



Fire Prevention on Construction Sites & Buildings undergoing renovation

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Objectives of the Joint Code of Practice

- **Prevention of fires on construction sites**
 - Design out the risks of fire
 - Take simple precautions
 - Adopt safe working practices
 - All parties work together
-
- Appoint Site Fire Safety Co-ordinator who will:-
 - Ensure the Site Fire Safety Plan is understood and complied with
 - Implement and monitor hot work permits
 - Weekly checks of fire fighting equipment and alarms
 - Weekly inspections of escape routes, fire brigade access, & temporary emergency lighting



Section 5 – Design Stage

Sections 1-4: Objectives, Compliance Introduction and definitions

Requirement to work with (PSDS/PSCS) co-ordinator.

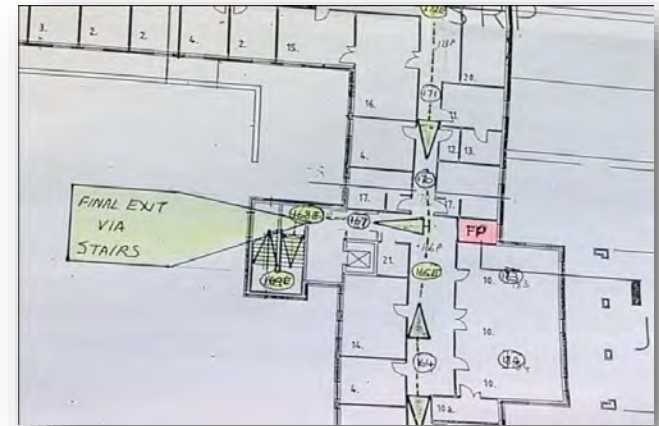
Design must consider the following:

- Use of non-combustible and non-flammable materials
- Materials and methods that avoid hot work
- How to prevent spread of smoke and fire
- Safe evacuation routes
- Early use of fire fighting and fire alarm systems

Section 6 - Construction Phase

Main Contractor shall appoint a competent person to:

- Assess the fire risk
- **Create a Site Fire Safety Plan**
- **Implement the Plan** for the life of the project
- Draw up a Fire Safety Plan detailing:-
 - Training of site operatives and allocation of responsibilities
 - Fire detection and alarm systems
 - Location of smoking areas
 - Hot work permit regime
 - Location and construction of temporary buildings
 - Fire escape and evacuation plan
 - Fire brigade access
 - Instructions to site personnel in the event of fire
 - Security measures to minimise arson risk
 - Material storage and waste regime



Site Fire Safety Co-ordinator

- **Ensure the Site Fire Safety Plan is understood and complied with**
- **Implement and monitor hot work permits**
- **Weekly checks of fire fighting equipment and alarms**
- **Weekly inspections of escape routes, fire brigade access, temporary emergency lighting**
- **Fire brigade liaison including familiarisation visits**
- **Liaise with site security personnel**
- **Maintenance of fire protection equipment**
- **Written record of all training, fire patrols, and fire drills**
- **During fire alarms ensure all staff and visitors report to assembly points**
- **Promote a safe working environment at all times**

