



The Scottish
Government

Building Standards Division

**Whisky Maturation Warehouses
Storage Buildings (Class 1) –
Automatic Fire Suppression Systems**

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Title: Whisky Maturation Warehouses – Storage Buildings (Class 1) – Automatic Fire Suppression Systems

Purpose: To provide supplementary information for the installation of automatic fire suppression systems in whisky maturation warehouses to that already provided in the Scottish Building Standards Technical Handbooks.

Version	Date	Notes
1.0	02/02/15	To provide supplementary information for the installation of automatic fire suppression systems in whisky maturation warehouses.

CONTENTS

		Page
1	<u>PURPOSE OF THIS DOCUMENT</u>	<u>3</u>
2	<u>BACKGROUND</u>	<u>4</u>
3	<u>BUILDING STANDARDS TECHNICAL HANDBOOKS</u>	<u>5</u>
4	<u>LPC RULES FOR AUTOMATIC SPRINKLER INSTALLATIONS</u>	<u>6</u>
5	<u>HEALTH AND SAFETY LEGISLATION</u>	<u>7</u>
6	<u>GRANTING BUILDING WARRANTS</u>	<u>8</u>
7	<u>BUILDING WARRANT FLOW CHART</u>	<u>9</u>
8	<u>ACCEPTING COMPLETION CERTIFICATES</u>	<u>10</u>
9	<u>COMPLETION CERTIFICATE FLOW CHART</u>	<u>12</u>

1. PURPOSE OF THIS DOCUMENT

1.1 The purpose of this document is to give supplementary information for the installation of automatic fire suppression systems in whisky maturation warehouses to that already provided in the Scottish Building Standards Technical Handbooks.

1.2 The document will also provide guidance to local authority verifiers when conducting 'reasonable inquiry' prior to accepting or rejecting completion certificates.

1.3 Clients, designers, contractors and local authority verifiers should find the information helpful to satisfy Building Regulations when carrying out building work on new or existing maturation warehouses. The guidance only addresses matters relating to building regulations and does not purport to satisfy any other legislation or insurer or client requirements.

2. BACKGROUND

2.1 The Scottish Government's purpose is to focus government and public services on creating a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth.

2.2 The Government recognises the important role that the Scottish whisky industry contributes to achieving this aim. The Scottish whisky industry has enjoyed significant growth in global exports over the last decade and this is set to continue. There has been an urgent need to replace whisky stocks and as a result, there has been a significant increase in the number of new distilleries and an unprecedented increase in the number of maturation warehouses being built throughout Scotland.

2.3 Building Standards Division (BSD) was made aware of a significant emerging problem in Autumn 2012 regarding sprinkler installations in whisky maturation warehouses. Fire safety concerns have been raised over the guidance contained in the Technical Handbook for non-domestic buildings which supports mandatory Building Standard 2.1: Compartmentation and Standard 2.6: Spread to neighbouring buildings as it relates to whisky maturation warehouses.

2.4 A number of major differences became apparent between BS 5306-2 (Fire extinguishing installations and equipment on premises, Part 2 Specification for sprinkler systems) and BS EN 12845 (Fixed firefighting systems – Automatic sprinkler systems – Design, installation and maintenance) in relation to maturation warehousing including the maximum area and maximum height of free standing / block stacking wooden barrels on pallets. The reference in BS EN 12845 Annex G.6 to wooden barrels containing spirit based liquors to be stored to a height not exceeding 4.6m with ceiling sprinklers only, is particularly problematic for the whisky industry since free standing or block stacking up to 6-7 barrel high has been normal practice within the industry for over 50 years. Further, the reference to intermediate sprinklers for storage heights exceeding 4.6 m is not practical for this predominant method of storage in maturation warehouses in Scotland.

2.5 BSD, the Scottish Whisky Association (SWA), Local Authority Building Standards Scotland (LABSS) and the Scottish Fire and Rescue Service (SFRS) have been working collaboratively since then to identify solutions for individual cases throughout Scotland.

3. BUILDING STANDARDS TECHNICAL HANDBOOKS

3.1 Mandatory Building Standards are contained in Schedule 5 of the Building (Scotland) Regulations 2004 as amended. Building Standards are written as expanded functional standards and are supported by guidance contained in the Scottish Building Standards Technical Handbooks.

3.2 The standards set out the mandatory requirements that must be achieved in relation to new buildings and building work. The supporting guidance in the handbooks identifies the most common route for compliance. This does not, however, preclude the use of alternative solutions to meet the requirements of the standards. The building standards system, therefore, allows building owners or developers a great deal of flexibility in how they achieve compliance. See Alternative Approaches (clause 2.0.7) of the Non-domestic Technical Handbook.

