STATEMENT OF CAPABILITY

AVVIQ consulting

AVVIQ Consulting Limited

14a High Street, Wendover, Bucks HP22 6EA – Tel: 01296 929500

Introduction:

AVVIQ Consulting Limited is a combined team of talent providing a unique range of services to assist their clients in developing and implementing cost effective and relevant fire detection, fire prevention and fire protection strategies.

AVVIQ Consulting has a team of full-time consultants comprising individuals with complementary expertise. The team's experience and knowledge include fire science, fire detection/protection systems' engineering, fire protection/safety systems auditing, hazard assessment, major incident firefighting, system commissioning and training. The expertise in the team is supplemented by the use of associated consultants in specialist areas such as insurance or expert witness cases. Thus, AVVIQ can provide a balanced, independent analysis of all fire hazard management problems and offer practical solutions based on hands-on experience.

This document has been compiled to illustrate AVVIQ's capability, experience and expertise in the Fire Engineering market to deliver specialist design works to the following market sectors - retail, commercial, residential, manufacturing, warehousing, entertainment, industrial, special risk and petrochemical.

The scope of services generally provided by AVVIQ Consulting includes:

- **System Design**
- **Site Visits/Assessments**
- **Third Party Audits**
- **Building Surveys**
- **Testing and Commissioning**
- **Industry and Company Guidance**
- **Fire Risk Assessment**
- **Expert Witness**
- **Training and Seminars**
- **Fire Training Grounds**

Some of our Technical Achievements are provided as a guide to the areas of our expertise, the services we specialise in and can offer.

AVVIQ's consulting engineers have undertaken projects for some of the world's leading companies which includes British Airways, KLM, John Lewis Partnership, Primark, LIDL, Starwood, Marriott, BBC, Pfizer, INTU, BPA, BP, Shell, Total and Royal Estates to name just a few.

System Design:

The consultancy team have carried out numerous detailed fire systems designs for both Fire Detection and Fire Suppression Systems. These have been undertaken on an entirely independent basis and on occasions have been carried through to installation, supervision, commissioning, O&M manual development, testing and training.

From our involvement with significant projects in almost every market sector, our design engineers have gained extensive experience in designing all types of fire suppression and detection systems. These systems include -

- Fixed Fire Extinguishing Systems
- Automatic Sprinkler Systems
- Deluge Systems
- Gas and Detection Systems
- Hydrant Mains
- High and Low expansion Foam systems
- Water Mist Systems
- Foam Systems
- Dry powder
- Kitchen Protection Systems
- Oxygen Reduction Systems
- Detection and High Sensitivity Systems

We use European and American Standards together with our knowledge of emerging technologies such as high-pressure water mist, we provide independent advice recommending effective systems and solutions that incorporate all local authority and insurance requirements. We have also developed test protocols to demonstrate the equivalence of engineered solutions for clients with requirements that cannot be met by existing standards.

For the majority of our projects, we generally provide the following range of services -

- *Conditional Survey*
- *Feasibility Study*
- *GA Drawings, Schematic and Technical Specification*
- *Tender Appraisal and Interviews*
- *Drawing and Calculation Reviews*
- *Site Inspection Visits*
- *O&M Manual Review*
- *PC Handover Visit and 12month Warranty Inspection*

Site Visits/Assessments:

Many of our projects require independent site inspection and verification visits at various stages throughout construction programmes, to verify the progress of installation works.

Inspections are conducted during construction and on system completion the final verification requires a stringent methodical process with an audit trail to certificate completion. Following an inspection visit, a comprehensive report will be issued which contains a list of corrective actions/snags. The report would include any deviations from standards and a review of the test certification.

Third Party Audits:

One of the many services provided by AVVIQ are Third Party Audits, involving condition surveys and a review of hazard for existing buildings and sites where sprinkler installations have been installed. To accord with the current LPC rules and regulations for Automatic Sprinkler Installations, it is now a requirement under LPCB Technical Bulletin 203 that sprinkler systems shall be periodically inspected at least once a year by an Independent Third Party – ***not*** the system owner, building occupier, system installer, or the sprinkler service and maintenance provider.

It has been discovered that in many existing facilities the internal occupancies, operations and layouts continue to be changed without modification to the sprinkler system, which unknowingly, is impacting on the existing sprinkler system design thus rendering the installations inadequate which in some cases could be considered un-insurable.

