

Site Safe risk assessment

Checklist for structural timber buildings

Version 1.0 | December 2011



1. Introduction

1.1 Purpose of the checklist

All parties involved in a construction project including designers have a legal duty to ensure that the design and method of build is undertaken in such a way as not to put the health and safety of the work force at risk. The effective planning and providing the right processes and persons to manage construction risks is central to the Design and Management Regulations 2007 CDM regulations. All design professionals provide, as appropriate, a hazard assessment and this document will provide an aid on what to consider to mitigate a possible risk of a fire occurring on a structural timber construction site and the risk of fire spread from such an event. The aim of this checklist is to eliminate accidental or arson fire hazards and to provide support for information on actions to be handed over to the appropriate party involved and to provide an aid to ensuring the correct data is provided for the health and safety file relating to fire hazards.

The Risk Assessment Checklist (RA) has been written to be suitable for parties involved in a building from a project's feasibility through to the start on-site; or as covered by the RIBA work stages A to K. At each stage of the design and construct process there will be different professionals responsible for taking the project onwards; therefore the RA is designed to be used at each stage of a process and to be used by the different professional teams involved. Whilst the RA is broken down into project stages it can be used at any point where the option to use structural timber is being considered by back reviewing the initial stages.

STA would like to thank the HSE for their support in delivering this guidance - and CFOA for the feedback in this document. In addition thanks is given from support in reviews from, Bernie Sims Partnership, PRP Architects, Tulloch Homes Group, Keepmoat, Pinewood, Prestoplan, Rider Levett Bucknall UK Ltd, Thomas Vale and Scott Brownrigg Architects.

This document is based on an original format and idea from Bernie Sims Associates.

Author: Martin Milner, Milner Associates - December 2011

1.2 Using this document

It is emphasised that designers should not be forced into thinking they should undertake and sign off against each of the fire hazard risk reviews presented in this document. The principle of any risk assessment is to encourage appropriate thinking about the risk factors involved in a process and not follow a prescriptive checklist.

The checklists presented are to be used as an aide-mémoire for competent persons and organisations involved in a project. It is pointed out that each and every project will have a different set of circumstances and it is not possible to cover all eventualities with a checklist. Furthermore it is assumed that a competent organisation or individual will take responsibility to discharge the appropriate fire risk review applicable to the specific project.

Using this checklist:

1. Complex paper systems are not required or desirable the checklist is an aid only
2. Good competent designers always eliminated hazards, the checklist may be used to ensure that information is appropriately passed from key persons and organisations involved in a project.
3. The objective is to engage in the process, take ownership and reduce the amount of risk by undertaking an appropriate review and actions.
4. The checklist is not to encourage a back covering exercise based on blind following of a checklist and verification culture. The focus is in reducing a hazard by design and making a difference.

The reader is reminded to consider the responsibilities of designers (and who is considered to be a designer under the CDM regulations 2007). For support within this document a summary of key points relating to competent persons and what a designer is and what duties are expected is provided in the Appendix 3.

