning is carried out by a person registered with a competent person scheme the notice of commissioning will be given by that person.

3.77 Until Building Control receives notice of commissioning it is unlikely to be satisfied that Part G has been complied with and consequently is unlikely to be able to give a completion certificate covering Part G.

The Requirement G4

This Guernsey Technical Standard deals with the following requirement from Part G of Schedule 1 to the Building Regulations.

<i>Requirement</i>	<i>Limits on application</i>
Sanitary conveniences hand washing facilities and sinks in workplaces	
G4 (1) Adequate and suitable sanitary conveniences must be provided in rooms provided to accommodate them or in bathrooms.	
(2) Adequate hand washing facilities must be provided in-	
(a) rooms containing sanitary conveniences, or	
(b) rooms or spaces adjacent to rooms containing sanitary conveniences.	
(3) Any room containing a sanitary convenience, a bidet, or any facility for washing hands provided in accordance with sub-paragraph (2)(b), must be separated from any kitchen or any area where food is prepared.	
(4) Adequate sinks must be provided in buildings used as places of work in which at least 10 persons are employed to work at any time.	

Guidance

Performance

Requirement G4 will be met if:

- a. Sanitary conveniences of the appropriate type for the sex and age of the persons using the building are provided in sufficient numbers, taking into account the nature of the building; and
- b. hand washing facilities are provided in, or adjacent to, rooms containing sanitary conveniences and are sited, designed and installed so as not to be prejudicial to health.
- c. Those places of work are provided with a sink, worktop and an adequate supply of hot and cold water.

General

4.1 Attention is also drawn to the requirements for accessible sanitary conveniences and hand washing facilities of Part M (Access to and use of buildings) of Schedule 1 to the Building Regulations and to Guernsey Technical Standard M.

4.2 Requirement for ventilation is in Part F (Ventilation) of Schedule 1 to the Building Regulations. Guidance on ventilation of sanitary accommodation is given in Guernsey Technical Standard F.

4.3 Further guidance on washbasins associated with sanitary conveniences may be found in the *UK Food Standards Agency's Code of Practice Food hygiene – a guide for businesses*.

4.4 Guidance on the selection, installation and maintenance of sanitary appliances including composting toilets may be found in *BS 6465-3:2006 Sanitary installations. Code of practice for the selection, installation and maintenance of sanitary and associated appliances*.

4.5 Where hot and cold taps are provided on a sanitary appliance, the hot tap should be on the left.

4.6 Any dwelling (house or flat) should have at least one sanitary convenience and associated hand washing facility. This will include a WC provided in accordance with paragraph M4 (Sanitary conveniences in dwellings) of Schedule 1 to the Building Regulations 2012 and with Guernsey Technical Standard M. A room containing a WC should not be entered directly from a bedroom unless it is intended for the sole use of the bedroom occupants, and a second WC is provided elsewhere in the private dwelling for visitors.

Note: Paragraph M4 requires that reasonable provision of sanitary conveniences, must be made in the entrance storey of a dwelling, or where the entrance storey contains no habitable room, reasonable provision is made in the entrance storey or the principal storey of a dwelling.

4.7 Where additional sanitary conveniences are provided, each should have an associated hand washing facility.

4.8 To allow for basic hygiene, hand washing facilities should be located in:

- a. the room containing the sanitary convenience; or
- b. an adjacent room or place that provides the sole means of access to the room containing the sanitary convenience (provided that it is not used for the preparation of food).

4.9 A place containing a sanitary convenience and/or associated hand washing facilities should be separated by a door from any place used for the preparation of food (including a kitchen) (see Diagrams 2 and 3).

Note: In dwellings, a room containing both a sanitary convenience and a basin for hand washing does not need a separation lobby between this room and a kitchen or food preparation area (Diagram 2). The layout for a room containing a sanitary convenience only should be such that the room or space containing its associated hand washing facilities is accessed before entry to a food preparation area, and is separated from that area by a door (Diagram 3).