AVVIQ undertake condition surveys and inspections that will assess as to whether or not the existing sprinkler systems remain in accordance with the appropriate standards and that the system designs are adequate enough to meet with the requirements of the risks as they now stand. When AVVIQ undertake these independent Third Party Audits a fully detailed report is provided highlighting any inadequacies or deviations identified which are reported back for corrective action as appropriate.

Building Surveys:

We currently undertake Building Fire Safety Surveys and Fire & Life Safety Design Philosophies for a multitude of clients – residential, educational, and commercial.

Our works refer to the Building Regulations Approved Document Part B (referred to as part B) – Fire Safety. The most up to date version is 2019 but it is recognised that earlier versions will be those applicable at the time of build for the properties audited.

The inspection programme completed by our consultants generally includes the following areas –

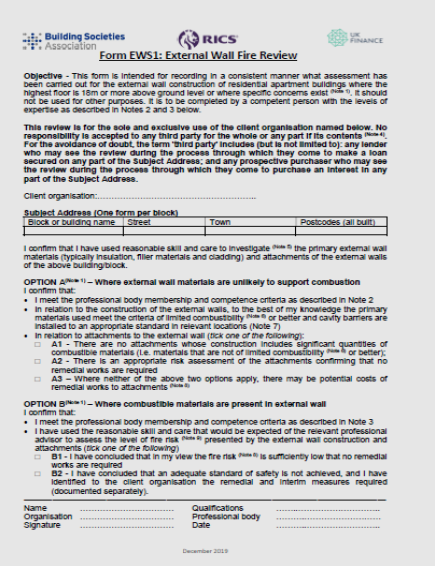
- Fire linings
- Internal fire spread (structure)
- Construction of compartment walls and compartment floors
- Compartment walls between buildings
- Cavities
- Provision of cavity barriers
- Provision of compartmentation
- Openings in compartment walls separating buildings or occupancies including Fire Doors
- Openings in other compartment walls, or in compartment floors
- Fire-stopping
- Resisting fire spread over external walls including cladding and balconies.

Normally our works are non-intrusive and only include areas where access can be obtained, such as riser shafts. However, we can employ specialist contractors to remove cladding and unveil cavities or compartmentation boundaries where required.

In December 2019, The Royal Institution of Chartered Surveyors (RICS), the Building Societies Association (BSA) and UK Finance launched the **External Wall Fire Review *(EWFR)*** process to assist in overcoming many of these difficulties. This review was developed through extensive consultation and collaboration with a wide range of stakeholders which included fire engineers and other cross industry representatives.

The new External Wall Fire Review process will require a fire safety assessment to be conducted by a suitably qualified professionals which will afford assurance for lenders, valuers, residents, buyers, sellers and all other interested parties.

AVVIQ have a team of experts who work closely with the building professionals and financial institutions and have the required levels of competency and experience to undertake External Wall Reviews and provide the completed EWS1 Form documentation.



Building Societies Association · RICS · UK FINANCE

Form EWS1: External Wall Fire Review

Objective - This form is intended for recording in a consistent manner what assessment has been carried out for the external wall construction of residential apartment buildings where the highest floor is 18m or more above ground level or where specific concerns exist (Note 1). It should not be used for other purposes. It is to be completed by a competent person with the levels of expertise as described in Notes 2 and 3 below.

This review is for the sole and exclusive use of the client organisation named below. No responsibility is accepted to any third party for the whole or any part if its contents (Note 4). For the avoidance of doubt, the term 'third party' includes (but is not limited to): any lender who may see the review during the process through which they come to make a loan secured on any part of the Subject Address; and any prospective purchaser who may see the review during the process through which they come to purchase an interest in any part of the Subject Address.

Client organisation:.....

Subject Address (One form per block)

Block or building name	Street	Town	Postcodes (all built)

I confirm that I have used reasonable skill and care to investigate (Note 5) the primary external wall materials (typically insulation, filler materials and cladding) and attachments of the external walls of the above building/block.

OPTION A (Note 1) – Where external wall materials are unlikely to support combustion
I confirm that:
- I meet the professional body membership and competence criteria as described in Note 2
- In relation to the construction of the external walls, to the best of my knowledge the primary materials used meet the criteria of limited combustibility (Note 6) or better and cavity barriers are installed to an appropriate standard in relevant locations (Note 7)
- In relation to attachments to the external wall *(tick one of the following)*:
  - ☐ A1 - There are no attachments whose construction includes significant quantities of combustible materials (i.e. materials that are not of limited combustibility (Note 6) or better);
  - ☐ A2 - There is an appropriate risk assessment of the attachments confirming that no remedial works are required
  - ☐ A3 – Where neither of the above two options apply, there may be potential costs of remedial works to attachments (Note 8)

OPTION B (Note 1) – Where combustible materials are present in external wall
I confirm that:
- I meet the professional body membership and competence criteria as described in Note 3
- I have used the reasonable skill and care that would be expected of the relevant professional advisor to assess the level of fire risk (Note 9) presented by the external wall construction and attachments (tick one of the following)
  - ☐ B1 - I have concluded that in my view the fire risk (Note 9) is sufficiently low that no remedial works are required
  - ☐ B2 - I have concluded that an adequate standard of safety is not achieved, and I have identified to the client organisation the remedial and interim measures required (documented separately).

