

# **Loss Prevention Standard**



LPS 1048 -1: Issue 4.1

## **Requirements for the approval of Sprinkler System Contractors in the UK and Ireland**

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Amendments from the previous issue (Issue 4: September 2003) are indicated by a vertical bar in the right hand margin.

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## **PARTICIPATING ORGANISATIONS**

This standard was approved by the BRE Global Governing Body and Working Group C. The following organisations participated in the preparation of this standard:-

Association for Specialist Fire Protection (ASFP)  
 Association of British Insurers (ABI)  
 Association of Insurance Surveyors  
 BAA Plc  
 British Automatic Fire Sprinkler Association (BAFSA)  
 British Property Federation (BPF)  
 Construction Industry Council (CIC)  
 Construction Products Association  
 Co-op Banking  
 Fire Industry Association (FIA)  
 Home Builders Federation (HBF)  
 Homes & Communities Agency  
 Lend Lease  
 Chief Fire Officers' Association (CFOA)  
 London Underground Ltd  
 NHBC  
 RIBA  
 RICS  
 Risktech Ltd  
 Sustainability + Architecture  
 Sustainable by Design

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### **REVISION OF LOSS PREVENTION STANDARDS**

Loss Prevention Standards (LPSs) will be revised by issue of revised editions or amendments. Details will be posted on our website at [www.RedBookLive.com](http://www.RedBookLive.com).

Technical or other changes which affect the requirements for the approval or certification of the product or service will result in a new issue. Minor or administrative changes (e.g. corrections of spelling and typographical errors, changes to address and copyright details, the addition of notes for clarification etc.) may be made as amendments.

The issue number will be given in decimal format with the integer part giving the issue number and the fractional part giving the number of amendments (e.g. Issue 3.2 indicates that the document is at Issue 3 with 2 amendments).

Users of LPSs should ensure that they possess the latest issue and all amendments.

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## FOREWORD

This Standard identifies the evaluation and / or testing practices undertaken by LPCB for the purposes of approval and listing of products and services. LPCB listing and approval of products and services is based on evidence acceptable to LPCB:-

- that the product or service meets the standard;
- that the manufacturer or service provider has staff, processes and systems in place to ensure that the product or service delivered meets the standard

and on:-

- periodic audits of the manufacturer or service provider including testing as appropriate;
- compliance with the contract for LPCB listing and approval including agreement to rectify faults as appropriate;

The responsibility for ensuring compliance with the technical and managerial process and requirements for the product or service lies with the manufacturer, service provider or supplier.

## NOTES

Compliance with this LPS does not of itself confer immunity from legal obligations. Users of LPSs should ensure that they possess the latest issue and all amendments.

LPCB welcomes comments of a technical or editorial nature and these should be addressed to “the Technical Director” at [enquiries@breglobal.co.uk](mailto:enquiries@breglobal.co.uk).

The BRE Trust, a registered charity, owns BRE and BRE Global. BRE Global and LPCB (part of BRE Global) test, assess, certificate and list products and services within the fire and security sectors. For further information on our services please contact BRE Global, Watford, Herts. WD25 9XX or e-mail to [enquiries@breglobal.co.uk](mailto:enquiries@breglobal.co.uk)

Listed products and services appear in the LPCB “List of Approved Products and Services” which may be viewed on our website:- [www.RedBookLive.com](http://www.RedBookLive.com) or obtained in hard copy or CD by telephoning +44 (0) 1923 664100.

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## **INTRODUCTION**

### **1.1 Benefits of the LPS 1048 scheme**

Automatic sprinkler systems are installed in industrial, storage, commercial, retail, residential and domestic premises to safeguard life, property and the environment. Equipment designs and system configurations are continuously evolving. In order to ensure adequate protection, sprinkler system installers (hereinafter called Contractors) need an appropriate level of technical competency in both design and installation.

This scheme has been prepared by an Expert Group drawn from installers, local government, insurers and clients to help:

- Clients select Contractors.
- Ensure that sprinkler systems are appropriate for the occupancy and/or hazard class of the premises in which they are installed, and will operate reliably in the event of a fire.

It has been approved by the LPC (Fire & Security) Board.

### **1.2 Technical Requirements**

The technical requirements for industrial, storage, commercial and retail sprinkler systems installed in the UK are set out in the LPC Sprinkler Rules, version 1 incorporating BS5306: Part 2: 1990 and version 2 incorporating BS EN 12845, both with subsequently published Technical Bulletins.

The technical requirements for domestic and residential sprinkler systems are set out in BS 9251 and LPC Sprinkler Rules, Technical Bulletin 14.

A full list of all the acceptable installation standards is given in Appendix 1.

This document, sets out the basis for approval of Contractors under this scheme including the levels of competence required for different classes of contract. It also defines the circumstances under which Contractors require supervision provided by an approved third party.