4.10 Guidance on the provision of activity space

Scale of provision and layout in dwellings

Diagram 2 Separation between hand washbasin/WC and food preparation area – single room

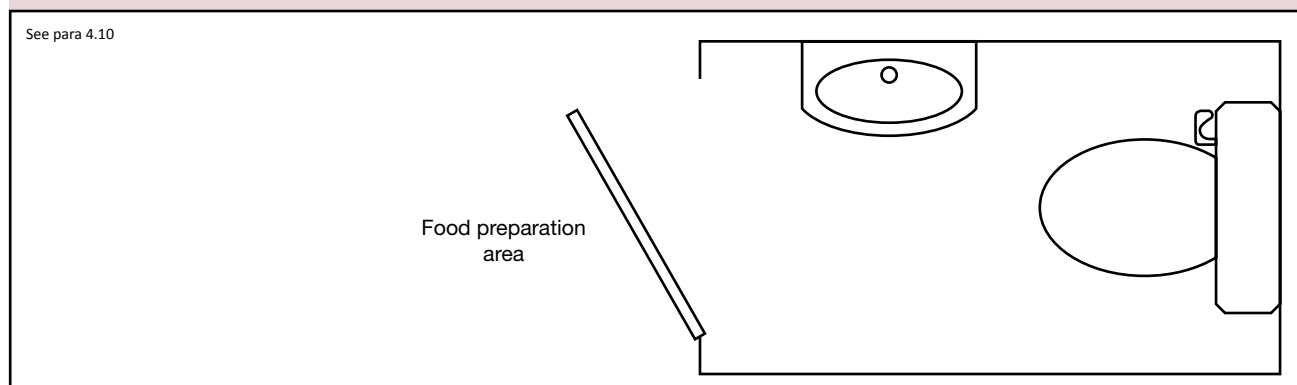
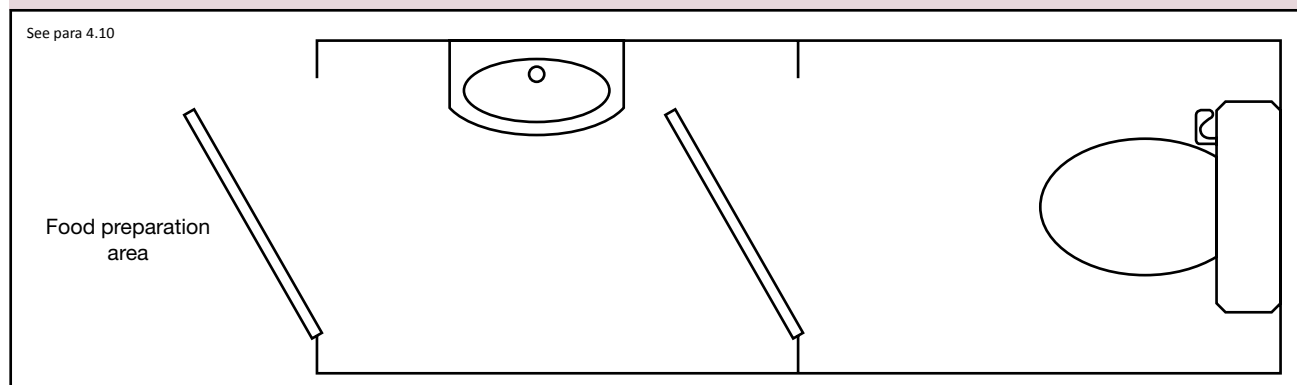


Diagram 3 Separation between hand washbasin/WC and food preparation area – two rooms



around sanitary appliances is given in *BS 6465-2:1996 Sanitary installations. Code of practice for space requirements for sanitary appliances*.

Scale of provision and layout in buildings other than dwellings

4.11 Part M of Schedule 1 to the Building Regulations sets out requirements relating to access to and use of buildings. Guernsey Technical Standard M provides guidance on the provision of suitable sanitary accommodation. Such accommodation may form part of the total number of sanitary conveniences provided within a building.

4.12 Further guidance on the provision of sanitary conveniences can be found in *BS 6465-1:2006 (including the Guernsey addendum see annex B) + A1:2009 Sanitary installations. Code of practice for the design of sanitary facilities and scales of provision*

of sanitary and associated appliances. This may be used for those building types not set out in paragraph 4.12 above or for those workplaces where the applicant wishes to provide more than the minimum recommended in the Approved Code of Practice, for example, to deliver equivalent provision for men and women.

4.13 A sanitary convenience may be provided in:

- a self-contained room which also contains hand washing facilities;
- in a cubicle with shared hand washing facilities located in a room containing a number of cubicles; or
- in a self-contained room with hand washing facilities provided in an adjacent room.