3.3 Clarification has been sought on the guidance contained in the Technical Handbook for non-domestic buildings which supports mandatory Building Standard 2.1: Compartmentation and Standard 2.6: Spread to neighbouring buildings as it relates to whisky maturation warehouses.

3.4 Standard 2.1 requires that *“Every building must be designed and constructed in such a way that in the event of an outbreak of fire within the building, fire and smoke are inhibited from spreading beyond the compartment of origin until any occupants have had the time to leave that compartment and any fire containment measures have been initiated.”*

3.5 Standard 2.6 requires that *“Every building must be designed and constructed in such a way that in the event of an outbreak of fire within the building, the spread of fire to neighbouring buildings is inhibited.”*

3.6 The intent behind these standards is to limit the fire size by the use of passive fire safety measures (walls and floors) and active measures (automatic fire suppression) where appropriate. The purpose of these measures is to allow the building occupants sufficient time to escape in the event of an outbreak of fire within the building and the fire and rescue service to implement fire-fighting and rescue operations to preserve life and protect property.

3.7 The guidance supporting Standard 2.1 limits the floor area of a storage building (Class 1) to 1,000m². This allowance may be doubled to 2,000m² where an automatic fire suppression system is installed in the building. Further, the guidance supporting Standard 2.6 allows a reduction in the minimum distance between buildings when an automatic fire suppression system is installed in the building.

3.8 In October 2010, reference in the Non-domestic Technical Handbook to the British Standard (BS 5306-2) for fire sprinkler systems was replaced by reference to the Loss Prevention Council (LPC) Rules for Automatic Sprinkler Installations 2009, Incorporating BS EN 12845.

The key drivers for this change were:

- BS 5306-2 had been withdrawn and was no longer supported by the British Standards Institution, and
- The proposed change from the Construction Products Directive (89/106/EEC) to the Construction Products Regulation (305/2011/EU) which was due to come into force on 1 July 2013.

4. LPC RULES FOR AUTOMATIC SPRINKLER INSTALLATIONS

4.1 The LPC Rules for Automatic Sprinkler Installations is in 3 parts. Part 1 contains the full text of BS EN 12845, Part 2 is a series of Technical Bulletins and Part 3 is supplementary information. Technical Bulletin (TB) 201: 2009 includes guidance on sprinkler components, specifications and services and refers to the United Kingdom Accreditation Service (UKAS) who maintain a directory of accredited UK test and certification bodies. The Loss Prevention Council Board (LPCB) is an example of one such body who lists approved sprinkler products and installers in a specifier's guide, see www.redbooklive.com/.

4.2 TB 201.3 refers to the LPCB 3rd party installer scheme 'Loss Prevention Standard (LPS) 1048 - Requirements for the approval of sprinkler system contractors in the UK and Ireland'. The installer scheme provides quality assurance. This comprises of a technical assessment of an installer's capability, assessment and surveillance of the installer's quality system and production procedures as well as regular inspection of completed installations.

4.3 Sprinkler installers are approved by LPCB from Level 1 to 4. For example, Level 1 means that the installer is not approved to self-certify any category of work and all categories of work must be supervised. Whereas a Level 4 installer is approved to self-certify all categories of work and no supervision is required.

4.4 It is worth noting that Appendix 1 of the LPS 1048 scheme also provides a list of acceptable alternative sprinkler installation standards including BS 5306-2, NFPA 13 (excluding 13D and 13R), and FM Global Property Loss Prevention Data Sheets (excluding Residential Data sheets).

4.5 The use of 3rd party installer schemes under building regulations can be recognised by local authority verifiers as a means of demonstrating compliance with the sprinkler installation standards. They can also be used to assist the verifier when carrying out their duty of 'reasonable inquiry' under the terms of the Act.

5. HEALTH AND SAFETY LEGISLATION

5.1 Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) apply to maturation warehouses. The regulations are concerned with 'process' related fire safety as opposed to 'general' fire safety i.e. the potential for fires and the formation of explosive atmospheres from activities associated with dangerous substances such as ethanol.

5.2 The DSEAR regulations require the risks from dangerous substances with flammable, explosive or oxidising properties to be assessed, eliminated and reduced so far as is reasonably practicable. This can include particular design and construction requirements for buildings in which dangerous substances are present or in the vicinity. The whisky maturation process and the associated activities may also come under the Control of Major Accident Hazard Regulations 1999 (COMAH), where the warehouse contains qualifying quantities of certain flammable and/or highly flammable liquids.

5.3 If the regulations apply, the operator of the establishment is required to take all necessary measures to prevent major accidents and limit their consequences to persons and the environment. This is once again based on a principle of reducing risk to a level 'as low as is reasonably practicable' (ALARP). The duty holder should consider what they need to do to comply with the requirements of the DSEAR and COMAH regulations.

