

CDM Case Studies for Small Builders and Contractors

Handy examples of the application of the Construction (Design and Management) Regulations 2015 to three small to medium building projects in the domestic sector.

What are CDM regulations and do they apply to my business?

The Construction (Design & Management) Regulations (CDM 2015) are the main set of regulations for managing the health, safety and welfare of construction projects. CDM applies to all building and construction work and includes new build, demolition, refurbishment, extensions, conversions, repair and maintenance.

Source: CITB

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CITB CDM Wizard

Download the CITB CDM Wizard app, to help you plan and organise your construction job, and make sure that the work is carried out without risks to health and safety.



Construction Phase Plan

Download the HSE's one-page template for the Construction Phase Plan.



HSE L153

L153 Managing health and safety in construction. Construction (Design and Management) Regulations 2015. Guidance on Regulations (2015).



This document is an amended and abridged version of the 'CDM 20-20 Vision – Changing the Culture' report published by the Keeping Pace with Change (KPWC) group of the Construction Industry Advisory Committee (CONIAC), it has been compiled by the Supporting Small Employers (SSE) group of CONIAC.

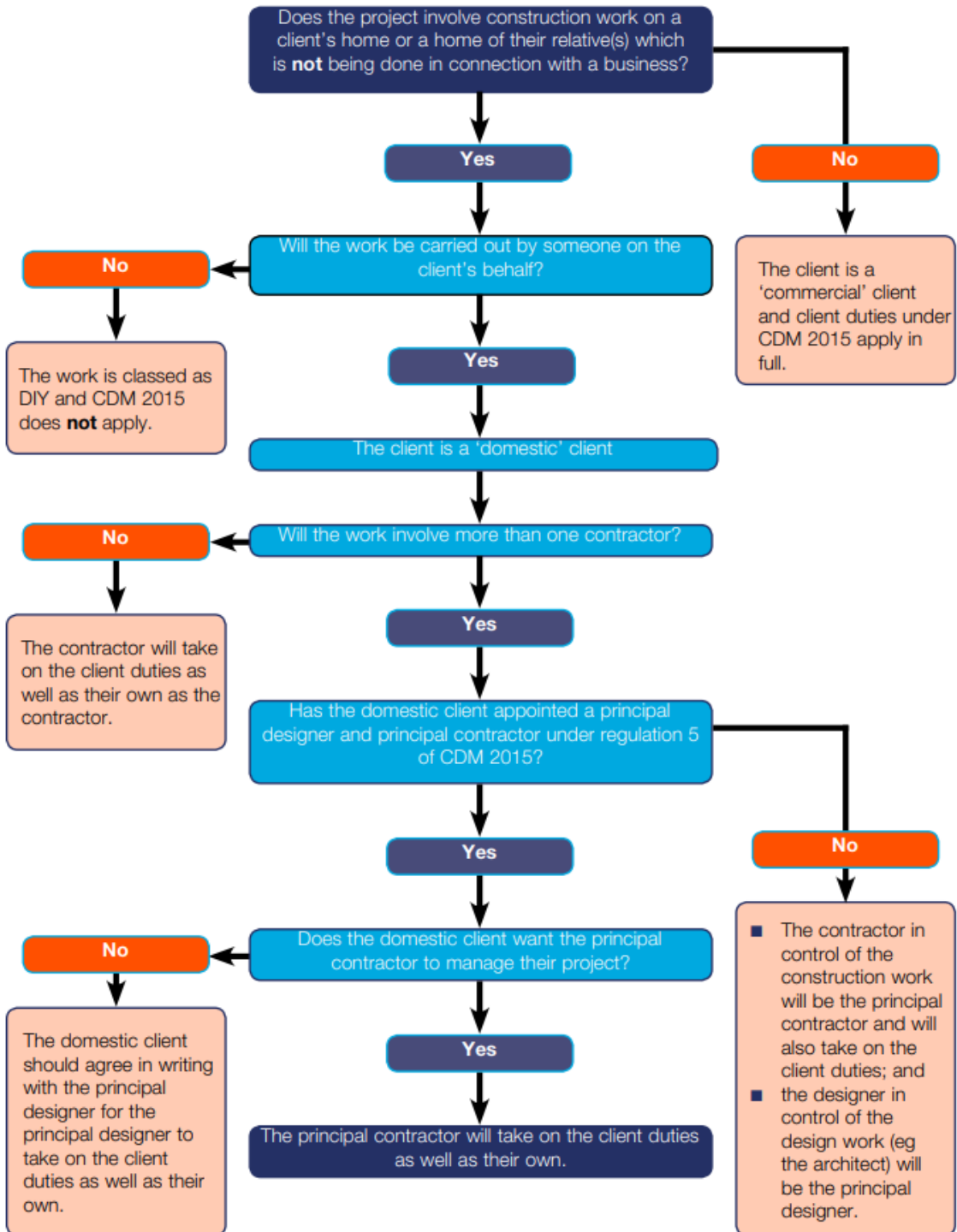
Interested readers can access the full report here:

<https://www.cdmdifferently.com/resources>

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1. How CDM 2015 Applies in the Domestic Sector



2. What is the purpose of the Construction (Design and Management) Regulations [CDM] 2015?

Complying with CDM 2015 will help ensure that no-one is harmed during the work. Effective planning and good consideration of health and safety risk management will help to ensure that the work is safely managed and that the building is safe to use and maintain.

2.1 Summary of key changes in CDM 2015

The Principal Designer

The CDM 2015 Regulations introduced the *Principal Designer* function, to mirror, in the pre-construction phase, the duties of the *Principal Contractor* in the construction phase (and removed the CDM coordinator function). The principal designer function requires a management capability and understanding of the whole design and construction process which is usually (though not always) best fulfilled by a lead designer.

The principal designer manages health and safety in the pre-construction phase of a project. The role extends to the construction phase through the principal designer's duties to liaise with the principal contractor and ongoing design work.

A principal designer is required to plan, manage and coordinate the planning and design work. Appoint them as early as possible so they can help you gather information about the project and ensure that the designers have done all they can to check that it can be built safely. **See the FAQs section for who should do this role.**

Domestic clients

Although CDM 2015 does impose duties on domestic clients, if the domestic client doesn't formally appoint a Principal Designer or Principal Contractor where the works involve more than one contractor, those duties are automatically transferred to the contractor or principal contractor. The case studies below help to show this in practice.

General Duties 'Regulation 8'

Some duties in the regulations apply to everyone (all duty holders) involved. These include:

- Designers (including principal designers) and contractors (including principal contractors) being able to demonstrate their suitability for the roles to which they are appointed (skills, knowledge, experience and organisational ability)
- The obligation to work cooperatively with other parties engaged on the same project or adjoining construction sites (including at design stage)
- Emphasis being placed on project team-members providing clear, concise and necessary information relating to CDM, rather than information overload

Management Arrangements

The HSE publication 'Managing health and safety in construction' (L153) provides guidance on the Regulations and the expected standards which duty-holders should seek to satisfy. Where a Client Brief is required, it should be collaboratively developed in the earliest stages of the project, to ensure that everyone understands the requirements of CDM 2015 and how the various duties will be discharged.

3. Case Studies

Case Study 1a – Small Domestic- the Sunbury Extension

Project description

Mr and Mrs W. wanted to improve their home to provide a large kitchen/dining area by knocking the existing kitchen and dining room into one and extending the back of the house by 3 metres. The existing integral garage was to be converted into a playroom for their children. The house was to remain occupied throughout the construction period.

Project value - Less than £100K

Key duty holders

As they were having building work carried out on their own home, Mr and Mrs W were not legally responsible for discharging the client duties under CDM 2015.

During stages 2/3, the architectural designer had the duties of the designer and principal designer.

From stage 4 onwards, the builder had the principal designer and principal contractor duties, as well as the client duties.