Name ..... Qualifications .....
Organisation ..... Professional body .....
Signature ..... Date .....

December 2019

Testing and Commissioning:

Our engineers carry out firewater network and system testing for numerous clients on an international basis. These tests include -

- Fire Pump Tests
- Firewater network and hydrant systems
- System flow measurement
- System application rate testing
- System hydraulic capability testing
- Fire scenario flow and pressure testing
- Foam solution proportioning and expansion tests
- Equipment appraisals and factory acceptance testing

We have the full range of hydrant testing equipment and ultrasonic flow meters.

These visits can also include inspection, testing, and certification of fire and life safety systems, through to commissioning and witness testing. Our engineering team is fully conversant with the testing and maintenance requirements of UK, European, US and International standards.

System testing can be anything from local fire alarm panels through to full scale foam testing in storage tanks.

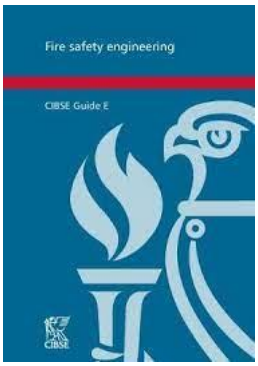
Our engineers also undertake pipework integrity testing, which is of particular use for sprinkler system 25-year inspections.

Industry and Company Guidance:

AVVIQ Consultants have been responsible for developing or contributing to the following international guidance. These represent the latest best practices in industry and are critical guidance notes for carrying out internal audits as well as for direct comparison with in-house philosophy documents.

A sample of the documents are illustrated below -

CIBSE Guide E

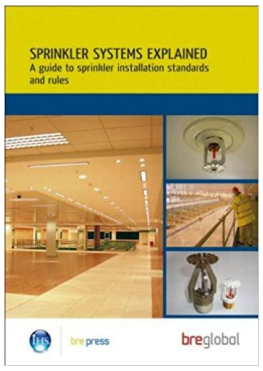


Guide E provides a useful concise handbook of fire safety engineering which is of proven value to professional fire engineers.

Our consultants have recently provided technical assistance to CIBSE to redraft Chapter 11 of Guide E, titled Fire Suppression.

This section provides engineering guidance to CIBSE members for sprinkler, foam, gaseous and water mist systems.

BRE Sprinkler Systems Explained: A Guide to Sprinkler Installation Standards and Rules



Intended as an aid to understanding fire sprinkler installations and the LPC Rules to which they are designed. Seeks to dispel some preconceptions. Addresses how a sprinkler system works, what it is expected to do and why they are installed

AVVIQ consultants wrote the entire publication for the BRE, available from their bookshop (BR 503)

Starwood Hotel Group - NFPA Fire Suppression Systems handbook

The purpose of Fire Protection Systems Handbook is to familiarise hotel engineering staff and other interested personnel with the components, design, maintenance, operation, testing, and inspection of common fire protection, detection, and suppression systems.

Our consultants wrote and illustrated the fire suppression systems handbook for Starwood which was a great compliment awarding a UK company a contract to write company guidance on American standards.

Fire Risk Assessment:

The team at AVVIQ provide specialist risk assessments and integration of HSE standards.

We provide a competent and structured approach to Fire Risk Assessment. Our experienced consultants have a clear understanding of all the principles of fire safety and the methodology that is adopted to ensure comprehensive reporting covering all aspects of fire safety.