4.14 Urinals, WC cubicles and hand washing facilities may be in the same room.

4.15 A place containing a sanitary convenience

and/or associated hand washing facilities should be separated by a door from any place used for the preparation of food (including a kitchen).

4.16 Guidance on the provision of activity space around sanitary appliances is given in *BS 6465-2:1996 Sanitary installations. Code of practice for space requirements for sanitary appliances*.

Chemical and composting toilets

4.17 Chemical toilets or composting toilets may be used where:

- a. suitable arrangements can be made for the disposal of the waste either on or off the site; and
- b. the waste can be removed from the premises without carrying it through any living space or food preparation areas (including a kitchen); and
- c. no part of the installation would be installed in any places where it might be rendered ineffective by the entry of flood water.

4.18 There are currently no British or European standards for composting toilets. Appropriate guidance can be found in *ANSI/NSF 41:2005 as amended by Addendum 1:2007 Non-liquid saturated treatment system*.

4.19 Composting toilets should not be connected to an energy source other than for purposes of ventilation or sustaining the composting process.

Discharges to drains

Note: See Guernsey Technical Standard for requirement H1, foul water drainage for guidance on provision for traps, branch discharge pipes, discharge stacks and foul drains.

4.20 Any WC fitted with flushing apparatus should discharge to an adequate system of drainage.

4.21 A urinal fitted with flushing apparatus should discharge through a grating, a trap or mechanical seal and a branch pipe to a discharge stack or a drain.

4.22 A WC fitted with a macerator and pump may be connected to a small bore drainage system discharging to a discharge stack if:

- a. there is also access to a WC discharging directly to a gravity system; and
- b. the macerator and pump meets the requirements of *BS EN 12050-1:2001 Wastewater lifting plants for buildings and sites. Principles of construction and testing. Lifting plants for wastewater containing faecal matter* or *BS EN 12050-3:2001 Wastewater lifting plants for buildings and sites. Principles of construction and testing. Lifting plants for wastewater containing faecal matter for limited applications*.

Note: Where greywater recycling is used, lower overall flows are to be expected and this should be taken into account in drain design. This is particularly relevant at the head of the drain where only one building is connected to the drain.

G5 BATHROOMS

The Requirement G5

This Guernsey Technical Standard deals with the following requirement from Part G of Schedule 1 to the Building Regulations.

<i>Requirement</i>	<i>Limits on application</i>
Bathrooms G5 A bathroom must be provided containing a wash basin and either a fixed bath or a shower.	Requirement G5 applies only to dwellings and to buildings containing one or more rooms for residential purposes.

Guidance

Performance

Requirement G5 will be met if a bathroom is provided containing a fixed bath or shower and a washbasin.

General

5.1 The Water Bylaws (Guernsey) Ordinance 2003 make provisions for appropriate backflow protection on taps including mixer fittings and hose connections.

5.2 Requirements for ventilation are in Part F of Schedule 1 to the Building Regulations (Ventilation). Guidance on ventilation of sanitary accommodation is given in Guernsey Technical Standard F.

5.3 Guidance on the selection, installation and maintenance of sanitary appliances may be found in *BS 6465-3:2006 Sanitary installations. Code of practice for the selection, installation and maintenance of sanitary and associated appliances.*

5.4 Where hot and cold taps are provided on a sanitary appliance, the hot tap should be on the left.

Scale of provision and layout in dwellings

5.5 Any dwelling (house or flat) must have at least one bathroom with a fixed bath or shower, and a washbasin.

5.6 Guidance on the provision of activity space around sanitary appliances is given in **BS 6465-2:1996 Sanitary installations. Code of practice for space requirements for sanitary appliances.**

Scale of provision and layout in buildings with rooms for residential purposes

5.7 The number of fixed baths or showers and washbasins in buildings with rooms for residential purposes should be in accordance with *BS 6465-1:2006 and A1:2009 Sanitary installations. Code of practice for the design of sanitary facilities and scales of provision of sanitary and associated appliances.*

Discharges to drains

Note: See Guernsey Technical Standard for Requirement H1, foul water drainage for guidance on provision for traps, branch discharge pipes, discharge stacks and foul drains.