Section 7 – Liaison with Fire brigade

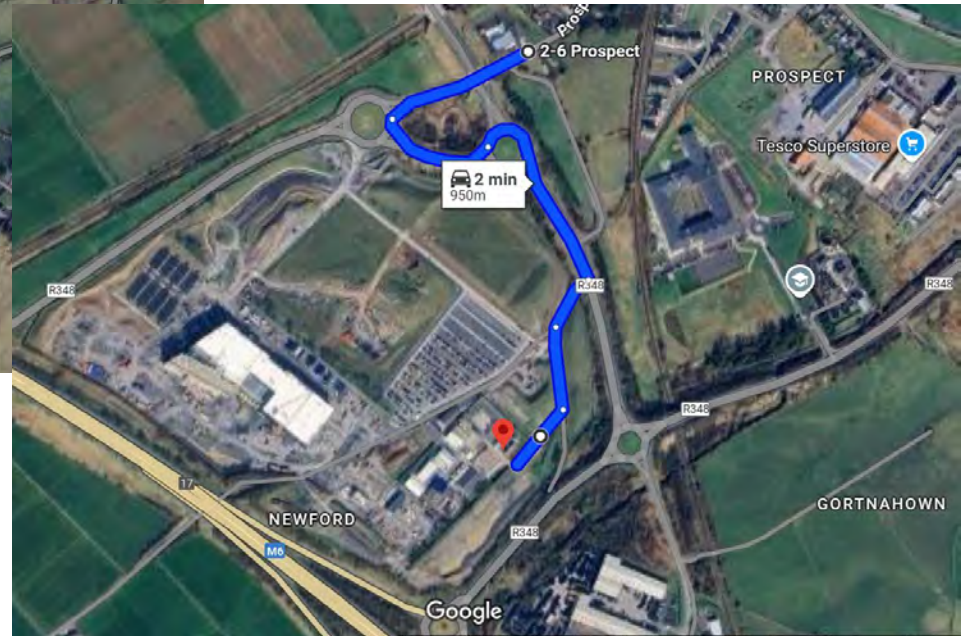
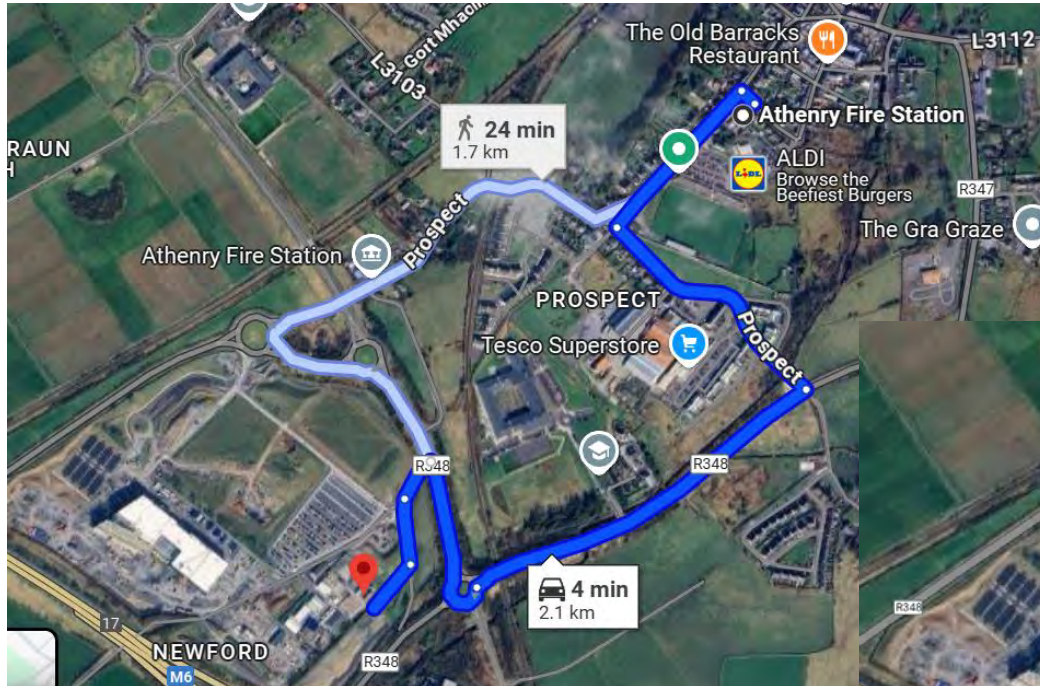
- **Designers to liaise with fire brigade on site access**
- **Principal Contractor provide fire brigade with site plans**
- **Establish response times**