Plan of work stage	0 – 1	2 - 3	4 – 5	6 – 7
Role				
Client (Domestic)				
Architectural Designer (Principal Designer & Designer)				
Structural Design (Designer)				
Contractor (Principal Contractor)				
Contractor (Principal Designer)				
Contractor (Client duties)				

Management arrangements

Stage 0/1

Mr and Mrs W discussed their requirements with a recommended architectural designer.

Stage 2/3

The architectural designer was employed to draw up the plans for the scheme, which had to be submitted for planning approval. During the lengthy design and planning approval process Mr and Mrs W. interviewed

several prospective builders. After a tendering process involving three contractors, they selected HBS to carry out the work.

Stage 4/5

The architectural designer had minimal involvement during the construction phase but was available for consultation if design issues needed further consideration.

- Although HBS carried out most of the work with their own workforce, they employed subcontractors for some of the work (eg, electrical, floor finishes.)
- Minor structural works were carried out by the builder with design checks carried out by a consultant structural engineer.
- The fitted kitchen was designed and supplied by a kitchen manufacturer but installed by HBS.



Design problems encountered when installing the kitchen units were resolved by HBS. HBS carried out both the principal designer and principal contractor duties and effectively took on the client duties as well.

Apart from the Construction Phase Plan produced using the CITB wizard app, there was no specific CDM documentation generated.

Significant risks

None – works were considered to be normal practice by the contractor.

Health & Safety file

On completion of the works an architectural drawing was marked up by the contractor showing below ground services including electrical, gas supply and drainage. Also, a separate architectural drawing was marked up by the contractor showing structural elements including the new supporting beams.

Summary

Although Mr and Mrs W had no legal responsibility under CDM 2015 (other than to make principal designer and contractor appointments in writing), they took a keen interest in the safety, health and welfare issues arising from the execution of the works by HBS, including the provision of suitable toilet facilities and the possible presence of asbestos.

Prior to the building contractor taking on the job, the architectural designer could be viewed as having principal designer duties, but as the only designer there was little to do in this function, over and above what they would do as a designer.

The project was not notifiable to the HSE as it did not exceed the five-hundred-person days limit.

Case study 1b – Small Domestic- the Bishops Stortford Extension

Project description

Mrs B. wanted to improve her small terraced, 2 storey, 2-bedroom house to provide a large kitchen/dining area by extending the back by 3 metres. The existing subdivided ground floor planning had a very small kitchen and small lounge dining area. The house was to remain occupied throughout the construction period.





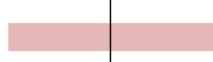
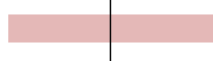

Project value - Less than £50K

Key duty holders

As she was having building work carried out on her own home, Mrs B was not legally responsible for discharging the client duties under CDM 2015.

During stages 2/3, the architectural designer was appointed for the duties of the designer and principal designer. The architectural designer also advised Mrs. B that the CDM client duties needed to be professionally discharged under CDM 2015, and that he was prepared to take on these client duties for a small additional fee.

During Stage 4 an independent professional building surveyor provided a Building Regulations drawing but the architectural designer retained the principal designer duties. From stage 4 onwards, the builder had the principal contractor duties, but the principal designer duties were retained by the architectural designer as well as the client duties.

Plan of work stage	0 – 1	2 - 3	4 – 5	6 – 7
Role				
Client (Domestic)				
Architectural Designer (Client Duties)				
Architectural Designer (Principal Designer & Designer)				
Structural Design (Designer)				
Building Surveyor Design (Designer)				
Contractor (Principal Contractor)				

Management arrangements

Stage 0/1

The design brief was agreed between Mrs. B and the architectural designer and a strategy

for agreeing permitted development rights with the local planning authority, which was more difficult and took longer than expected. The upper storey extension was omitted and just the ground floor extension developed.