We follow the guidelines of PAS 79 – 2012, which include -

General Information

1. The premises
2. The occupants
3. Occupants especially at risk from fire
4. Fire loss experience
5. Other relevant information
6. Relevant fire safety legislation

Fire Hazards and their Elimination or Control

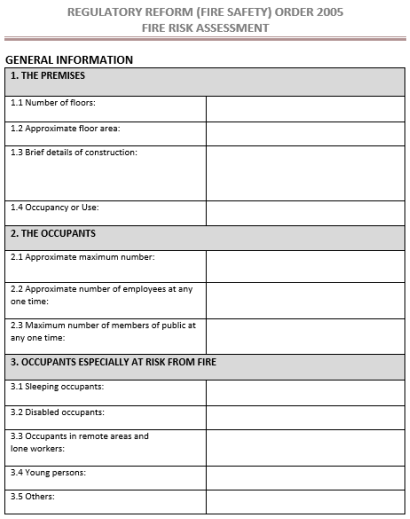
7. Electrical sources of ignition
8. Smoking
9. Arson
10. Portable heaters and heating installations
11. Cooking
12. Lighting
13. Housekeeping
14. Hazards introduced by outside contractors and building works
15. Dangerous substances
16. Other significant fire hazards that warrant consideration including process hazards that impact on general fire precautions

Fire Protection Measures

17. Means of escape from fire
18. Measures to limit fire spread and development
19. Emergency escape lighting
20. Fire safety signs and notices
21. Means of giving warning in case of fire
22. Manual fire extinguishing appliances
23. Relevant automatic fire extinguishing systems
24. Other relevant fixed systems and equipment

Management of Fire Safety

25. Procedures and arrangements
26. Training and drills
27. Testing and Maintenance
28. Records



REGULATORY REFORM (FIRE SAFETY) ORDER 2005
FIRE RISK ASSESSMENT

GENERAL INFORMATION

1. THE PREMISES	
1.1 Number of floors:	
1.2 Approximate floor area:	
1.3 Brief details of construction:	
1.4 Occupancy or Use:	
2. THE OCCUPANTS	
2.1 Approximate maximum number:	
2.2 Approximate number of employees at any one time:	
2.3 Maximum number of members of public at any one time:	
3. OCCUPANTS ESPECIALLY AT RISK FROM FIRE	
3.1 Sleeping occupants:	
3.2 Disabled occupants:	
3.3 Occupants in remote areas and lone workers:	
3.4 Young persons:	
3.5 Others:	

Expert Witness:

In the aftermath of a serious fire incident, it is inevitable that there will be an inquest into the event and ultimately as to where the responsibility lies. It is therefore of critical importance to undertake a fully comprehensive investigation and establish the true facts as to the exact reasons for the incident occurring, which can only be achieved impartially through an Expert Witness with capability, experience, and knowledge in the field.

Expert Witness is one of the many services that AVVIQ Consulting provide and over the years have dealt with many cases in both the private and public sectors providing independent expert opinion and advice to the to their clients and the courts.

The causes of serious fire can be the result of many failings, defects, or issues and therefore it is of the utmost importance to engage with experts having specific and relevant expertise in every area of Fire Engineering to cover every event or incident.

These could include -

- Identifying a lack of fire precautions and procedures in buildings that may be under construction, in redevelopment or undergoing major refurbishment where bad design, workmanship and management is identified.
- Identifying where there has been a breach of the requirements of the Building Contract or a failure in achieving the required levels of fire safety as laid down in statutory regulations.
- Omission of fire protection from places where it should be, inadequate construction or installation where the fire protection has been provided, and manufacturer's or supplier's claims of product performance not subject to proper scrutiny.
- Identifying inadequacies and failings with any of the installed fire protection systems and applications and where there has been a failure to service, maintain and upgrade systems particularly where there has been a change of risk.
- Identifying failings in building materials i.e cladding, fire stopping, fire doors etc.
- Contractual disputes arising between clients and systems providers particularly where deviations and departures from specification have occurred in both systems design and products provided.

AVVIQ specialise in working closely with clients who have fire safety issues, whether they be civil or criminal matters and can provide expert support arising out of construction defects or other issues where there is exposure to potential prosecution.

Our team of experts work closely with the Legal Profession in providing advice, technical support and opinion, both in and outside of court on a particular case in question. They are highly sought after by the legal profession to act as independent expert advisors or expert witnesses to help avoid or resolve disputes. They have unparalleled experience with the preparation and presentation of scientific and engineering evidence as and when required by the High Court and The International Court of Arbitration.

Training and Seminars:

AVVIQ have developed, run, and delivered numerous specialist seminars and training courses on a variety of Fire Hazard Management topics, on an international basis. These have been held as both open and in-house events with representatives of more than 70 companies attending.