5.8 Any sanitary appliance used for personal washing should discharge through a grating, a trap and a branch discharge pipe to an adequate system of drainage.

5.9 A sanitary appliance used for personal washing fitted with a macerator and pump may be connected to a small bore drainage system discharging to a discharge stack if:

- a. there is also access to washing facilities discharging directly to a gravity system; and
- b. the macerator and pump meets the requirements of *BS EN 12050-2:2001 Wastewater lifting plants for buildings and sites. Principles of construction and testing. Lifting plants for faecal-free wastewater.*

G6 FOOD PREPARATION AREAS

The Requirement

This Guernsey Technical Standard deals with the following requirement from Part G of Schedule 1 to the Building Regulations.

<i>Requirement</i>	<i>Limits on application</i>
Food preparation areas	
G6 A suitable sink must be provided in any area where food is prepared.	

Guidance

Performance

Requirement G6 will be met if a sink is provided in any place used for the preparation of food (including a kitchen).

Scale of provision in dwellings

6.1 A sink should be provided in any kitchen or place used for the preparation of food.

Scale of provision in buildings other than dwellings

6.3 In all buildings other than dwellings, there should be at least the same provision as described in 6.1.

6.4 In buildings where the Food & Drugs (Food Hygiene) Order 1976 applies, separate hand washing facilities may be needed. This is in addition to any hand washing facilities associated with WCs in accordance with Requirement G4.

Discharges to drains

Note: See Guernsey Technical Standard for Requirement H1, foul water drainage for guidance on provision for traps, branch discharge pipes, discharge stacks and foul drains.

6.5 Any sink should discharge through a grating, a trap and a branch discharge pipe to an adequate system of drainage.

G7 HABITABLE ROOMS

The Requirement G7

This Guernsey Technical Standard deals with the following requirement from Part G of Schedule 1 to the Building Regulations.

<i>Requirement</i>	<i>Limits on application</i>
Habitable Rooms G7 The layout, size and arrangement of habitable rooms must be adequate.	Requirement G7 applies only to dwellings, guesthouses, rooms for residential purposes, institutions and any other building containing sleeping accommodation.

Guidance

Performance

Requirement G7 will be met if those properties covered by this requirement have rooms of sufficient size, adequate layout and of suitable arrangement so as to provide a satisfactory minimum standard of accommodation.

Rules for Measurement

The area of any room shall be determined after taking into account the following;

- (a) measurements should be taken at floor level, and to the back of any projecting skirting board;
- (b) any part of the room with a floor to ceiling height of less than 1.5 metres shall be excluded

from the floor area;

(c) any part of the floor covered by fixed cupboards or chimney breasts shall be included in the total floor area;

(d) any part of the floor in any bay shall be included in the floor area.

Minimum Accommodation Sizes

Table 2 gives the normal minimum areas for basic accommodation for dwellings and flats. This table must be read in conjunction with table 3 overpage.

Table 2 **Minimum accommodation sizes for dwellings and flats (m²)**

<i>Persons</i>	<i>Kitchen, Living Dining & Bathing</i>	<i>Sleeping accommodation all bedrooms</i>	<i>Storage</i>	<i>TOTAL Rounded up</i>
1	22	7	1	30
2	22	12	1.25	35
3	24	19	1.5	45
4	27	24	1.75	53
5	30	31	2	63
6	33	36	2.25	71
7	36	43	2.5	82

Table 3 gives the normal minimum areas and minimum dimensions for sleeping accommodation.

<i>Purpose Group</i>	<i>Occupancy factor</i>	<i>Minimum Area (m²)</i>	<i>Minimum Dimension (m)</i>
Dwellings or Flats	1 person	7.0	2.2
	2 person	12.0	2.7
Lodgings, Institutions or other accommodation	1 person	6.5	2.2
	2 persons	10.2	2.7
Single person bedsit ¹ (excluding cooking and bathing area)	1 person	14.0	3.0

Note: 1 A bedsit is defined as accommodation where the bedroom and sitting room are combined and may also include cooking and washing facilities.