The local crews need training,
they can provide feedback to management



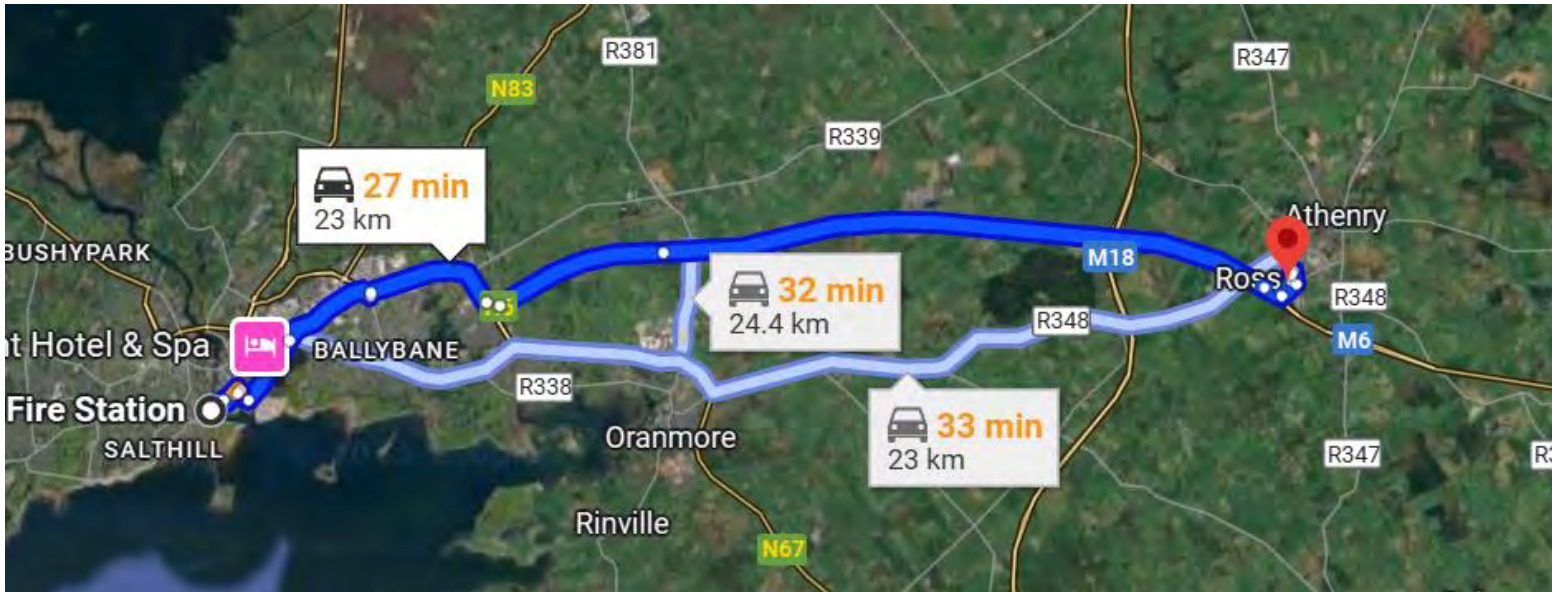
Section 7 – Liaison with Fire brigade

First Station Response Times



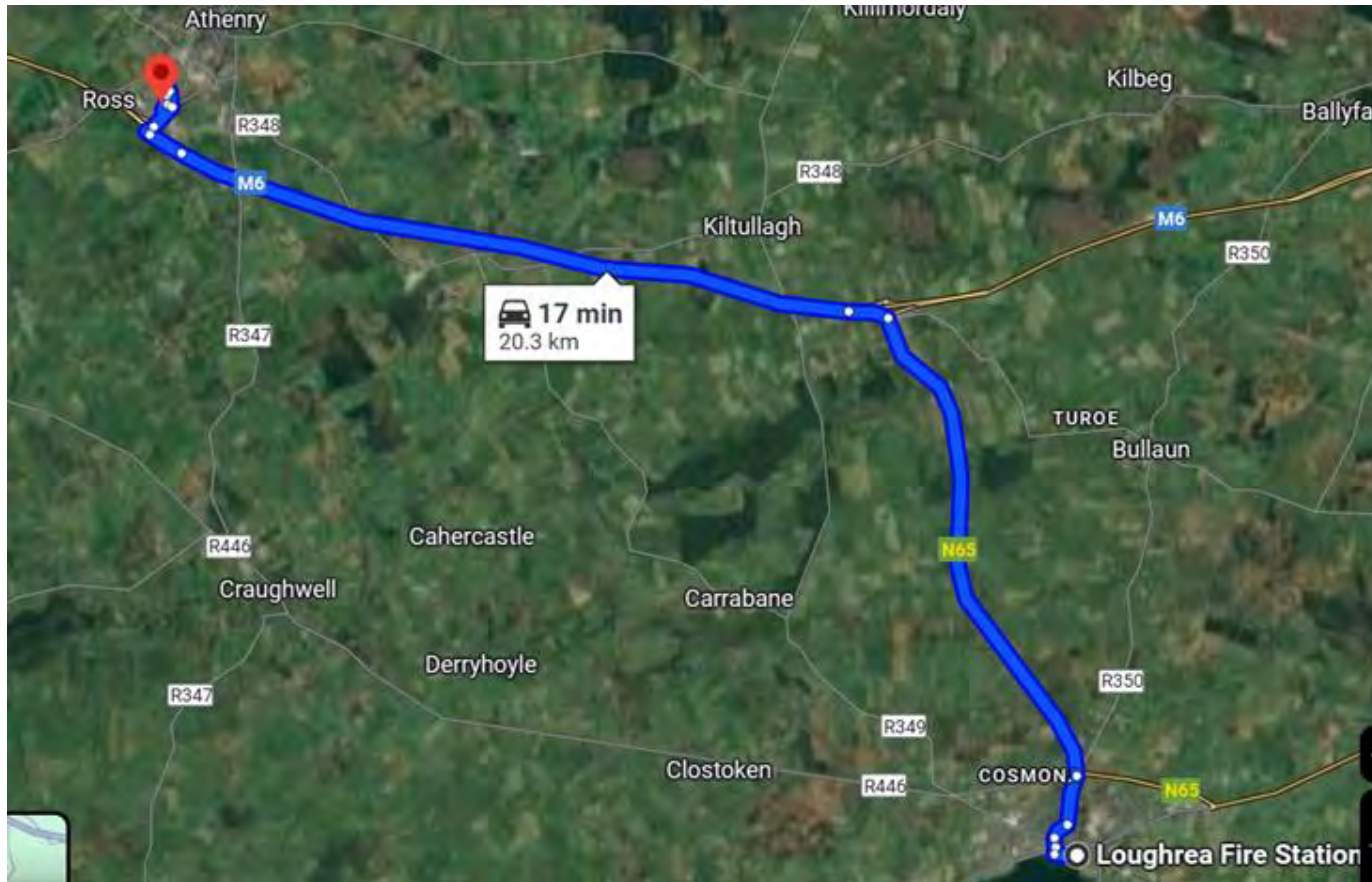
Section 7 – Liaison with Fire brigade

Next Station Response Time ?



Section 7 – Liaison with Fire brigade

Next Station Response Time ?



Section 8 - Emergency Procedures

- Establish means of giving fire warning
- Temporary wired or wireless systems promoted over manually operated systems
- Display written emergency procedures.
- Clear access to site at all times
- Temporary emergency lighting prior to installing fixed systems
- Clear signs indicating;
 - Fire access routes
 - Escape routes
 - Dry riser inlets
 - Fire extinguishers
- Must consider non-English speaking workers



Section 9 – Fire Protection

The project should be designed and planned to achieve the **early installation** and operation of:

- ☐ Permanent fire escape stairs/ Internal fire compartments
 - ☐ Early fire stopping on modular buildings/ Fire protection to structural steelwork
 - ☐ Fire fighting shafts/ Lightning conductors
 - ☐ Automatic fire detection systems/Automatic sprinkler systems
 - ☐ Automatic detection and extinguishing systems for expensive equipment or plant
-
- **Dry and wet risers**
 - **Ensure adequate water supply for fire fighting**
 - **All hydrants marked and clear of obstruction**
 - **Appropriate extinguishers for distribution panels and electrical equipment**
 - **Fire checks at the end of each shift or day**
 - **Where 24 hour security fire checks throughout the night and over holidays and weekends**
 - **Permanent occupancy not permitted without prior approval from local authority**
 - **Construction workers must not live on site and any caravans must be separated by suitable hoarding.**

Section 10 - Temp. Covering Mats



- Picture 1 - Safety netting is used to prevent objects falling onto passers-by. However it must be of fire-retardant material or will aid the rapid spread of fire.