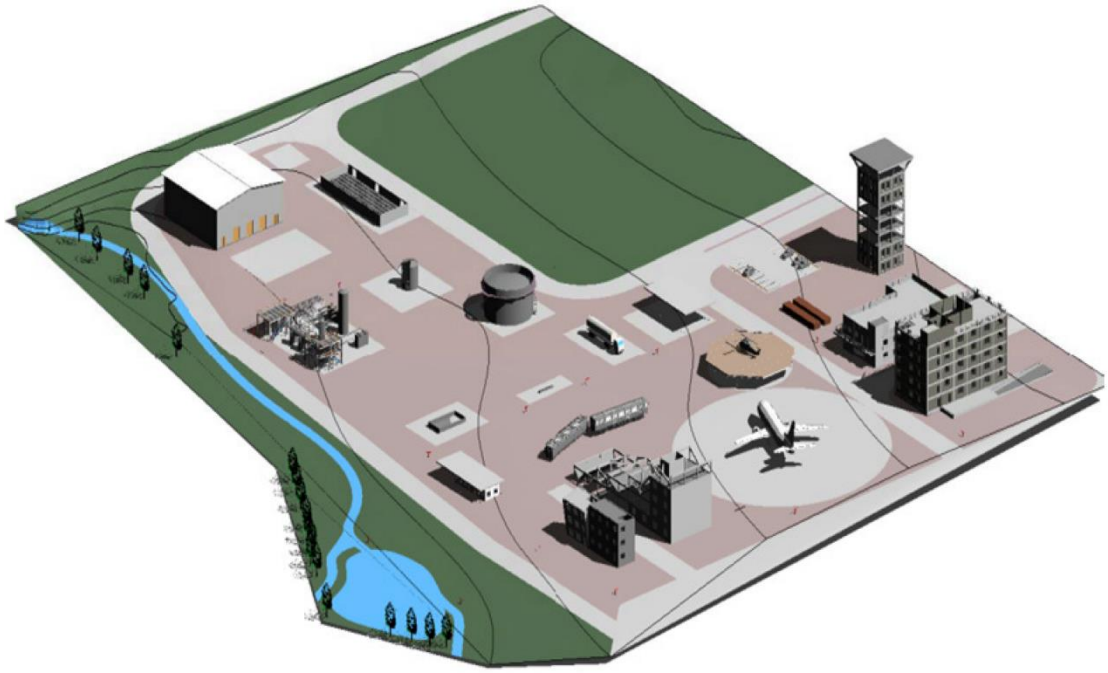
Additionally, in house and bespoke seminars have been held for numerous clients also on an international basis.

Courses are also run on behalf of the UK based but internationally recognised Loss Prevention Council on Sprinkler Systems, Automatic Fire and Gas Detection Systems, Special Hazards, and Fire Hazard Management. AVVIQ carry their consultancy work right through to implementation, which includes hands-on training of operators to use the equipment and systems correctly and the development of specialist courses as required. Often these courses are held at our client's premises.

Fire Training Ground Design:

Through its network of associates, AVVIQ has extensive experience of designing, commissioning, and operating Fire Training Grounds. These include specialist facilities for hydrocarbon processing, onshore and offshore risks, and other related activities.

We have designed, project managed, implemented, and commissioned training facilities for several customers on an international basis. In each case the training simulators were custom designed to suit local potential incident scenarios.



Technical Achievements:

The AVVIQ team of consultants have been involved in many technical achievements across all industry sectors.

- Contributed to the production of the Active Fire Protection Systems Handbook for fixed fire protection of all hotel complexes within the Starwood Hotel Group, which was based upon NFPA Standards. The handbook is an indication of the confidence expressed by ITT Sheraton, when asking a UK based company to write a book based on American Fire Protection Standards.

- Selected by the BRE/LPC, as part of a small team, to write a publication titled Sprinkler Systems Explained: A Guide to Sprinkler Installation Standards and Rules (BR 503).

- Chosen by CIBSE to author and plan for the current redraft of CIBSE Guide E – Fire Suppression: 2019.

- Technical contributors to the London Assembly Planning Committee report titled Never again: Sprinklers as the next step towards safer homes – calling for a reduction in the height, from 30m to 18m, where AFSS need to be installed in buildings.

- Recently part of the review team for CIBSE regarding the amendments to ABD, where the height for AFSS to buildings was reduced further to 11m.

- Undertaken a series of live fire tests in archive storage for the University of Oxford, leading to the creation of bespoke water mist and sprinkler design criteria that has received third party accreditation by the LPCB and Warrington Fire.

- AVVIQ consultants were employed by the British Government's Health and Safety Executive, to provide a design solution to a very complex research and development project, the design of a waterspray system which can substantially reduce explosion overpressures in off-shore platforms to survivable limits. The test results were featured on Tomorrows World, a British television programme.