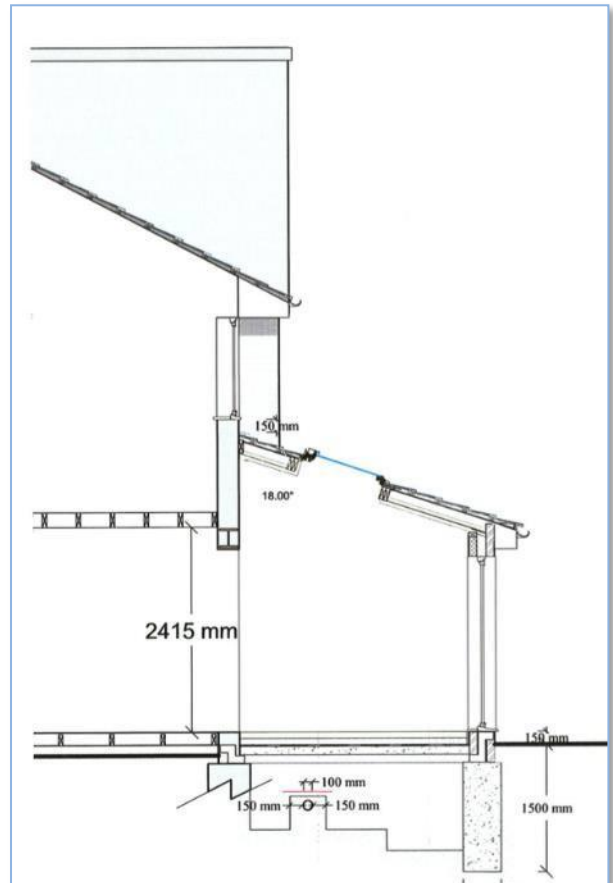
Stage 2/3

Once agreement on planning matters was achieved a sub-contract building surveyor designer prepared a Building Regulations application drawing and submission including structural calculations from a structural engineer.

During the lengthy design and planning approval process Mrs B. interviewed several prospective builders. After a tendering and team interview process involving three contractors, Mrs B. selected GPS to carry out the work.

Stage 4/5

The architectural designer and principal designer expected minimal involvement during the construction phase but were available for consultation if design issues needed further consideration. However, after a start had been made on site and foundation trenches dug, a shared sewer passing below the extension and serving the 2 adjacent houses was discovered to have collapsed and needed replacement. The water utility company investigated and recommended full replacement across the 3 properties, with an earliest start date causing 6 weeks delay. The JCT Minor Works contract permitted this force majeure delay with no consequences to either party. There was also a need to change the design of the ground floor slab from a ground bearing slab to a beam and block spanning construction at additional cost.



- Although GPS carried out most of the work with their own workforce, they employed subcontractors for some of the work (e.g., electrical, floor finishes, and kitchen installation.)
- Minor structural works were carried out by the builder with design checks and design carried out by a consultant structural engineer.
- The fitted kitchen was designed and supplied by a reputable supplier but installed by GPS. Design of the kitchen units were agreed by Mrs. B and the supplier.

GPS carried out the principal contractor duties but not the client or principal designer duties as they did not have the skills, knowledge or experience. Apart from the Construction Phase Plan produced using the CITB wizard app. there was no specific construction stage CDM documentation generated.

Significant risks

Works were generally thought to be of normal practice for the contractor, but various changes of design and programme phasing were required for public health and structural ground loading conditions. An asbestos and utilities (e.g., Gas and electrics) review had been carried out by the design team with no adverse conditions in this case. It was noted, however, that both these issues are commonly found on

domestic projects and need due consideration at design and construction stages of all such projects. Good liaison between



the principal designer and principal contractor negotiated suitable design, cost, utility company requirements and construction changes.

Access to the site for materials, plant and workforce was via a small route to the rear of the terrace gardens which had to be managed to not affect other properties and children who used this route.

Health & Safety file

On completion of the works the construction drawing was marked up by the principal designer showing the revised below ground drainage services and floor construction, including the structural calculations for opening up and a new beam to support the upper floor.

Access to a new SVP rodding eye internally was also indicated on the drawings along with a newly located electrical fuse board.