Annex A - Competent person self-certification schemes relevant to sanitation, hot water safety and water efficiency work

- i. Installation of a heating or a hot water system connected to a heat producing gas appliance

GAS SAFE Services Limited

HETAS Limited

NAPIT Registration Limited

OFTEC Oil Firing Technical Association Limited

- ii. Installation of a hot water system connected to an oil-fired combustion appliance

OFTEC Oil Firing Technical Association Limited

HETAS Limited

NAPIT Registration Limited

- iii. Installation of a hot water system connected to a solid fuel burning appliance

HETAS Limited

NAPIT Registration Limited

OFTEC Oil Firing Technical Association Limited

- iv. The installation of a hot water storage vessel which does not incorporate a vent pipe to the atmosphere

NAPIT Registration Limited

GAS SAFE Services Limited

HETAS Limited

OFTEC Oil Firing Technical Association Limited

Annex B - British Standard BS 6465-1:2006 Guernsey Addendum

Limited occupancy sanitary installations

This addendum is to be read in conjunction with *BS 6465-1:2006 Code of practice for the design of sanitary facilities and scales of provision of sanitary and associated appliances*.

In addition to the options set out in Tables 10 and 11 of the BS, the following additional options may be considered for small establishments formed following a change of use under the following criteria.

Regulation 7 Meaning of material change of use

- (k) the building is used for the sale of food or drink –
- (i) to the public in the course of a business
 - (ii) for the consumption in that building, and
 - (iii) where there is a maximum capacity of 15 or more persons including those seated or standing,
- where previously it was not.

Table 4 BS 6465-1:2006 Guernsey addendum for small premises

Sanitary Appliance	Licensed bars/pubs	Restaurants
W/C	2 unisex toilets for up to 35 people, one of which must be an accessible ¹ facility suitable for the venue.	1 unisex toilet for every 20 persons, or part thereof, up to 60 persons, one of which must be an accessible ¹ facility suitable for the venue
Washbasins	1 per sanitary appliance	1 per sanitary appliance
Urinal - optional provision	In separate enclosure together with washbasin	In separate enclosure together with washbasin

Note: 1 When designing accessible toilet facilities, guidance can be found in Guernsey Technical Standard M 'Access to and Use of Buildings'.

Annex C - Standards Referred to and other documents

Standards

ANSI-NSF 41:2005 + A1:2007. Non-liquid saturated treatment system. NSF, 2007.

BS EN 257:1992 Mechanical thermostats for gas-burning appliances. BSI, 1992.

BS 417-2:1987 Specification for galvanized low carbon steel cisterns, cistern lids, tanks and cylinders. Metric units. BSI, 1987.

BS 853-1:1996 Specification for vessels for use in heating systems. Calorifiers and storage vessels for central heating and hot water supply. BSI, 1996.

BS EN ISO 1043-1:2002 Plastics. Symbols and abbreviated terms. Basic polymers and their special characteristics.

BS EN 1111:1999 Sanitary tapware. Thermostatic mixing valves (PN 10). General technical specification. BSI, 1999.

BS EN 1287:1999 Sanitary tapware. Low pressure thermostatic mixing valves. General technical specifications. BSI, 1999.

BS EN 1490:2000 Building valves. Combined temperature and pressure relief valves. Tests and requirements. BSI, 2000.

BS 1566-1:2002 Copper indirect cylinders for domestic purposes. Open vented copper cylinders. Requirements and test methods. BSI, 2002.

BS 3198:1981 Specification for copper hot water storage combination units for domestic purposes. BSI, 1981.

BS 4213:2004 Cisterns for domestic use. Cold water storage and combined feed and expansion (thermoplastic) cisterns up to 500 l. Specification. BSI, 2004.

BS 5918:1989 Code of Practice for Solar heating systems for domestic hot water. BSI 1989.

BS 6283-2:1991 Safety and control devices for use in hot water systems. Specifications for temperature relief valves for pressures from 1 bar to 10 bar. BSI, 1991.

BS 6283-3:1991 Safety and control devices for use in hot water systems. Specification for combined temperature and pressure relief valves for pressures from 1 bar to 10 bar. BSI, 1991.

BS 6465-1:2006 + A1:2009 Sanitary installations. Code of practice for the design of sanitary facilities and scales of provision of sanitary and associated appliances. BSI, 2006. **In addition refer to the Guernsey addendum in annex B.**

BS 6465-2:1996 Sanitary installations. Code of practice for space requirements for sanitary appliances. BSI, 1996.

BS 6465-3:2006 Sanitary installations. Code of practice for the selection, installation and maintenance of sanitary and associated appliances. BSI, 2006.