Key terms are defined in the glossary.

The LPCB is constantly seeking to improve the schemes it operates, not just technically but also in providing an excellent service and value to all of the scheme stakeholders. If you have any suggestions for improving this scheme please contact:

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### **1.3 LPCB Listing**

All Contractors approved by the LPCB to carry out design and installation of sprinkler systems will be listed in the LPCB *List of Approved Fire and Security Products and Services* (Red Book), together with details of their approved scope.

This publication is available printed or on CD-ROM from the above address or on our web-site: [www.redbooklive.com](http://www.redbooklive.com).

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## 2. SCOPE

### 2.1 Scheme Structure

Four levels of approval are available as shown in Table 1 below.

**TABLE 1**

Category of Work		Approval level			
		1	2	3	4
<b>A</b>	Pre-calculated ordinary hazard systems, installations, extensions and alterations (excluding water supplies)	ü•	ü ,	ü ,	ü <i>f</i>
<b>B</b>	Pre-calculated high hazard systems, installations, extensions and alterations (excluding water supplies)	ü•	ü ,	ü ,	ü <i>f</i>
<b>C</b>	Town's main water supplies	ü•	ü ,	ü ,	ü <i>f</i>
<b>D</b>	Pumped water supplies	ü•	ü ,	ü ,	ü <i>f</i>
<b>E</b>	Base build contracts (pre-calculated design principles)	<b>X</b>	ü ,	ü ,	ü <i>f</i>
<b>F</b>	Systems, installations, extension and alterations involving FHC design principles	<b>X</b>	<b>X</b>	ü•	ü <i>f</i>

**ü•** - Allowed to undertake this Category of Work under supervision.

**ü ,** - Allowed to undertake this Category of Work, supervision may be required depending on whether the Contractor has been granted self-certification for this Category of Work.

**ü *f*** - Allowed to undertake this Category of Work, Contractor can self-certificate this Category of Work.

**X** - Not allowed to tender for or undertake this Category of Work.

For approval details for a particular Contractor refer to [www.redbooklive.com](http://www.redbooklive.com).

Progression from one approval level to the next higher level is by a combination of experience, assessment, review and examinations. In order to ensure and develop competence, supervision of work by a third party may be required. Table 2 summarises the requirements for approval at each level and further details are given in section 3 of this scheme document.

### 2.2 Application and Assessment

This scheme is open to all contractors operating in the UK and Ireland.

Application forms are available from LPCB at the address above.

Contractors may enter the scheme at any level, subject to meeting the appropriate requirements. Approval will be granted following successful assessment by the LPCB.

Any listing awarded by LPCB remains valid only whilst the Contractor continues to meet the scheme requirements as defined in this and related documents.

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Contractors wishing to gain approval at a higher level in the scheme, or to self-certificate additional Categories of Work, must submit an application to LPCB, pay the appropriate fees and undergo an assessment.

Where a Contractor operates design and installation work from more than one location, then separate approvals must be obtained for each. Regional offices undertaking only sales and/or emergency service work are not covered by this scheme.

### **2.3 Use of LPCB Marks**

Details of how the mark may be used can be found in publication PN 103.

### **2.4 Change of Company Identity or Particulars**

The Contractor should promptly notify the LPCB of any changes relating to their compliance with this scheme, including a change of company identity, legal entity, company registration and/or location. The Contractor shall notify any changes using publication PN 112.

### **2.5 Costs**

All costs associated with LPS 1048-1 assessments, surveillance visits, special visits, supervision and certification are borne by the Contractor. Charges will be made in accordance with the LPCB Schedule of Fees current at the time.

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### **3. REQUIREMENTS FOR APPROVAL OF ALL CONTRACTORS**

#### **3.1 Installation Standards**

Unless otherwise required by the Client, all sprinkler systems must be designed in accordance with the one of the installation standards listed in Appendix 1. Where the client's specification does not meet the minimum requirements of this scheme, the Contractor must not in any way claim or imply that the design or installation meets the requirements of this scheme and must not issue an LPS 1048 Certificate of Conformity.

#### **3.2 Management System Requirements**

In order to ensure that Automatic Sprinkler Installations meet and continue to meet the requirements of this scheme, Contractors are required to maintain full control of their design, supply of materials, pre-fabrication of sprinkler pipework, installation, commissioning and maintenance processes through a management system audited by LPCB.

If the Contractor requires LPCB ISO 9001 certification and listing, the management system will be audited against the requirements of ISO 9001 and Guidance Note GN11. However, if the Contractor does not require LPCB ISO 9001 certification and listing, they will be audited against the requirements of LPCB Publication PN111 – Generic Factory Production Control Requirement, and Guidance Note GN11.