5.4 The intent behind the legislation is firstly to eliminate the risk, or if this is not possible, to reduce the risk from dangerous substances by a combination of control and mitigation measures. This might include for example; minimising the release of ethanol vapour, warehouse ventilation, special lighting, switches and lighting zones, no smoking, explosion resistant plant or explosion relief equipment and in some cases, automatic fire suppression systems. In such cases, the Health and Safety Executive are the enforcing authority for 'process' fire safety precautions. An explanation of the demarcation responsibilities for process and general fire precautions in the workplace can be found in the following HSE operational guidance: <http://www.hse.gov.uk/foi/internalops/og/og-00015.htm>.

6. GRANTING BUILDING WARRANTS

6.1 The Building (Scotland) Act 2003 requires that a building warrant must be granted by the local authority verifier when they are satisfied that the proposed building work complies with building regulations. When the verifier grants a building warrant, building work can start on site.

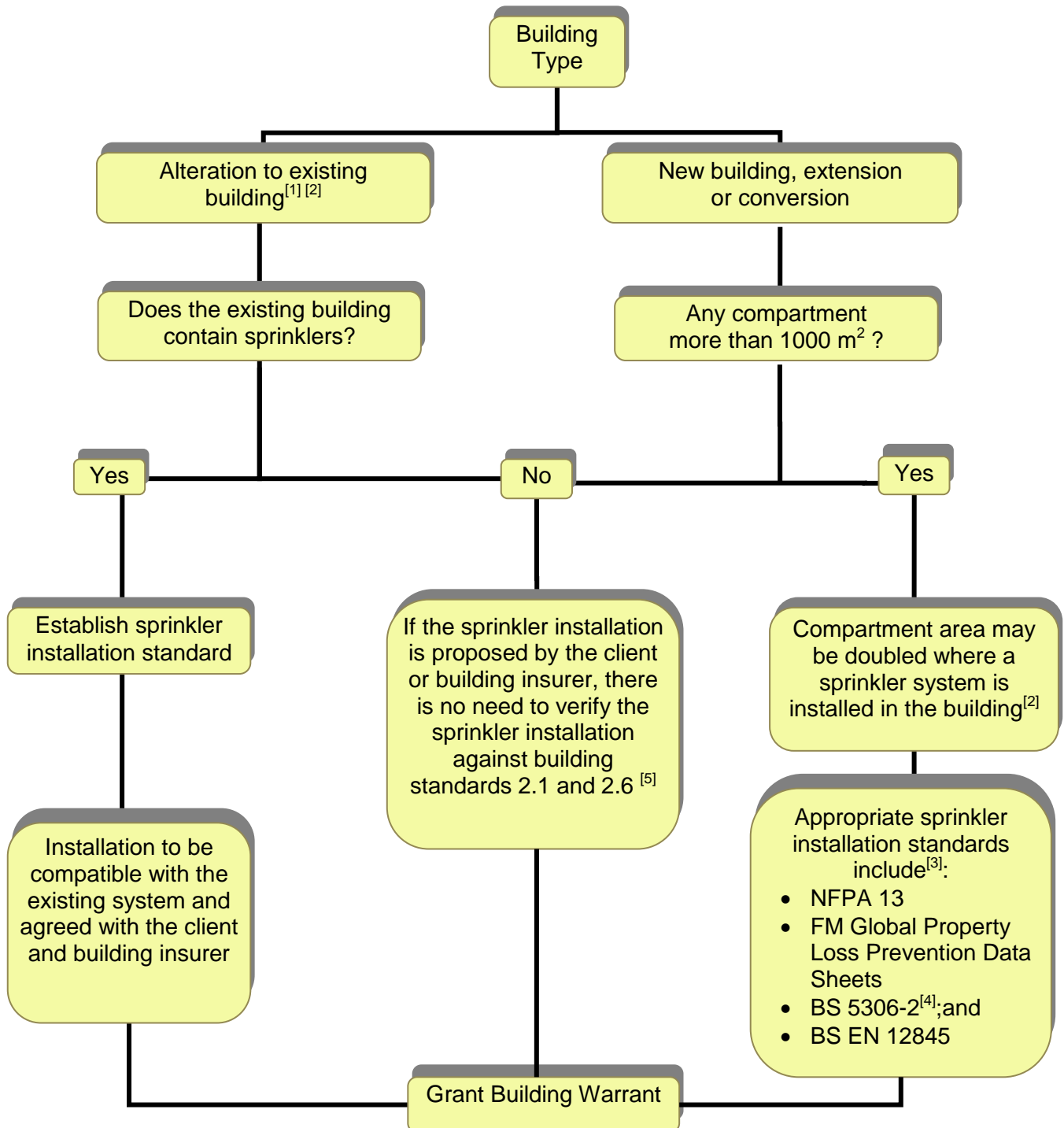
6.2 Where any compartment in a maturation warehouse is not more than 1,000m², there is no need to install an automatic fire suppression system to comply with building regulations. However, an automatic fire suppression system may still need to be installed in a maturation warehouse to comply with:

- DSEAR regulations
- COMAH regulations
- client requirements, or
- insurer requirements.