BS 6700:2006 + A1:2009 Design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages. Specification. BSI, 2006.

BS 7291-1:2006 Thermoplastics pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings. General requirements.

BS 7291-2:2006 Thermoplastics pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings. Specification for polybutylene (PB) pipes and associated fittings.

BS 7291-3:2006 Thermoplastics pipes and associated fittings for hot and cold water for domestic purposes and heating installations in buildings. Specification for cross-linked polyethylene (PE-X) pipes and associated fittings.

BS 7671:2008 Requirements for electrical installations (IET Wiring Regulations 17th Edition).

BS 8000-15:1990 Workmanship on Building Sites Code of practice for hot and cold water services (domestic scale). BSI, 1990.

BS 8515:2009 Rainwater harvesting systems, Code of Practice.

BS EN 12050-1:2001 Wastewater lifting plants for buildings and sites. Principles of construction and testing. Lifting plants for wastewater containing faecal matter.

BS EN 12050-2:2001 Wastewater lifting plants for buildings and sites. Principles of construction and testing. Lifting plants for faecal-free wastewater. BSI, 2001.

BS EN 12050-3:2001 Wastewater lifting plants for buildings and sites. Principles of construction and testing. Lifting plants for wastewater containing faecal matter for limited applications.

BS EN 12897:2006 Water supply. Specification for indirectly heated unvented (closed) storage water heaters. BSI, 2006.

BS EN 12976-1:2006 Thermal solar systems and components. Factory made systems. General requirements. BSI, 2006.

prCEN/TS 12977-1:2008 Thermal solar systems and components. Custom built systems. General requirements. BSI, 2001.

BS EN 15092:2008 Building valves. Inline hot water supply tempering valves. Tests and requirements. BSI, 2008.

BS EN 60335-2-21:2003 Household and similar electrical appliances. Safety. Particular requirements for storage water heaters. BSI, 2003.

BS EN 60335-2-35:2002 Specification for safety of household and similar electrical appliances. BSI, 2002.

BS EN 60335-2-73:2003 Specification for safety of household and similar electrical appliances. Particular requirements for fixed immersion heaters. BSI, 2003.

BS EN 60730-2-9:2002 Automatic electrical controls for household and similar use. Particular requirements for temperature sensing controls. BSI, 2002.

Other documents

Water Regulations Advisory Scheme. Water Regulations Guide. WRAS, 2000.

WRAS IGN 9-02-04: Issue 1: 1994. Reclaimed water systems. WRAS, 1994. (www.wras.co.uk)

WRAS Information & Guidance Note No. 9-02-05 Marking and identification of pipework for reclaimed (greywater) systems. WRAS, 1999. (www.wras.co.uk)

Market Transformation Programme. Rainwater and greywater: technical and economic feasibility. MTP, 2007.

Market Transformation Programme. Rainwater and greywater: a guide for specifiers. MTP, 2007.

Market Transformation Programme. Rainwater and greywater: review of water quality standards and recommendations for the UK. MTP, 2007.

NHS D08 National Health Service Model Engineering Specifications Thermostatic Mixing Valves (Healthcare Premises). NHS.

BRE Information paper IP14/03 Preventing hot water scalding in bathrooms: using TMVs.

Food Standards Agency Code of Practice Food hygiene – a guide for businesses. (www.food.gov.uk)

English Heritage publication Building Regulations and Historic Buildings, 2002 (revised 2004), (www.english-heritage.org.uk)

European Council Directive 89/106/EEC, The Construction Products Directive.

European Council Directive 93/68/EEC, The CE Marking Directive.

The Code for Sustainable Homes, December 2006. (www.planningportal.gov.uk)

HSC publication Legionnaires' Disease: Control of Legionella Bacteria in Water Systems. Approved code of practice and guidance. L8, Health and Safety Commission 2000. ISBN 0717617726

CIBSE Commissioning Code M: Commissioning Management, CIBSE, 2003. ISBN 1 90328 733 2

Health and Safety Commission, Workplace health, safety and welfare, Approved code of practice, HMSO 1992.