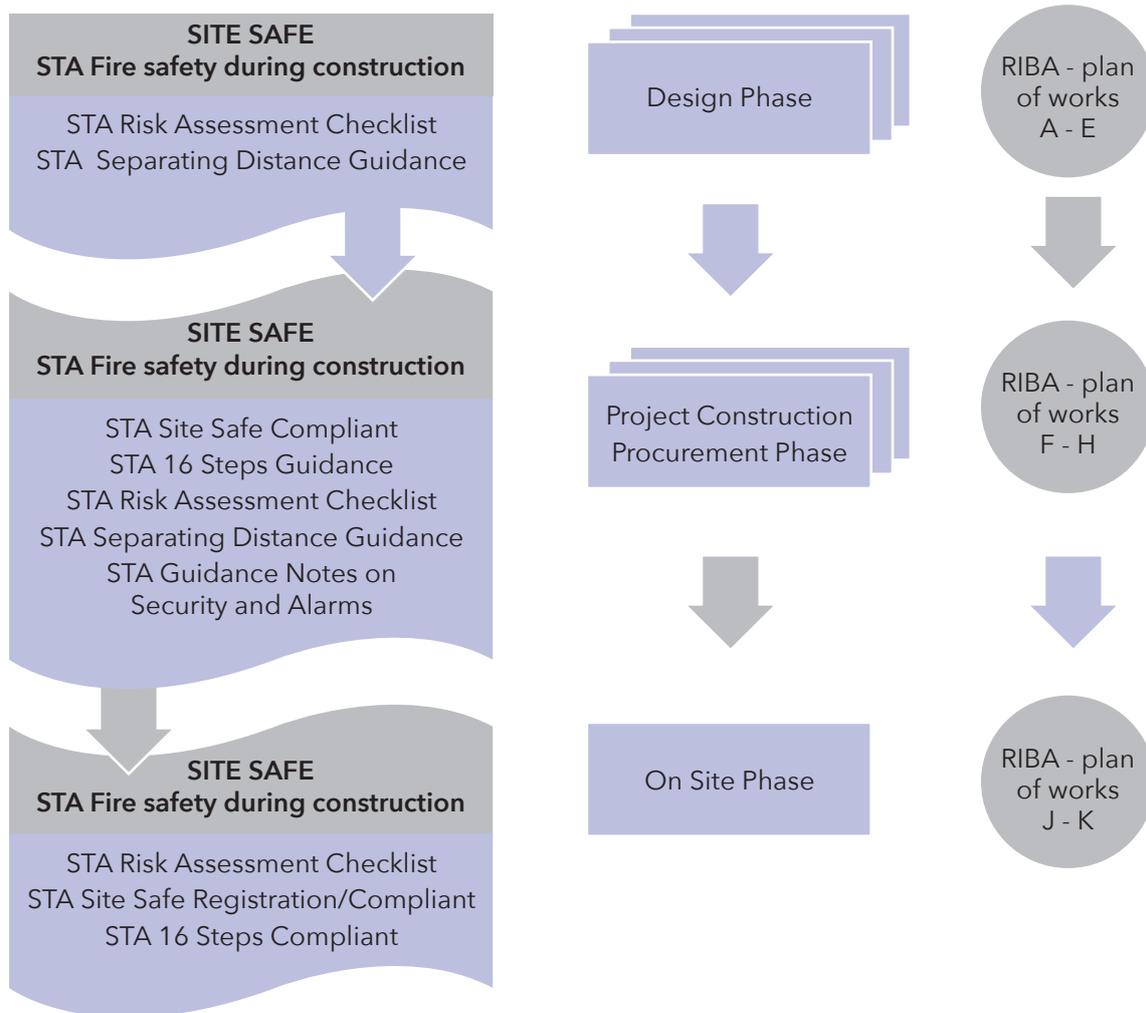
1.3 General aspects of Health & Safety

The general health and safety management process covers pre construction information and designers risk management actions. The checklist includes support to encourage the design team to consider site works, including scaffold access and storage of materials, and not to assume that the contractor's team will resolve the problem. The benefits of structural timber off-site prefabrication is covered to reduce the storage of materials, handling of loose materials, speed of assembly and engagement of competent site erectors to undertake the assembly of kit parts on site.

A CDM co-ordinator should request or investigate certain aspects of this checklist and this aid is to support this process and encourage the design team to pass on relevant information all under the strategy for a Safe Site.

1.4 The RA is part of the STA Site Safety strategy

The RA is part of the STA Site Safety Strategy. This risk assessment checklist is focused on the fire safety during construction and references other STA documents to be used in the design and construct process as presented below:



2. Stages in the design process

2.1 Risk assessment checklist stages in the design process

STA	DESCRIPTION / PARTIES INVOLVED / OUTPUTS	RIBA PLAN OF WORKS	
DESIGN	Stage 1: Feasibility stage Assessment performed by the client advisors/planning architect <i>Result: Preliminary consideration to structural timber building type and building location to deliver construction separating distances</i>	A & B Pre-design	
	Stage 2: Pre-scheme design Assessment performed by the client advisors/planning architect <i>Result: RA1 design checklist considered and answered where appropriate and handed over to planning stage team review/update on stage 1 frame type and building location</i>	C	
	Stage 3: Scheme design up to planning approval stage Assessment performed by the client advisors/planning architect/project/design manager <i>Result: RA2 planning checklist considered and answered where appropriate building location</i>	D	
	Stage 4: Detail design Assessment performed by the client advisors/architect/project/design manager <i>Result: RA1 and RA2 considered and information handed over to Procurement stage team</i>	E	
PROCUREMENT	Stage 5: Tender documents Assessment performed by the client advisors/architect/project/design manager <i>Result: RA3 procurement checklist considered and where appropriate communicated across the project team. Gaps to be note for action by the tendering party</i> <i>Production of risk mitigation outline plan for completion and adoption by main contractor</i>	F	
	Stage 6: Tender action Principal contractor review - opportunity for the contractor to make comment and/or disagree with risk mitigation measures proposed up to this point Assessment performed by the main contractor <i>Result: RA4 updated procurement checklist considered and communicated across the project team</i>	G, H Tender	
ON-SITE	Stage 7: Pre-start review stage and sign off Assessment performed by the main contractor/project manager and fire safety assessor <i>Result: RA5 on-site checklist communicated across the project team, incorporating Site Safe and 16 Steps</i>	J Project planning	
		K Site	

3. Risk assessment checklists

3.1 Risk assessment checklist 1 - RA1 design actions

REFERENCE		ACTION
1 Risk to buildings outside the site boundary		
a	Prepare a diagram showing the zone of minimum recommended separation distance based on STA separating distance guidance or engage fire engineer to assess the site proposals.	
b	Check on any external escape routes from existing buildings within the development site fall within the zone of minimum recommended separation distance?	
c	Agree where relevant if risk mitigation processes are required to reduce the site separation distances - see STA site separation distance guidance. Outline the category of structural timber suitable for the site separation required.	
2 Risk to buildings during the phasing of the development for multiple units		
a	Prepare a diagram showing the proposed phasing of construction and consider the separation distance aspects in the STA separating distance guidance or engage fire engineer to assess the site proposals.	
b	Outline the category of structural timber suitable for the site separation required. Note where temporary closure of openings needed to remove risk of fire growth.	
	The use of off-site structural timber fabrication systems from walls, floors and roof cassettes to be considered as reduction in site storage and where site space is at a premium.	
d	The location of a crane in a development should be considered. The location not to block access and to be protected in case of fire.	
3 Local fire risks		
a	Check on-site boundary and local boundary building usage. Are there any buildings, structures, uses or processes, storage of materials etc on adjoining sites which may be a high fire risk?	
b	Check on the site topography for increased risks. Are there any structures other than buildings on adjoining sites where an incendiary device could be thrown from: e.g. bridges, multi storey car parks. Prepare note to bring this to the attention for the construction security review stages. Alternatively is it feasible to locate building to remove risk.	
4 Local arson risks		
a	Is there any history of poor relations with neighbours? Are there any historic or current issues raised by fire officers or others relating to the existing buildings use e.g. history of vandalism and/or arson?	
5 Fire service discussions		
a	Engage with fire service to check knowledge of: <ul style="list-style-type: none"> • Adequacy of water supply for fire fighting purposes both during the construction works and after completion of the development. • Fire officer to be advised of the development proposals and the intention to construct in structural timber and to state the category of structural timber being proposed. • Suitability of fire brigade access both during the construction works. 	

The output is the risk assessment document (RA1) can be recording of the results of actions taken to pass on to next stage in the process.