- Picture 2 – typical floor coverings, again these must not contribute to the spread of fire.

Section 10 - Temp. Covering Mats



Section 10 - Temp. Covering Mats

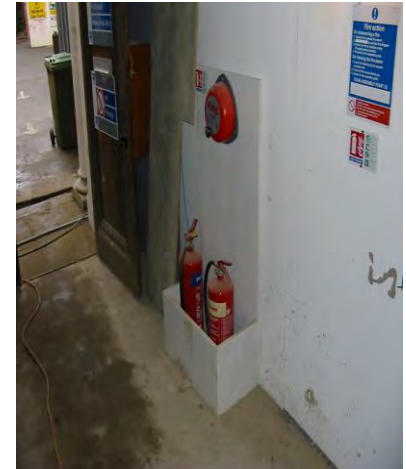


Cardboard protecting wall heater

Foam on timber door frame

Section 11 – Portable Fire Extinguishers

- Site personnel trained to use extinguishers
- Must be adequate number of extinguishers on site
- **Must be located in conspicuous positions near exits on each floor**
- All extinguishers must be serviced annually and service date recorded
- Ongoing review of adequacy of extinguishers as work progresses
- **“Ride on” site plant to carry own extinguishers**



Section 12 – Security

Most effective measure is to secure site against unauthorised entry -

- Perimeter fencing or hoarding
- Secure all windows and doors
- Suitable storage of gas cylinders and the like per Section 14
- Site illumination recommended
- Consider employing security personnel
- Consider CCTV on high value projects
- All personnel to be alert for fires started by on-site staff



- Consider theft of Plant and equipment risk



Section 13 – Temporary Offices

Many site fires start in temporary accommodation

Reduce fire risk -

- Construction
- Positioning
- Automatic detection

Site fire plan must include risk assessment for temporary buildings

To be located as far away from the main building as possible

If less than 6 metres away -

- Construction does not contribute to fire spread
- Walls and roof 30 minutes resistance
- Doors and windows 30 minutes resistance
- 30 minutes resistance on frames supporting vertically stacked units
- Automatic fire detection system per BS 5839-1



Section 14 – Flammable Liquids & Gasses

Storage



Hot Works



Electric Arc Welding



Hot Works Sign



Explosion of Acetylene
Cylinder



Bitumen/ Tar/ Pitch Boilers



Section 14 – Flammable Liquids

Preferably stored in open compounds

- Securely fenced
- Shaded from sun
- Bund sufficient contain contents of largest drum + 10%
- Store no more than a days supply
- Flammable liquids and LPG must not be stored together
- Store as far away as possible.
 - Minimum 20 metres away on high fire risk sites
- If within 4 metres boundary wall 30 minutes fire resistance
- Appropriate warning signs
- Adequate extinguishers at storage compound