A separate architectural drawing was marked up by the contractor showing structural elements including the new supporting beams.

Summary

Although Mrs B had no legal responsibility under CDM 2015, (other than to make principal designer and contractor appointments in writing), she took a keen interest in the safety, health and welfare issues arising

from the execution of the works by GPS, including the provision of suitable toilet facilities and the possible presence of asbestos.

The architectural designer took on the principal designer and client duties, as the lead designer and although it appeared to be a simple project there were additional design and coordination of health and safety issues that had not been expected. These were covered by the additional principal designer and client duties fee and a good rapport between the commissioning client, design team and the contractor. There was however a signed letter of appointment for all principal designer, client duty and principal contractor functions as well as a Minor Works JCT contract.

The project was not notifiable to the HSE despite the 2 months delay.

Case Study 2 – Medium Domestic -The Chelsea Mews Refurbishment

Project description








Remodeling of the existing elevation with new entrances and windows, whilst gutting the building and ensuring stability of the fabric when basement excavation, roof extension and floor removal works were being carried out. A significant amount of demolition and fit-out work was included. Access to the Mews Court for construction vehicles and plant was height and width restricted.

Project value Less than £1.5m

Key duty holders

The client Mrs. D was a businesswoman, moving to the UK with her family. Her aim was to convert the existing mews property into a suitable residence for herself and her children. An architectural practice was employed by the owner to lead the design team which included a structural engineer and building services consultant.

An experienced contractor was appointed as the principal contractor for the construction phase.

Plan of work stage	0 – 1	2 - 3	4 – 5	6 – 7
Role				
Client (Domestic)				
Architectural Designer (Client Duties)				
Architectural Designer (Principal Designer & Designer)				
Structural Design (Designer)				
Building Services Design (Designer)				
Contractor (Principal Contractor)				

Management arrangements

Stage 0/1

The architectural designer explained the requirements of UK legislation to the client and they agreed that the architectural designer should act as principal designer and also take on the duties of the client [regulations 4(1) to (7)] for the duration of the project. They jointly developed a CDM Strategy Brief to set out their joint understanding of the management arrangements for the project. The brief highlighted the structural stability and temporary works; considerations which the designers and contractors would have to take account of in their work.

Stage 2/3

The design team produced a detailed set of design drawings, with significant risk issues highlighted, which a number of experienced contractors were invited to tender against. The requirement to

manage the considerable amount of temporary works was made explicit in the tender documentation.

Stage 4/5

The successful contractor provided details of their temporary works procedures in their tender submission and subsequently set out the temporary works requirements in their construction phase plan. The architectural designer continued to project manage the scheme on behalf of the client and monitored the principal contractor's temporary works design performance through liaison with the principal contractor's temporary works coordinator (PC-TWC)

Significant risks

- Stability of structure during remodelling work.
- Access for construction vehicles including spoil removal trucks, waste skips, cranes and concrete pump for basement construction due to limited archway access.
- Limited rear access to adjoining owner's property behind, to build the roof extension. Asbestos in the existing fabric, requiring a detailed survey before design work began, paid for by the client
- Underground voids and a subterranean river in the road requiring consideration of temporary loading conditions during construction.

Health and Safety file

A simple file was issued to the Client based upon the Pre-Construction Information highlighting any residual risks and referenced to the Contractors O&M Manual.

Notes: The project was notifiable by F10, submitted by the architectural designer as a client duty.

Summary

This was a relatively small existing building refurbishment but with significant temporary works considerations which needed a suitably experienced contractor to deliver. Access to the site was difficult, the presence of underground voids presented unexpected water ingress and plant loading considerations. The early collaboration between the client and her architect resolved the client duty, principal designer appointment and appropriate principal contractor appointment issues.

4. Frequently Asked Questions (FAQs) and Appendix

The following FAQs should help any builder or contractor to understand the Regulations by expanding on the common terminology and defined roles mentioned throughout the Regulations. Some answers begin with a reference from 'L153' otherwise known as the 'Managing health and safety in construction' which is the Health and Safety Executive's guidance document for the Construction (Design and Management) Regulations 2015.