CIBSE Guide G: Public health engineering, CIBSE, 2004. ISBN 1 90328 742 1

CIBSE Domestic Building Services Panel: Solar heating design and installation guide, 2007. ISBN 978 1 90328 784 2

Key terms

The following are key terms used in this document:

Note: Terms shown with * are defined in legislation, either in the Land Planning and Development (Guernsey) Law, 2005 or the Building (Guernsey) Regulations, 2012, where the definition may be fuller than the summary of the definition given here. If in doubt refer to the statutory definition in the legislation.

***Building** will take its ordinary meaning but is defined in the 2005 Law and the Building Regulations to include also any well, cistern, cesspit, cellar or other excavation and any wall or permanent hoarding. The ordinary meaning will include dwellings (houses, flats) and public buildings.

***Building work** has the meaning by in regulation 5 of the Building Regulations.

Combined temperature and pressure relief valve means a mechanically operated valve that opens to discharge water when a fixed (factory set) temperature or fixed (factory set) pressure is exceeded.

***Controlled service or fitting** means a service or fitting subject to specified Schedule 1 requirements including certain requirements in respect of health, hygiene, water efficiency, drainage and waste disposal, heat producing appliances, oil tanks and certain requirements in respect of conservation of fuel and power.

Direct heating means a method of heating in which the heat source is integral with the hot water vessel. Examples are an electrical immersion heater, or a gas burner with a flue arrangement that passes through the vessel so that the flue transfers heat to the stored water, or the circulation of water from a vessel situated near a burner with a flue arrangement so that the flue transfers heat to the circulating water.

Domestic hot water means water that has been heated for cooking, food preparation, personal washing or cleaning purposes. The term is used irrespective of the type of building in which the hot water system is installed.

Earth-closet means a closet having a movable receptacle for the reception of faecal matter and its deodorisation by the use of earth, ashes or chemicals, or by other methods. This will therefore include chemical and composting toilets.

Exempt buildings and work means the erection of any building or extension of a kind described in regulation 13 of and Schedule 2 to the Building (Guernsey) Regulations, 2012; or the carrying out of any work to or in connection with such a building or extension, if after the carrying out of that work it is still a building or extension of a kind described in that Schedule.

Expansion vessel means a vessel to temporarily accommodate the expansion of water from the unvented hot water storage vessel as it is heated.

Greywater is domestic wastewater excluding faecal matter and urine. When appropriately treated this may replace the use of wholesome water in WCs, urinals, irrigation or washing machines.

Harvested rainwater means rainwater harvested from roofs or other suitable surfaces and collected and stored. When appropriately treated, this may replace the use of wholesome water in WCs, urinals, irrigation or washing machines.

Heated wholesome water means water that, when cold, was wholesome in accordance with the definition below and has been subjected to a heat source to increase its temperature.

Hot water storage system means a vessel for storing:

- a. heated wholesome hot water for subsequent use,
- b. water that is used to heat other water

together with any ancillary safety devices described in paragraphs 3.8 and 3.9 of this Guernsey Technical Standard and all other applicable operating devices.

Hot water storage system package means a hot water storage system having the safety devices described in 3.8 and 3.15 of this Guernsey Technical Standard factory-fitted by the manufacturer, together with a kit containing other applicable devices supplied by the manufacturer to be fitted by the installer.

Hot water storage system unit means a hot water storage system having the safety devices described in 3.8 and 3.15 of this Guernsey Technical Standard and all other applicable operating devices factory-fitted by the manufacturer.

Indirect heating means a method of heating stored water through a heat exchanger.

Kitchen means a room or part of a room which contains a sink and food preparation facilities

Material alteration means an alteration which results in a building or a controlled service or fitting not complying with, or being more unsatisfactory than it was before in relation to Schedule 1 requirements in relation to structure, means of warning and escape, internal and external fire spread, fire service access and facilities, and access and use.

Non-self-resetting energy cut-out means a device that will interrupt the supply of heat to a hot water storage vessel when a fixed (factory set) temperature is exceeded. If this protective device is actuated it should only be possible to reset it manually.

Preparation of food means handling, making and cooking of food.

Pressure relief valve means a mechanically operated valve that opens to discharge water when a fixed (factory set) pressure is exceeded.

Primary thermal store means a store of heat energy that can be used to heat domestic hot water by means of a heat exchanger. The thermal store can be heated by a variety of heat sources. Primary hot water thermal stores can be either vented or unvented.