Firms applying for Level 1 approval shall have a fully documented and operational quality management system meeting the requirements of ISO 9001 and GN11. To maintain LPS 1048-1 approval, they shall obtain LPCB certification for their quality management system within 12 months from issue of an LPS 1048-1 approval certificate.

Full details of our ISO 9001 certification process are set out in publication SD003 'Quality Management System Certification Scheme'.

The duration and frequency of the Management System audit visits is typically one day twice per year. However, the actual frequency and duration depends on a number of factors including size of company and scope of activities.

#### **3.3 Contract Requirements**

Contractors will have satisfactorily completed a minimum number of projects or contracts in order to enable LPCB to carry out a full technical review and site inspection of a sample of these contracts. The minimum numbers and types of contract for each level are given below. For approval purposes, each contract must be assessed as satisfactory by LPCB against the requirements of this scheme.

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**Level 1**

A minimum of 2 completed supervised pre-calculated sprinkler contracts.

**Level 2**

In addition to the requirements of Level 1, a further 8 completed supervised pre-calculated sprinkler contracts.

At least one supervised sprinkler contract with high hazard protection, one with town's main water supplies, one with pumped water supplies and one base build contract must be satisfactorily completed before the firm can self-certificate these specific types of contracts. (This condition may have been partially satisfied at Level 1.)

Firms may gain approval at Level 2 even if they cannot demonstrate their capability to undertake the full range of designs allowed under this level. The firm will be allowed to self-certificate work that they can prove their capability to undertake, but other work allowed under Level 2 must be fully supervised and their engineers must meet the qualification requirements of Table 2 by passing the relevant competence reviews.

**Level 3**

In addition to the requirements of Level 2, a minimum of 2 completed supervised FHC sprinkler contracts.

**Level 4**

In addition to the requirements of Level 3 the following contracts are required:

- 4 high hazard classification (\*)
- 4 with superior or duplicate water supplies (\*)
- 4 using fully hydraulically calculated design principles supervised by LPCB of which a minimum of two contracts must include intermediate in-rack protection (\*)

(\*) A minimum of 2 contracts of each type should be designed by currently employed designers. If this is not possible due to staff changes then evidence will be required that they have been replaced by other suitably qualified designers that meet the requirements of Table 2.

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**TABLE 2** (revised)

Approval Level	Limitations of work undertaken	Supervision and Issue of LPS 1048 Certificate of Conformity	Minimum number of technical staff	Qualifications	LPCB Surveillance Audits per year - duration
1	Pre-calculated contracts only, <u>excluding</u> all base build contracts	Supervision by LPCB Supervisory Service or Supervising Body.	1	Basic Design Review	LPCB Two x ½ day Supervising Body Two x 1 day
2	Pre-calculated contracts only, <u>excluding</u> all base build contracts	Supervision by LPCB Supervisory Service or Supervising Body may not be required, depending on the level of self-certification granted. At least one supervised sprinkler contract with high hazard protection, one with town's main and one with pumped water supplies must be satisfactorily completed (as assessed by LPCB) before the firm can self-certificate these specific types of contracts. (This condition may have been satisfied at Level 1.)	2	Basic Design Review Inspection Review	Three x 1 day
	Pre-calculated base build contracts	Supervision by LPCB Supervisory Service or Supervising Body may not be required, depending on the level of self-certification granted. At least one supervised base build sprinkler contract must be satisfactorily completed (as assessed by LPCB) before the firm can self certify this type of contract.	2	Intermediate Design Review	
3	Pre-calculated contracts	Supervision by LPCB Supervisory Service or Supervising Body may not be required, depending on the level of self-certification granted.	2	Basic Design Review Intermediate Design Review Inspection Review	Three x 1 day
	FHC	Supervision by LPCB Supervisory Service or Supervising Body.	1	FHC Design Review	
4	All work	Supervision not required, issue of LPS 1048 Certificate of Conformity by Contractor.	2	Basic Design Review Intermediate Design Review FHC Design Review Inspection Review	Two x 2 days
		<p><b><u>Issue of LPS 1048 Certificate of Conformity</u></b></p> <p>When a contract is supervised, the LPS 1048 Certificate of Conformity will be issued by the LPCB Supervisory Service or the Supervising Body. If the Contractor has been granted self-certification, the LPS 1048 Certificate of Conformity is to be issued by the Contractor.</p>			

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### 3.4 Supervision

Approval to Levels 1-3 requires third party supervision where specified and the Contractor is required to enter into a supervision agreement (SUP.F5) with one or more Supervising Bodies and/or the LPCB Supervisory Service (refer to Table 2).

The supervision process will be carried out in accordance with LPCB supervision procedure SUP.03. Table 2 gives details of the types of contracts that can be carried out and the supervision requirements for each approval level. Guidance note GN5/LPS 1048 gives details of which contracts require supervision.