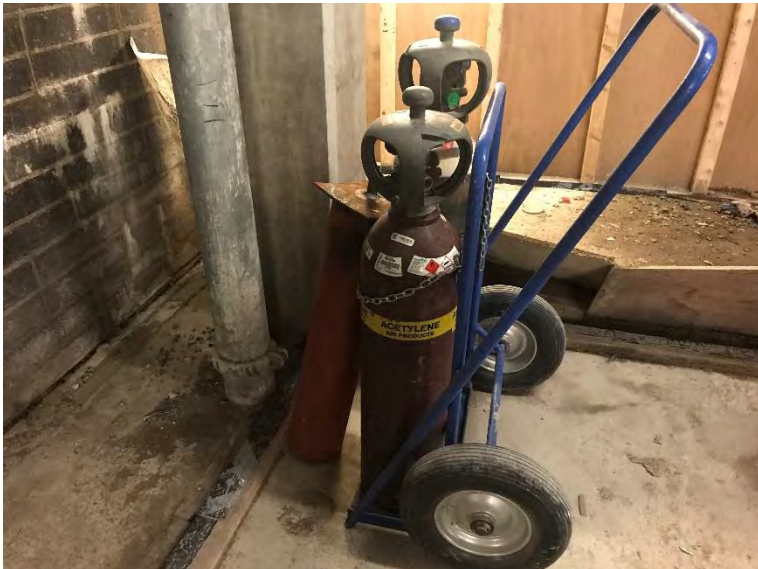


Section 15 – Acetylene

Unstable in a fire. Fire brigade establish
200 metre safety (exclusion) zone for 24 hours
See [Fire Safety Standard Operating Guidelines](#)

Eliminate use wherever possible
Consider alternatives – propane?

Where unavoidable, minimal storage



Acetylene transport fail / Explosion



Section 16 – Hot Works

Adopt alternative methods wherever possible

If possible work in dedicated area away from the Works or storage of materials

Must adopt a “**permit-to-work**” system

Before starting work

- Clear area of all loose combustible material

- Examine behind any walls or partitions

- Cover exposed wooden floors and any other combustible material that cannot be moved

Extinguishers to hand and maintain careful watch

Non-combustible screening when welding cutting or grinding

Gas cylinders secured in vertical position

Tar boilers placed at ground level wherever possible

Periodically inspect work 1 hour after hot work before signing off (closing) permit.



Section 17 – Electricity and Gas

All electrical supply installations comply with BS7671 & National Rules for Electrical Installations 2008 (UK Electricity at Work Regulations 1989)

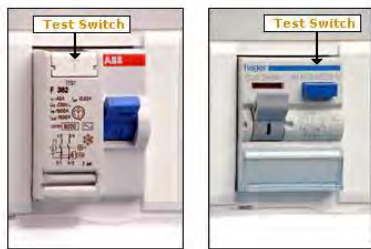
All electrical work undertaken by competent electrician

Regular inspections (**Quarterly examinations**)
Use of unprotected halogen lights discouraged

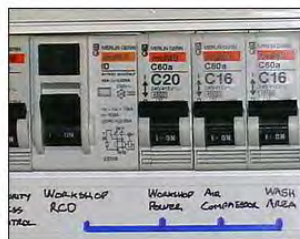
Main switches turned off and equipment unplugged when not in use



Examples of Residual Circuit Devices (RCDs)



An RCD in a Switchboard



RGII member for domestic gas installations .

Gas lines ! Multiple Choice Question

Is it .. ?

A: Live Gas Main

B: No Gas in Pipe

C: Unsure / unknown



Section 18 – Waste

- Good housekeeping essential on all sites
- Accumulated waste can aid start and spread of fire
- Regular collection and removal of waste and packaging
- Locate skips as far away as possible
- Metal bins with lids for flammable materials
- Regularly clear dry vegetation



Housekeeping...

Combustible Materials



Premises due to open within one month!

Section 19 – Plant and Vehicles

- Stationary plant powered by internal combustion engine positioned in open air or well ventilated non-combustible enclosure
- Re-fuel only in designated areas
- Do not fill fuel tanks when engine running
- Compressors housed singly in separate enclosure(s)
- Protect plant and equipment from impact
- Long term parking should not be within 10 metres
- Separate car park for workers vehicles wherever possible



Section 19 – Plant and Vehicles



Check Location and Exhaust Fumes



Add a Drip Tray

Section 20 – Materials and Storage

- Store combustible materials outside building under construction wherever possible
- Recommended materials stored in locked metal container
- If stored inside -
 - Designated non-smoking area
 - Controlled access
 - Fire detection system or included on route for regular fire checks
 - Fire fighting equipment close by
- All non-essential combustible wrapping and packaging removed and disposed ASAP



- Protect combustible materials with covering conforming with LPS1207

Section 21 – Smoking

- **A no smoking policy** must be established throughout the site
- Smoking restricted to designated areas
- Where a smoking shelter is provided must be
 - Specific fire risk assessment
 - Constructed of non-combustible materials
 - As far as reasonably practical from any building but at least 20 metres on a high fire risk site
 - Metal ashtrays and separate metal bin with fitted metal lid
 - Fire extinguishers
- All hazardous areas to be no smoking areas - and have suitable notices



Site Supervision?