3.2 Risk assessment checklist 2 - RA2 planning stage

REFERENCE	ACTION
6 Fire officer consultation (Local Authority and Local Fire Service)	
<p>Fire officer to be advised in writing of the development proposals and the intention to construct in structural timber and to state the category of structural timber being proposed as given in the STA separation guidance.</p> <p>Include relevant scheme drawings and site set up plan - plus risk checklist summary to date.</p>	
7 Risk to buildings outside the site boundary	
<p>Update checklist item 1 - to present a diagram on separation distances using the STA guidance based on the category of structural timber. Include for compartmentation and areas of frame types where appropriate.</p>	
8 Preliminary site plan	
<p>Prepare a preliminary site set up drawing showing the following:</p> <ul style="list-style-type: none"> • Proposed area for contractor's compound • Proposed vehicular access from highway • Fire hydrant position where this is within or close to the compound. (if the hydrant is distant from the site) • Provide a separate plan showing hydrant position in relation to the construction-site • Fire tender access and parking • Temporary rerouting of any existing footpaths or rights of way (formal and informal) across the site • Concept location for tower cranes if required. 	
9 Post planning/outcome of planning stage	
<p>Where the proposed development is on a site with existing buildings which are to remain in operation during the construction works, show the following:</p> <ul style="list-style-type: none"> • Parking spaces available for the duration of the construction works • Temporary access routes • Temporary rerouting of existing means of escape both within and external to the buildings in operation • Fire assembly point. <p>Consideration of the checklist item 2 - risk to buildings during the phasing of the development for multiple units.</p>	

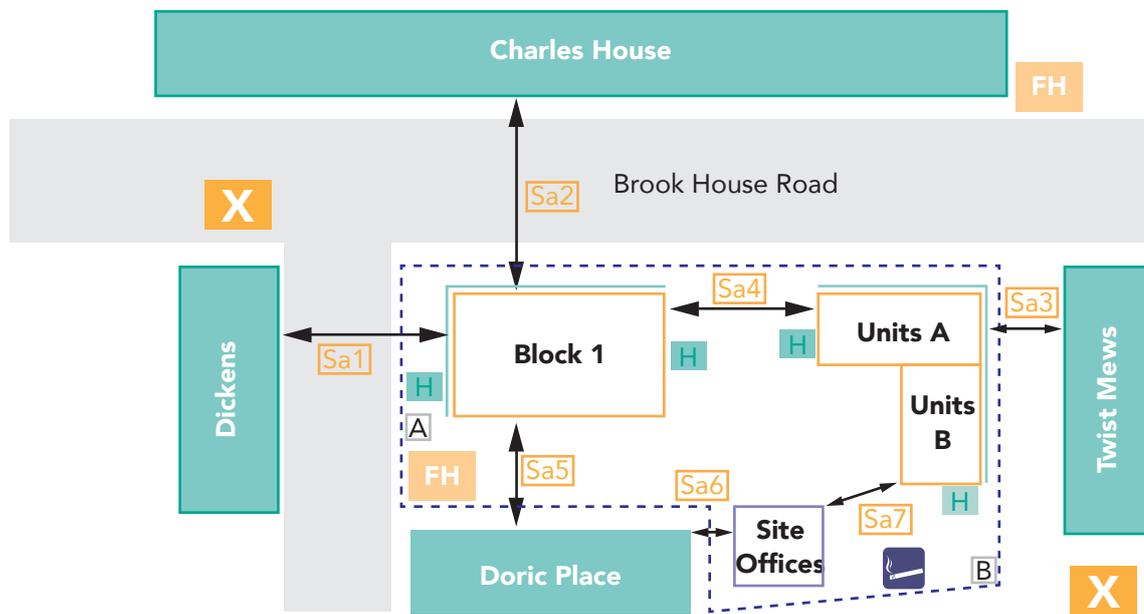
The output, which is the risk assessment document (RA2), can be the recording of the actions (if appropriate to the project), and the passing on of this information to the next team in the process along with an update of RA1. Note: A fire engineer should be considered to be engaged on sensitive sites.