A Contractor that requires supervision shall maintain an Installer Supervision Tracking Log BF663.

Where a contract comprises work that requires supervision and work that the Contractor can self-certificate, the complete contract must be fully supervised.

### 3.5 Personnel, Training and Competency

All personnel employed (directly or by sub-contract) must be able to demonstrate that they are fully trained and competent in the disciplines and skills appropriate to their role. Complete records of training and competence skills of personnel must be maintained, in particular:

- Design staff that carry out full hydraulic calculations must be fully trained in the use of in-house computer hydraulic calculation packages.
- All personnel engaged in the installation of pipework are expected to have been assessed for their competency by the installing company.
- All personnel engaged in the installation, testing and maintenance of specialist sprinkler equipment are expected to have been assessed for their competency by the installing company and where available attend the proprietary manufacturer's training.

### Design Verification and Validation

Depending on their level in the scheme, the Contractor is expected to ensure that all designs are verified, and that all extensions, alterations, installations and systems are inspected by qualified technical staff. The minimum number of technical staff required is given in Table 2. The scope of the qualifications is as follows:

<b>Qualification:</b>	<b>Covers:</b>
Basic Design Review	Pre-calculated work including water supplies
Intermediate Design Review	Base build designs
FHC Design Review	Full hydraulically calculated designs
Inspection Review	Inspection, testing and commissioning of contracts involving pre-calculated and FHC designs

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Note – The qualification requirements referred to in Table 2 may be waived up to 1 January 2008 for the design competence reviews and 1 January 2009 for the inspection competence review where the Contractor can demonstrate to the satisfaction of the LPCB that the personnel employed have the necessary levels of competence.

### **3.6 Competency Reviews**

The competence review process, together with its associated examination formats, examination questions, model answers and marking regime are overseen by an examination panel.

The examination panel comprises technical experts drawn from various organisations, such as:

LPCB/BRE  
InFires  
Trade Organisation(s)

### **3.7 Sub-contracting**

A Contractor cannot sub-contract work that they are not allowed to undertake at their current approval level in the LPS 1048-1 scheme.

The Contractor shall be fully responsible for the work of their sub-contractors.

Where sub-contractors are used:

- The quality of their designs, materials, equipment or workmanship is to be to the same standard as that of the LPS 1048-1 approved Contractor.
- Service and maintenance activities will be carried out by directly employed personnel, or be sub-contracted to other LPS 1048-1 approved Contractors. Where specialist equipment and plant is involved e.g. fire pumps, suction tanks, trace heating, alarm/indicating systems, the service and maintenance may be carried out by the manufacturer, their authorised agents or specialist companies.
- All work undertaken by such sub-contractors is to be reviewed and verified by qualified staff directly employed by the Contractor to ensure that the requirements of the scheme are met. Records are to be maintained for all work sub-contracted.

### **3.8 Equipment**

Where available, all specialist fire protection equipment used by the Contractor will be LPCB approved and procured directly from the manufacturer or his agent.

Training in the use and service of this equipment will be obtained from the manufacturer or his agent. All equipment will be used fully in accordance with manufacturer's instructions, its LPCB approval conditions, and the installation standard.

The Contractor should, where available, only use spare parts obtained from the manufacturers or their approved agents.

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### **3.9 Technical Data**

The Contractor will:

- have access to current technical data, including specifications, installation, commissioning and service/maintenance instructions from all manufacturers of specialist fire protection equipment installed or serviced.
- make this information readily available to all necessary personnel, especially field operations staff.
- maintain computer software packages for hydraulic calculations to the version compliant with the installation standard in use.
- carry out and record standardisation checks for hydraulic calculation packages on each workstation, where terminals are independent of a central server.

### **3.10 Sprinkler Systems Inspection and Maintenance**

The Contractor will offer an inspection and maintenance service to customers in accordance with the appropriate installation standard. The results of such inspections will be recorded and a copy provided to the building owner and/or occupier or agent.

The results of periodic testing will be compared with the original system requirements e.g. installation design flow rates, pump ratings, air pressures, in-fill rates, etc. to confirm that the system continues to provide protection commensurate with the occupancy and/or hazard class of the premises under review.

In the event that test results are found to be inadequate or that there are serious shortfalls in sprinkler protection, the Contractor shall notify the building owner and/or occupier or agent within 7 days. Examples of such serious shortfalls would be: change of hazard class, storage height not commensurate with density, unprotected areas, inadequate densities of discharge, pump performance shortfall, installation control valve un-serviceability, deterioration of town's main or pumped water supply etc.

### **3.11 Emergency Service**

The Contractor will provide an effective 24-hour emergency service for customers to ensure that appropriate remedial action can be undertaken on site within 24 hours.