Section 22 – High Rise Construction Sites



Section 22 – High Rise Construction Sites



Section 22 – High Rise Construction

Normal fire protections may be insufficient

- Time to safely escape
- Incomplete compartmentation leading to rapid fire spread threatening escape routes
- Inadequate water supplies

Risk assessment with Fire and Rescue services

- Fire doors with self closers to protect escape routes
- At least 1 staircase designated for fire fighting
- Where reasonably practicable building to be horizontally fire compartmented every 10 floors
- Risers, shafts, ducts etc between floors should be closed off with doors having 30 minutes resistance
- Electrically operated fire alarm systems to be provided throughout whole height of the building
- Wet riser to be provided and fed by duplicate pumps

Section 22 – High Rise-risers

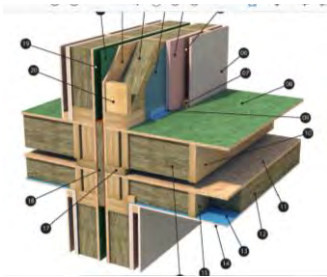


Section 23 – Timber Frame

Best practice advice for the construction of large timber frame buildings

Timber should have received appropriate fire protection

Building compartmented as soon as possible



Fire stopping installed as soon as possible
Final cladding to be put in place as soon as possible

Proximity of incomplete structure to site boundary and surrounding buildings to be considered as part of the risk assessment



Confined Sites – The Problems?



Top Floor – Extension



Top Floor – Incomplete

Due to Party Wall issues



Planning Issues



Storage and Waste



Basement - Waste



Fire Extinguishers - Location



Fire Extinguishers – Gone!

- Site personnel trained to use extinguishers
 - Must be adequate number of extinguishers on site
 - Must be located in conspicuous positions near exits on each floor
 - All extinguishers must be serviced annually and service date recorded
 - Ongoing review of adequacy of extinguishers as work progresses
-
- **“Ride on” site plant to carry own extinguishers**



No Sleeping Accommodation



Confined Sites

The Good, the Bad and the Ugly



Confined Sites – Basements



Traffic Management & Restricted Working Hours





Storage of Materials



Smart At The Front



Not So Smart At The Back!