Risk assessment for the purposes of this document means the identification of the hazards associated with a process or activity combined with an assessment of the probability and consequences of each hazard.

***Room for residential purposes** refer to the Building regulations 2012.

Sanitary accommodation means a room containing a WC or urinal, whether or not it also contains other sanitary appliances. Sanitary accommodation containing one or more cubicles counts as a single space if there is free circulation of air throughout the space.

Sanitary appliance means WC, urinal, bath, shower, washbasin, sink, bidet and drinking fountain. It also includes appliances that are not connected to a water supply (e.g. composting toilet) or drain (e.g. waterless urinal).

***Sanitary convenience** means a water closet, toilet or urinal.

Sink means a receptacle used for holding water (for preparation of food or washing up) supplied through a tap and having a wastepipe.

Tundish means a device, installed in the discharge pipe from a valve, that provides an air break allowing discharge to be conducted safely to a place of termination. The tundish also provides a visible indication of a discharge and functions as a backflow prevention device.

Temperature relief valve means a mechanically operated valve that opens to discharge water when a fixed (factory set) temperature is exceeded.

Unvented (closed) hot water storage system means a vessel fed with cold water from a supply pipe or dedicated storage cistern (without a vent pipe) and in which water is heated directly or indirectly. Expansion of the water when it is heated is accommodated either internally or externally and the system is fitted with safety devices to prevent water temperatures exceeding 100°C, and other applicable operating devices to control primary flow, prevent backflow, control working pressure and accommodate expansion.

Urinal means an appliance used for reception and disposal of urine.

Vented (open) hot water storage system means a vessel fed with cold water from a dedicated storage cistern. Expansion of the water when it is heated is accommodated through the cold feed pipe. A vent pipe connecting the top of the vessel to a point open to the atmosphere above the cold water storage cistern is provided as a safety device.

***Water-closet (WC)** means a toilet that has a separate fixed receptacle connected to a drainage system and separate provision for flushing either by the operation of a mechanism or by automatic action.



GUERNSEY TECHNICAL STANDARDS

The following documents have been approved and issued by the Development and Planning Authority for the purpose of providing practical guidance with respect to the requirements of the Building Regulations

Guernsey Technical Standard A: Structure, 2012 edition with May 2016 amendments.

Guernsey Technical Standard B: Fire Safety - Volume 1 - Dwellinghouses, 2012 edition with May 2016 amendments.

Guernsey Technical Standard B: Fire Safety - Volume 2 - Buildings other than dwellinghouses, 2012 edition with May 2016 amendments.

Guernsey Technical Standard C: Site preparation and resistance to contaminants and moisture 2012 edition with May 2016 amendments.

Guernsey Technical Standard D: Toxic substances 2012 edition with May 2016 amendments.

Guernsey Technical Standard E: Resistance to the passage of sound, 2012 edition with May 2016 amendments.

Guernsey Technical Standard F: Ventilation, 2012 edition with May 2016 amendments.

Guernsey Technical Standard G: Health, hygiene and water efficiency, 2012 edition with May 2016 amendments.

Guernsey Technical Standard H: Drainage and waste disposal, 2012 edition with May 2016 amendments.

Guernsey Technical Standard J: Heat producing appliances and fuel storage systems, 2012 edition with May 2016 amendments.

Guernsey Technical Standard K: Safe means of access and egress, 2012 edition with May 2016 amendments.

Guernsey Technical Standard L1: Conservation of fuel and power – Dwellings, 2012 edition with May 2016 amendments.

Guernsey Technical Standard L2: Conservation of fuel and power – Buildings other than dwellings, 2012 edition with May 2016 amendments.

Guernsey Technical Standard M: Access to and use of buildings, 2012 edition with May 2016 amendments.

Guernsey Technical Standard N: Glazing - Materials and protection, 2012 edition with May 2016 amendments.

Guernsey Technical Standard P: Roads - Layout design and construction, 2012 edition with May 2016 amendments.

Guernsey Technical Standard Regulation 11: Materials and Workmanship, 2012 edition with May 2016 amendments.



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States of Guernsey - Building Control

Sir Charles Frossard House

La Charroterie

St Peter Port

Guernsey

GY1 1FH

Telephone +44 (0) 1481 717200

Facsimile +44 (0) 1481 717099

Email planning@gov.gg



States of Guernsey
Building Control