Service and maintenance engineers are to have access to a sufficient range of approved spare parts to resolve emergency call-out situations.

### **3.12 Maintenance of Certification**

Certification of the Contractor is maintained by regular audits by LPCB to ensure that the requirements of the scheme continue to be met (see Appendix 2 for further details).

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### **3.13 LPS 1048 Certificates of Conformity**

An LPS 1048 Certificate of Conformity shall be issued for each extension, alteration, installation and system carried out in accordance with the LPS 1048-1 scheme requirements and Guidance Note GN4.

Certificates shall be completed in accordance with Guidance Note GN3.

### **3.14 Distribution of LPS 1048 Certificates of Conformity**

LPS 1048 Certificates of Conformity will be issued to the following:

- The building owner/occupier (requiring their representative's signature)
- LPCB

and, where appropriate, secured to the installation control valve assembly.

Where required and agreed by the Client, copies of the certificate may be issued to:

- Building control
- Fire brigade
- Insurance Company

In the case of multi-tenancy buildings:

- a. The facilities management department or
- b. The Centre Manager (for shopping centres)

Copies of the certificate are to be retained by:

- a. The Contractor
- b. The Supervising Body / LPCB Supervisory Service

### **3.15 Annual Returns**

The Contractor is to provide to LPCB details of the numbers of sprinkler heads and alarm valves it has installed between January 1<sup>st</sup> to December 31<sup>st</sup> each year. Annual returns to be made by 31<sup>st</sup> July of each following year.

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**Appendix 1 - List of acceptable installation standards and publications referred to:**

**A1.1 Installation Standards**

For the purpose of this scheme document, Installation Standard will mean, as appropriate, the current documents including the latest revisions of:

- a) LPC Rules for Automatic Sprinkler Installations (version 1), incorporating BS 5306: Part 2: 1990 - Specification for sprinkler systems, with LPC Technical Bulletins that are in force at the time, or
- b) For Life Safety systems only, BS 5306: Part 2: 1990, incorporating LPC Technical Bulletins 1, 2 and 20, providing no other Technical Bulletins are used to carry out the design, or
- c) LPC Rules for Automatic Sprinkler Installations (version 2), incorporating BS EN 12845 - Fixed fire fighting systems – Automatic sprinkler systems – Design, installation and maintenance, with LPC Technical Bulletins that are in force at the time, or
- d) For Life Safety systems only, BS EN 12845, incorporating LPC Technical Bulletins 201 and 202, providing no other technical bulletins are used to carry out the design, or
- e) BS 9251 - Sprinkler systems for residential and domestic occupancies – Code of practice, or
- f) NFPA 13 (excluding 13D and 13R), or
- g) FM Global Property Loss Prevention Data Sheets (excluding Residential Data sheets).

Note: Hybrid and individualised corporate or institutional specifications are not acceptable to LPCB for the purpose of certification.

If a Contractor wishes to certificate to another standard or set of installation standards they should contact the LPCB.

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## **A1.2 Publications**

- Application form F 015
- BRE Global – PN 100 – Complaints and Appeals Procedure
- BRE Global – PN 101 – Terms & Conditions
- BRE Global – PN 103 – Use of Marks
- BRE Global – PN 112 – Notification of change of particulars
- BS 5306: Part 2: 1990 – Specification for Sprinkler Systems
- BS 9251 - Sprinkler systems for residential and domestic occupancies – Code of practice
- BS EN 12845 - Fixed fire fighting systems – Automatic sprinkler systems – Design, installation and maintenance
- Contract Log F543
- GN3/LPS 1048– Guidance Note for the completion of LPS 1048 Certificates of Conformity
- GN4/LPS 1048– Issue of LPS 1048 Certificates of Conformity
- GN5/LPS 1048– Supervision requirements
- GN8/LPS 1048 – Transition Arrangements – Notification/Assessment Process (Note – not applicable after 1 January 2008 for design and design verification and after 1 January 2009 for inspection, testing and commissioning)
- GN10/LPS 1048 – Control of Departures
- GN11/LPS 1048 – Quality management system requirements
- Installer Supervision Tracking Log BF663
- ISO 9001:2000 - Quality management systems - Requirements
- LPC Rules for Automatic Sprinkler Installations (version 1), incorporating BS 5306-2: 1990, and all Technical Bulletins
- LPC Rules for Automatic Sprinkler Installations (version 2), incorporating BS EN 12845: 2004, and all Technical Bulletins
- PN111 – Generic Factory Production Control Requirements
- Quality Management Systems Certification Scheme - SD003
- QP5-3 – Non-conformities and observations
- SUP.03 – LPS 1048 Supervision procedure for supervised Contractors
- SUP.F5 – Supervision Agreement (pro forma)

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## **Appendix 2 – Surveillance Audits**

### **(a) LPCB Technical Surveillance Audits**

Contractors will be audited regularly for continued compliance with the requirements of this scheme document, the installation standards and their general standards of design, installation, testing, commissioning and servicing. The frequency and duration of the audits are dependent on the level in the scheme and whether supervision is provided by a Supervising Body or by the LPCB Supervision Service and are set out in Table 2.