3.3 Risk assessment checklist 3 - RA3 tender document

Review actions 1-9 during the design process prior to the tender document generation

REFERENCE	ACTION
10 Check on relevance of RA1 and RA2 answers	
Check if there are any alternations to the site, neighbourhood, nearby land etc that can alter the outputs from actions 1-9. At this stage a competent fire engineer may be considered necessary to review the risk register and present specific updates. The results are to be incorporated into updated RA1 and RA2.	
11 Drawings and documents to be included in the tender stage	
<p>The following drawings and documents are to be included in the tender stage documentation:</p> <ul style="list-style-type: none"> Completed structural timber fire hazard assessment based on answers to RA1 and RA2 this can be included in a fire risk assessment report (with updates from fire engineer report where commissioned/necessary). <p>Key out puts:</p> <ul style="list-style-type: none"> Diagram showing zone of minimum recommended separation distance - update on RA1 checklist 1 for information. Preliminary site set up drawing - general for main contractor to consider in the tender - see site set up drawing example. Plan showing any vertical and horizontal compartmentation required to be formed as building progresses and specifying any sequencing of works which may be required to achieve this. Request to the tenderer to present a preliminary site risk assessment drawing alongside their tender document. 	
12 Quality of contractors	
<p>The choice of contractors is to be considered based on quality as much as cost. Lower costs may mean risks are being taken; it is recommended that a check in undertaken to ensure that reputable contractors, sub-contractors and equipment suppliers are being selected for tender.</p>	
13 Product assessments	
<p>Within the tender documents consideration should be given to mitigating risks of fire from construction process events such as:</p> <ul style="list-style-type: none"> Heat generated from large volumes of concrete curing Appropriate use and selection of adhesives if used Appropriate storage of ignitable insulation material Site hoarding appropriate for the site Reference to the STA 16 Steps guide and data sheets on security and fencing is recommended. 	

1-9 during the design process prior to the tender document generationa The output, which is the risk assessment document (RA2), can be the recording of the actions (if appropriate to the project), and the passing on of this information to the next team in the process along with an update of RA1. Note: A fire engineer should be considered to be engaged on sensitive sites.



Key

- Proposed building outline
- Fire door to block
- - - Site boundary
- Existing building
- Debris netting
- FH Fire hydrant
- H HAKI staircase
- X Emergency muster point
- A Main entrance
- B Emergency exit
- Sa Actual separating distances
- ☑ Smoking area

Step 1 - Compliance with CDM 2007

All duty holders were consulted when compiling the information required for all stages of fire safety plans for above project. The site team continuously monitor the conditions to ensure the plan is always fully compliant to CDM regs.

Step 2 - The appointment of a fire safety co-ordinator

Fire safety co-ordinator and his site team (who are fire marshals and deputy fire marshals) ensure that all necessary updates are undertaken as and when they are needed.

Step 3 - The fire safety plan

Developed by Construction Manager to set out clear steps taken to minimise risk on the scheme. The fire safety plan is regularly reviewed and amended in line with construction or significant design changes.

Step 4 - Checks, inspections and tests throughout construction

The site manager team undertakes daily and weekly inspections in order to protect the scheme from potential fire risks. The Construction Manager undertakes a monthly inspection to ensure that suitable fire protection is continuously monitored, recorded and improved upon. Out of hours monitoring is undertaken by the remotely controlled link CCTV.

Step 5 - Communication and liaison

Early communication with local emergency services teams, security personnel and the HSE in order to ensure all parties could provide their valid input. Further discussions are regularly undertaken, as and when necessary.

Step 6 - Promoting a 'fire safe' working environment

All aspects of the build are carried out in a manner which has been approved by the safety team. All equipment and build procedures are controlled by the Site Manager and Construction Manager to ensure a 'fire safe' working environment.

Step 7 - Fire detection and warning

Early detection systems including, smoke detectors in relevant places, and a linked fire alarm system which can be heard throughout the site to provide suitable detection and warning should a fire break out.

Step 8 - Protecting emergency escapes

Fire retardant sheeting between scaffold and external staircases to stop fire spread. Fire escapes to suit travel distances.

Step 9 - Building in fire protection along the way.

Permanent stairs constructed as soon as possible. Review building sequence to provide a fire break in the structural timber erection sequence. Review options for applying fire retardant treatments to structural timber.

Step 10 - Site security against arson

Site gates remain closed to limit access. Remote link CCTV cameras in continuous operation. Access to ground floor flats and scaffolding to deter any unauthorised access gaining entry to building.

Step 11 - Protecting temporary buildings and accommodation

All temporary buildings are positioned away from the structural timber structures.