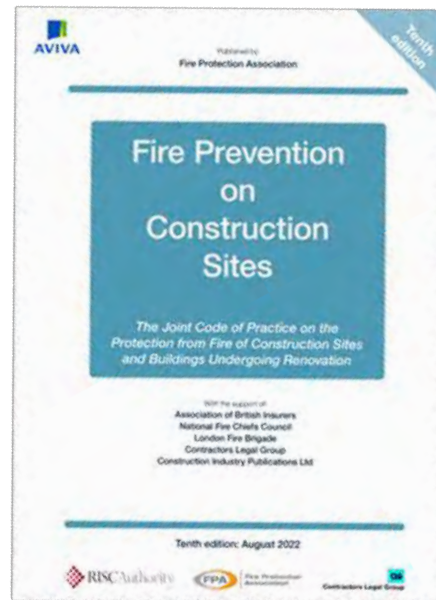


Clean and Tidy



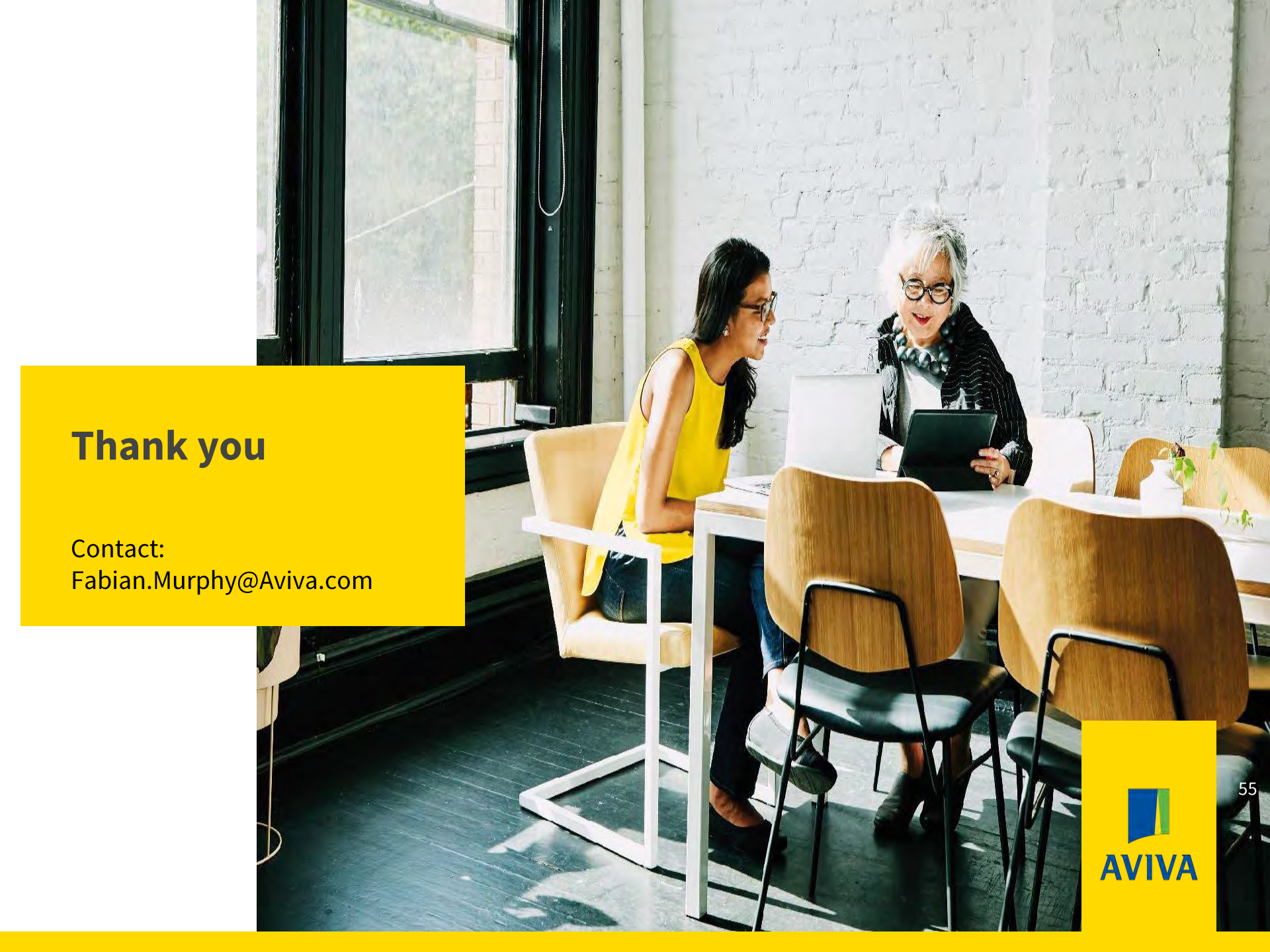
- Useful Links

www.cfpa-e.eu



Fire Protection Association®



A photograph of two women sitting at a white table in a modern office or cafe. The woman on the left is wearing a yellow sleeveless top and glasses, looking towards the other woman. The woman on the right is older, with short grey hair and glasses, wearing a dark patterned jacket over a white top and a chunky necklace. She is holding a tablet. A laptop is open on the table. The background features a large window and a white brick wall. The floor is dark wood.

Thank you

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