The Contractor shall maintain a Contract Log F543 from which the LPCB will select the requisite number of contracts to sample at each surveillance audit in accordance with item 2 below.

Each surveillance audit will address 2 distinct areas:

1. Compliance with the relevant individual clauses of LPS 1048

All relevant clauses of the standard, identified on the planning matrix, will be audited over an 18 month continuous rolling programme.

2. Compliance with technical standard (and specification) applicable to individual contracts

Level 1 to 3 Contractors:

The firm shall arrange for the LPCB to inspect at least one completed sprinkler contract, selected by the LPCB, against the installation standard and design and layout drawings, at each surveillance audit.

Level 4 Contractors:

The firm shall arrange for the LPCB to inspect at least two completed sprinkler contracts, selected by the LPCB, against the installation standard and design and layout drawings, at each surveillance audit.

Should a Contractor not have completed sufficient contracts to enable the LPCB to sample the minimum number of contracts as detailed above for two successive surveillance visits (no more than a period of 12 months), their LPS 1048-1 approval may be withdrawn.

### **(b) Audit findings**

Where an audit has identified non-compliances with the scheme requirements or installation standard, they will be documented by the assessor as non-compliance reports (NCR) or observation reports (Obs). Written evidence is to be provided by the installer, in an agreed time-scale, of completion of the necessary corrective/preventative measures.

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**(c) Surveillance Audit Frequency - Unsatisfactory Performance**

Where the LPCB technical surveillance audit reveals significant non-compliances, additional surveillance visits may be required until the matters of concern have been satisfactorily resolved. See paragraph (d) below for Non-Compliances policy.

Some examples of the areas that may cause an increase in the frequency of audits would be:

- Design standards falling below acceptable levels
- Breaches of management systems and ISO procedures
- Poor execution of site work resulting in complaints to LPCB

When written complaints with supporting evidence are received by LPCB concerning the execution of any installation contract within the LPS1048 scheme, and there is a prima facie case, then they will be investigated. Such complaints will be drawn to the attention of the listed installing Contractor and where involved the Supervising Body. Contractors will be liable for reasonable costs incurred by LPCB investigating complaints, if found to be at fault.

**(d) Non-Compliances Policy**

Approval of Contractors is conditional on their satisfactory initial assessment and continued technical audits by LPCB according to the requirements of the scheme.

A Contractor who incurs a small number of minor non-compliances at each LPCB visit and completes effective corrective and preventative actions in the required time will continue to be approved under the scheme. If a Contractor fails to comply with the requirements of the scheme by incurring a large number of minor non-compliances and/or major non-compliance(s), one or more of the following actions will be taken by LPCB:

- A special visit will be carried out on the Contractor, normally within 30 days or at an agreed time after the non-compliances were raised, to verify that the necessary corrective actions have been completed. This visit will be at the cost of the Contractor.
- If the necessary corrective actions are not completed within the agreed time, the Contractor's certification will be suspended or withdrawn.

**(e) Suspension or Withdrawal of Approval**

The conditions under which LPCB may suspend or withdraw approval are set out in BRE Global Limited Terms and Conditions, publication PN101.

A Contractor may appeal against a decision by LPCB to suspend or withdraw approval using the procedure described in publication PN 100, Complaints and Appeals Procedure. During the appeal period, the approval remains suspended/withdrawn.

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### **Appendix 3 – Approval of Multisite Organisations** (new to version 4.1)

#### **Introduction**

The following procedure shall only apply to organisations that have more than one site approved in the LPS 1048-1 scheme and that meet the criteria set out in the entry criteria below, in addition to the appropriate requirements in other parts of the LPS 1048-1 scheme document.

#### **Application**

Organisations that wish to be approved to this procedure shall complete and submit an application form to LPCB and pay the appropriate fee.

#### **Entry criteria**

An organisation shall meet the following criteria to be eligible for consideration under this procedure.