Step 12 - Safe storage of materials

All materials, including flammable ones, are stored away from the structural timber structure. The requirement for a fuel bund has been designed out.

Step 13 - Designing out hot works

All hot works have been designed out.

Step 14 - Keeping a tidy site

The management team ensures that the site is kept in a tidy state throughout the length of the build development. Daily inspections are undertaken to ensure that all potential hazards are removed before works begin.

Step 15 - Dealing with plant and equipment

All plant and equipment used on site is regularly assessed and tested to ensure that it is in good working order. Any such items which are considered to be unsafe for work are removed from site with immediate effect.

Step 16 - A 'no smoking' site

Above site is classified as a no-smoking site. There is a designated smoking point next to the site compound. Any operatives found smoking will be immediately removed from site and banned from future developments.

3.4 Risk assessment checklist 4 - RA4 pre-site start review

REFERENCE	ACTION
14 Principal contractor review	
<p>Principal contractor to review structural timber fire risk register RA1, RA2 and RA3 (this is an opportunity for the contractor to disagree with the contents of the structural timber risk register). A preliminary site risk assessment drawing is to be prepared by contractor alongside their tender document? (See example drawing with STA 16 Steps notated on the drawing and site separation distances).</p> <p>The following drawings and documents to be reviewed:</p> <ul style="list-style-type: none">• Completed structural timber fire risk assessment - all stages as reported in RA1- 3 and check completion of each check item (with updates from fire engineer report where commissioned/ necessary)• Diagram showing zone of minimum recommended separation distance (from RA1, updated as appropriate)• Site set up drawing• Plan showing closest fire hydrant location (if not on-site set up drawing)• Plan showing any vertical and horizontal compartmentation required to be formed as building progresses and specifying any sequencing of works which may be required to achieve this• Provide details below of any other relevant documentation. <p>Passive fire fighting potential:</p> <ul style="list-style-type: none">• Engage with the water authority to check if a sprinkler system can be considered.	

3.5 Risk assessment checklist 5 - RA5 site checklist

REFERENCE	
15 Principal contractor review	
Q1	Can the permanent fire escape stair enclosures in the new building be formed at an early stage of construction to provide protected escape routes for construction workers? If yes provide brief summary of proposed construction and likely sequencing requirements below:
Q2	Will the height and type of hoarding proposed prevent unintentional access to the compound by anybody other than construction workers, both from the remainder of the site or adjoining land?
Q3	Will the height and type of hoarding proposed help to minimise the opportunities for someone to intentionally access the compound from adjoining land?
Q4	Does the site set up allow temporary accommodation huts to be located 20m away from the building to be constructed? If no, then the temporary accommodation units will need to comply with section 13 of the "Joint code of practice" and a note to that effect should be included on the drawing.
Q5	Does the site set up allow suitable fire brigade access for fire fighting purposes?
Q6	Where the existing fire hydrant is within the compound can it be easily accessed both in the event of a fire in the building under construction or in an existing building on the site? If no, is there another fire hydrant within an acceptable distance? If no, then a new hydrant may be required to be installed prior to commencement of construction works.
Q7	Are all existing and temporary external escapes routes from any buildings on the site which are to remain operational during the construction works sufficiently clear of the building under construction so as not to be compromised in the event of a fire?
Q8	Do all temporary rerouted fire escapes from existing adjoining buildings comply with current Building Regulations Part B?