6.3 In such cases, local authority verifiers do not need to verify the suppression system against standards 2.1 and 2.6 and hence, the guidance in the technical handbooks.

7. GRANTING BUILDING WARRANT FLOW CHART

7.1 The following flow chart is intended to assist local authority verifiers when granting building warrants in relation to sprinkler installations in maturation warehouses.



Notes

- [1] Where the alteration or extension creates a compartment more than 1000m², a sprinkler installation is required.
- [2] This does not preclude the use of any other approach to meet the functional standards. See Alternative Approaches (clause 2.0.7) of the Non-domestic Technical Handbook.
- [3] The building insurers should be in agreement with the proposed sprinkler installation including any deviations from the installation standard.
- [4] Despite being withdrawn, a BS 5306-2:1990 system may be used.
- [5] Where the sprinkler system is proposed but not required by building regulations, the sprinkler installation should meet the design requirements of the client, insurer or as required to meet DSEAR or COMAH Regulations.

8. ACCEPTING COMPLETION CERTIFICATES

8.1 The Building (Scotland) Act 2003 requires that the relevant person (usually the building owner or developer) must submit, to the local authority verifier, a completion certificate. The certificate confirms that the building has been constructed in accordance with the relevant building warrant and is compliant with the building regulations. A Fire Safety Design Summary (FSDS) should also be submitted with the completion certificate and recorded in Part 2 of the Building Standards Register. All relevant sprinkler installation information and any assumptions should be recorded in the FSDS.

8.2 The local authority verifier must accept the completion certificate but only if, after 'reasonable inquiry', they are satisfied the building complies with the building warrant and building regulations. It is an offence under the Building (Scotland) Act 2003 to occupy a new building, unless the relevant completion certificate has been accepted.

8.3 Guidance document ['Verification During Construction – Guidance to Support the Application of Reasonable Inquiry'](#) was produced by LABSS and supported by BSD to help verifiers fulfil their responsibility to carry out 'reasonable inquiry' at the completion of a project. The guidance provides detail on risk assessments to support the creation of the Construction Compliance and Notification Plan (CCNP). The CCNP is then issued with the building warrant. The CCNP identifies the different stages of the project where the owner or developer should notify the verifier for site inspection purposes. It also details any alternatives to site visits where this is deemed appropriate by the verifier e.g. the submission of sprinkler commissioning certificates or test reports. The shape of the CCNP will be developed during the processing of the building warrant application.

8.4 Clause 19.2 of BS EN 12845 relates to commissioning of sprinkler installations and states:

"The installer of the system shall provide the user with the following:

- a) *a [BS EN 12845] completion certificate stating that the system complies with all appropriate requirements of this standard, or giving details of any deviation from the requirements*
- b) *a complete set of operating instructions and "as built" drawings including identification of all valves and instruments used for testing and operation and a user's programme for inspection and checking (see 20.2)".*

8.5 Where an alternative sprinkler installation standard is adopted, the relevant guidance on commissioning or acceptance of sprinkler installation should be followed.

8.6 A copy of a sprinkler installation completion certificate or acceptance (hereafter referred to as a Certificate of Conformity) should be requested by the verifier. The certificate of conformity is normally issued by the sprinkler contractor (or supervisory body) and should state that the system complies with all appropriate requirements of the relevant installation standard or specify details of any deviation. Where a sprinkler installation certificate of conformity cannot be issued the verifier should request a copy of the commissioning / acceptance test results.

8.7 It is important that the verifier has the ability to interpret commissioning test results and is able to check them against the installation standard.

8.8 It is common for dry pipework to be pneumatically tested and all pipework to be hydrostatically tested in accordance with the relevant sprinkler installation standard. Where issues arise any leaks should be corrected and the tests repeated. All other sprinkler

equipment will be tested and the test results recorded. These tests include; water supply test; water motor alarm test; automatic pump starting test and diesel engine restarting test. In addition, the following equipment will be checked and recorded against the installation standard; water and air pressure gauge readings on installations and trunk mains and pressure tanks, water levels in storage tank(s) and the correct position of the main stop valve(s). For more detailed information on commissioning / acceptance tests and information that will be recorded, refer to the sprinkler installation standard.

8.9 If the verifier wishes to witness any commissioning test, this should be recorded in the CCNP and notified to the client or duly authorised agent.

9. ACCEPT COMPLETION CERTIFICATE FLOW CHART

9.1 The following flow chart is intended to assist local authority verifiers when accepting completion certificates in relation to sprinkler installations in maturation warehouses. This does not preclude the use of any other means to satisfy the verifiers' duty to carry out 'reasonable inquiry'.