It shall:

1. All sites shall belong to the same legal entity.
2. Have all sites undertaking sprinkler systems installation and/or servicing approved in the LPS 1048-1 scheme.
3. Have a minimum of two approved sites in the LPS 1048-1 scheme.
4. The organisation shall have the requisite number of qualified staff to ensure that all designs are verified and all sites are validated by qualified staff.
5. Have quality management system certification from LPCB complying with ISO 9001 and LPCB Guidance Note GN11 for all sites approved in the LPS 1048-1 scheme as a multisite organisation in accordance with ISO/IEC Guide 62, Annex 3. The same methods and procedures shall be used at all sites for the design, design verification, supply, pipe fabrication, installation, site inspection, testing and commissioning and servicing of fire sprinkler systems to ensure that all contracts are carried out in a consistent manner. The methods and procedures shall ensure conformity to the contract specification and installation standard. The quality management system must ensure that only appropriately trained and experienced personnel carry out functions that affect the quality and compliance of sprinkler systems.
6. Nominate one of its sites as the central office, at which quality and technical matters are planned, controlled and managed. The central office shall have the necessary processes and records to effectively monitor the compliance of all sites, and have the necessary authority to enforce close out of non-compliances within agreed timescales.
7. Nominate a responsible person, or persons, with adequate authority, to act as a representative(s) of the whole organisation in all matters relating to the LPS 1048-1 scheme. The representative(s) shall be responsible for ensuring that the organisation takes effective corrective action to close out non-compliances raised during LPS 1048-1 audits within the agreed timescales.

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**IMPORTANT NOTE** - The organisation shall understand that all its sites will be treated as a single organisation and that if due to the performance of one site, LPCB decide to suspend or withdraw LPS 1048-1 approval, this would result in the suspension or withdrawal of LPS 1048-1 approval for the whole organisation.

### Surveillance programme

The interval between surveillance audits to each site will be 9 months, subject to the satisfactory performance of the organisation. The frequency may be adjusted depending on the performance of the individual sites. In no case will the interval for each site exceed 12 months.

The audit frequency will not be changed from the requirements of Appendix 2, section (a) 2, until a full audit programme has been carried out to all sites to confirm compliance with the requirements for multisite approval.

The sampling of all Categories of Work allowed at each site should be covered over a three year period.

Clauses covered at central office and at each site carrying out installation and service contracts:

Clause	Description	Covered at	
		Central office (system requirements)	Sites (sampling jobs)
3.1	Installation Standards		ü
3.2	Management System Requirements	ü	
3.4	Supervision		ü
3.5	Personnel, Training and Competency	ü	ü
3.7	Sub-contracting		ü
3.8	Equipment		ü
3.9	Technical Data		ü
3.10	Sprinkler System Inspection and Maintenance		ü
3.11	Emergency Service		ü
3.13	LPS 1048 Certificates of Conformity		ü
3.14	Distribution of LPS 1048 Certificates of Conformity		ü
3.15	Annual Returns	ü	
Appendix 1	Design		ü
	Design verification		ü
	Site inspection		ü
	Testing & commissioning		ü

Note - If the central office also undertakes installation and/or servicing work, the appropriate clauses listed in column 4 of the table above will also be covered.

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### **Six-monthly meetings**

At intervals of approximately six-months, there shall be a meeting, either at the LPCB offices in Garston or at one of the organisation sites, between the organisation's nominated representative(s) and the LPCB LPS 1048-1 Scheme Manager, to review the performance of the organisation in the LPS 1048-1 scheme during the previous period. A representative of the LPCB Quality department may also be present, if required. In the case of the first meeting, the review shall deal with the results of audits carried out from the time the multisite approval was granted.

At the meeting the organisation shall demonstrate that it has taken appropriate and effective corrective and preventive action to close out all non-conformance and observation reports issued during audits to sites carried out since the previous management meeting, or in the case of a first meeting, from when multisite approval was granted. When non-conformities are found at any individual site, either through the organisation's internal auditing or from LPCB audits, the organisation shall carry out an investigation to determine whether other sites may be affected. The organisation shall review the non-conformities to determine whether they indicate an overall system deficiency or not. If they are found to do so, corrective action should be performed both at the central office and at the individual sites. If they are found not to do so, the organisation shall demonstrate the justification for limiting its follow-up action.

The meeting shall follow a set agenda to ensure that the meeting is structured and covers all necessary items. A review of Customer Complaints received by the organisation during the review period shall be carried out. An audit of the LPS 1048-1 system clauses will also be carried out. Records of the meeting shall be produced by LPCB and issued to the organisation. The records shall identify any actions required by the organisation or the LPCB.

A decision will be made by LPCB at the meeting whether the current audit frequency should be adjusted, up or down, depending on the performance of the organisation in the LPS 1048-1 scheme. The surveillance programme may vary for each site depending on its performance. It is expected that the meeting would last no more than half a day.

### **Approval Certificate**

A single LPS 1048-1 approval certificate will be issued to the organisation with the name and address of the central office and a list of LPS 1048-1 approved sites. The approval level of each office will be shown for each site.

### **Listing**

The listing of the organisation in Volume 1, Part 5, Section 1.1, of the Red Book will follow a similar format to that of the approval certificate. Listing fees will be based on the current schedule of fees P0027 for multisite organisations.