4. Appendices

4.1 Minimum standards during construction

Review fire risk specific contract documentation (designers fire risk assessment, fire engineers report (if applicable), pre construction information, etc) and ensure all control measures are incorporated into fire management plan	Y	N
Liaise with existing operations team and ensure existing fire management plan is suitably updated for the period of construction together with arrangements for revisions	Y	N
Check condition of existing fire breaks of any building (particularly in the roof void)	Y	N
Programme deliveries of combustible materials to minimise fire loading	Y	N
Adequate site hoarding /fencing to site	Y	N
Establish assembly point	Y	N
Eliminate hot work	Y	N
Provide site security and lighting during structural timber construction. maintain external lighting out of hours throughout contract	Y	N
Install fire detection and alarm system on each floor. Repeater alarms to be located in site office	Y	N
Install emergency lighting	Y	N
Deploy fire extinguishers within the corridor of the building in locations and at distances detailed in the STA 16 Steps, HSG168 and joint cop	Y	N
Complete dry lining at earliest opportunity, especially internal staircase and when used as means of escape	Y	N
Post all necessary directional signage within building	Y	N
Post laminated building fire layout plans at each fire point	Y	N
Establish adequate number of escape routes (minimum of 2 required)	Y	N
Provide smoking area/shelter at a suitable distance from the building	Y	N
Establish no smoking policy elsewhere (emphasise at inductions)	Y	N
Use appropriate non combustible stairs as means of escape	Y	N
Dry line and install sacrificial door or wall with appropriate fire resistance/rating on any breakthrough (to the existing building)	Y	N
Board up all ground floor windows and doors prior to installation to prevent unauthorised entry after hours in areas	Y	N
Building to be compartmentalised in accordance with the design	Y	N

4.2 Duties of responsible person/site manager

Checklist for duties of responsible person/site manager/ competent responsible person/site manager to undertake the following:

Ensure that fire plan/log book is developed and updated throughout contract. Include main issues in regular contractor report to project team	
Ensure that all operatives, visitors, etc are inducted with respect to fire safety	
Liaise with local fire officer and emergency services (STA Site Safe process managed by STA member structural timber supplier will ensure fire officer is aware of site once structural timber manufacturer has been appointed)	
Liaise with client's health and safety manager and local manager (if extension/bolt on)	
Maintain no hot works policy unless no alternatives exist	
Establish and maintain strict hot work permit system for residual hot works	
Check operation of fire alarms and that fire stations are in place and operational	
Ensure that directional signs are in place and remain so throughout the contract	
Ensure that practice evacuations/fire drills are undertaken and results recorded	
Ensure safe storage of all flammable materials and lpg vessels	
Ensure that site and all working areas are kept clean and tidy throughout the contract <i>NOTE: the principal contractor to sign off below to confirm process document completed and forwarded to CMC co-ordinator</i>	

4.3 Key responsibilities under CDM regulations 2007

The following are key points to consider in any risk assessment as taken from HSE training module on CDM

What does CDM 2007 require?

All persons who have duties under CDM 2007 should:

- Take “reasonable steps” to ensure persons who are appointed are competent
- Not arrange for or instruct a worker to carry out or manage design or construction work unless the worker is competent
- Not accept an appointment unless they are competent

Applies to corporate and individual competence

Assessment should focus on the needs of the particular project and be proportionate to the risk, size and complexity of the work

Considering competence in a project

To be competent, an organisation or individual must have:

- Sufficient knowledge of the specific tasks to be undertaken and the risks which the work will entail; and
- Sufficient experience and ability to carry out their duties in relation to the project; to recognise their limitations and take appropriate action in order to prevent harm to those carrying out construction work, or those affected by the work

Designers under CDM regulations

A ‘designer’ under CDM 2007 is someone or organisation that:

- Designs or specify building work
- Duties apply to all projects, including non-notifiable and domestic
- It includes people who prepare
 - Drawings
 - Design details, analysis and calculations
 - Specification and Bills of Quantities
 - Those specifying or purchasing materials
 - Temporary works designers
 - Clients who specify
 - Design and construction contractors
 - Statutory bodies that require features that are not statutory requirements e.g. outside of Building Regulations
- The design could be on paper, computer or verbal

Designers - including those responsible for the delivery of a project must be able to:

- Identify hazards, understand how they can be eliminated, and address residual risk
- Design in accordance with the Workplace (Health, Safety and Welfare) Regulations 1992
- Identify significant remaining risks
- Inform contractors
- Co-operate and co-ordinate with the Principal Contractor
- CDM 2007 does not require “zero risk” designs
- Amount of effort made to eliminate hazards should be proportionate to the risk
- Competent designers eliminate hazards and reduce risks - manage the risk, not the paperwork

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