### **Adding sites to the existing multisite approved organisations**

Prior to the LPS 1048-1 assessment, a new office of an existing LPS 1048-1 company, approved as a multisite organisation, shall be LPCB ISO 9001 certificated. In addition, the organisation shall provide confirmation that the requirements of GN11 have been fully addressed and the requisite records are available at the new office.

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The assessment audit of the new office will consist of a review of records to ensure that the LPS 1048-1 scheme requirements have been met and sampling (design check and site inspection) of a number of contracts carried out by the new office. The number of contracts sampled will depend on the approval level being applied for by the new office.

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## **GLOSSARY OF DEFINITIONS USED**

### **Base Build**

There are usually two types of base build contract, shopping centres and multi-storey/high-rise buildings. For shopping centres, the base build contract includes the provision of water supplies, trunk mains and main distribution pipes up to and including the zone valves and sprinkler protection to the malls (if covered) and Landlord's areas. For multi-storey/high-rise buildings, the base build contract includes the provision of the water supplies, trunk mains and main distribution pipes up to and including section/zone valves for each floor or floor section and sprinkler protection to landing and amenity areas.

### **Fully calculated**

Term applied to an installation in which all the pipework is sized by hydraulic calculation. [definition taken from BS EN 12845: 2004 clause 3.29]

### **Install**

Install as referred to in this scheme document will be deemed to include the following responsibilities and activities, carried out by the Contractor in respect of each sprinkler contract.

- a. The in house day-to-day management and progressing of the contract including design, procurement, site erection, commissioning and hand-over, including co-ordination with the client, and authorities having jurisdiction and other contractors where applicable.
- b. Purchasing of equipment, materials and labour, and inspection and storage of equipment and materials.
- c. Control by the Contractor of on-site erection teams, whether directly employed or sub-contracted by the Contractor, and the progressive regular inspection of work, final inspection and testing, commissioning, service and maintenance.

### **Installation Standards**

See Appendix 1.

### **Installation (sprinkler installation)**

Part of sprinkler system comprising a control valve set, the associated downstream pipes and sprinklers. [definition taken from BS EN 12845: 2004: clause 3.34]

### **Life safety systems**

Term applied to sprinkler systems forming an integral part of measures required for the protection of life. [definition taken from BS EN 12845: 2004: clause 3.40]

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## **Non-compliance**

### **(a) Listed on LPS 1048 Certificates of Conformity**

A departure from the installation standard listed on the LPS 1048 Certificate of Conformity as a non-compliance. The definitions of minor and major are as follows:

Minor - A departure from the installation standard that will not reduce the effectiveness of the sprinkler protection to control or extinguish a fire.

Major - A departure from the installation standard that will significantly reduce the effectiveness of the sprinkler protection to control or extinguish a fire.

Note – a number of minor non-compliances may when taken together constitute a major non-compliance.

If the Contractor is unsure if a non-compliance is either minor or major, they should consult with LPCB before a commitment is made to issue a Certificate of Conformity.

### **(b) Raised during audits**

Non-compliance (sometimes referred to as non-conformity) is used to cover instances where, either during assessment or surveillance audits, the Contractor has not complied with the scheme requirements or the installation standard. Definitions for minor and major non-compliance are described in QP5-3.

## **Pre-calculated**

Term applied to an installation in which the pipes downstream of the design point(s) have been previously sized by hydraulic calculation. Tables of diameters are given. [definition taken from BS EN 12845: 2004: clause 3.49]

## **Sprinkler Contract**

For the purposes of this document, Sprinkler Contract means a contract undertaken by a Contractor to design, procure, fabricate, install and commission an alteration or extension to an existing sprinkler system or a new sprinkler installation or system, and completed to the requirements of the installation standard.

## **Sprinkler System**

The entire means of providing sprinkler protection in the premises comprising one or more sprinkler installations, the pipework to the installations and the water supply/supplies. [definition taken from BS EN 12845: 2004: clause 3.72]. Does not include town mains external to the legal boundary of the premises, inland water courses such as lakes or canals and private reservoirs. Designed to one of the acceptable installation standards listed in Appendix 1.1.

## **Sprinkler System Alteration**

Modifications to an existing sprinkler system or installation.

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### **Sprinkler Systems Contractor**

A Company established and registered in the UK or Ireland whose principal business, or that of a properly established division of the company, is the design and installation of sprinkler systems and servicing if undertaken.

### **Sprinkler System Extension**

A sprinkler system extension comprises additional sprinkler protection connected to an existing sprinkler system or installation.

### **Technical Staff**

Personnel employed by the Contractor or by the Supervising Body who have the appropriate qualifications and experience for one or more of the functions of design, installation, commissioning, inspection and maintenance.