How do I know if the project/works will require a Principal Designer?

Any project or works involving more than one contractor, requires the client to appoint (in writing) a principal designer and make sure they carry out their duties

How do I know if the project/works will require a Principal Contractor?

Any project or works involving more than one contractor, requires the client to appoint (in writing) a principal contractor and make sure they carry out their duties

Is the pre-construction phase the period of time before construction starts on site?

L153 - Regulation 2 Interpretation – 'pre-construction phase' "means any period of time during which design or preparatory work is carried out for a project and may continue during the construction stage"

In simple terms:

Pre-construction is everything that happens on a construction project before you do any construction work. You might refer to this as the planning phase or project preparation, but in CDM, it's known as pre-construction.

Comment – Some projects have distinct design and construction stages, but design work often continues in parallel with construction activities. A wide variety of design activities take place on a typical project, some of them by contractors (e.g. Building services). The principal designer role is to manage 'pre-construction' activities, the principal contractor has to manage the 'construction' activities. The greater the overlap of activities, the greater the need for the PD and PC functions to work together. This is particularly relevant where advanced works (often referred to as 'enabling works') are carried out before main works packages are let.

Who needs to take on the Principal Designer role and why?

L153 - Regulation 5(1) - "A designer with control over the pre-construction phase"

In simple terms:

The Principal Designer is a designer which may be an organisation or an individual (on smaller projects) who is appointed by the client to take control of the pre-construction phase of any project involving more than one contractor to plan, manage, monitor and coordinate health and safety in the pre-construction phase.

Comment - Depending on the nature and complexity of the project, the client, lead designer or another 'person' (who is a designer) with control over the pre-construction activities is the most suitable to take on the function. In legal terms the 'person' can be an individual or an organisation. Every project client must consider what is the best arrangement and this should be done as part of

developing the Client Brief. The preceding case studies demonstrate the variety of ways in which the requirements of the Regulations can be satisfied.

Do designers have to identify all risks?

L153 Paragraph 102 – “Identifying insignificant risks is not an effective way of alerting other duty holders to important design issues they need to know about. Designers should be able to demonstrate they have addressed only significant risks. These are defined as “not necessarily those that involve the greatest risks, but those (including health risks) that are not likely to be obvious, are unusual, or likely to be difficult to manage effectively”.

In simple terms:

A significant risk is anything that is not trivial, during the work or planning the work that may expose someone to danger and cause them harm for their physical health or their safety, and these should be considered by the Designer. The Designer should then put in place means to make people safe (control and manage the risks effectively).

Comment – every project team should focus, from the outset, on those areas of the project that could represent a threat to the wellbeing of the workforce and the wider population. The major causes of accidents and ill-health are well recognised in the Construction sector; falls from height, entrapment due to collapse or overturning; being struck by a flying object or vehicle, slips, trips and falls on the same level and manual handling are the most common and these require to be managed effectively.

Remember, it is important that designers must consider and eliminate/reduce risks during end use, maintenance, and eventual demolition of the building, not just risks which are present during the construction phase. Refer also to Schedule 3 in the Appendix.

What is the principal designer’s role during the construction phase?

L153 – Regulation 11 (7) – “The principal designer must liaise with the principal contractor for the duration of the principal designer’s appointment and share with the principal contractor information relevant to the planning, management and monitoring of the construction phase and the coordination of health and safety matters during the construction phase”

In simple terms:

A principal contractor is the contractor with control over the construction phase of a project involving more than one contractor. They are appointed in writing by the client (commercial or domestic) to plan, manage, monitor and coordinate health and safety during this phase.

Comment – although the principal designer and principal contractor duties are different, a collaborative relationship will allow both parties to benefit from the knowledge and experience of the other and discharge their duties more effectively. The greater the volume of design work to be carried out after the commencement of construction works, the more vital that the two major duty-holders form an integrated team.

What should the health and safety file contain and who should produce it?

L153 – Reg. 12(5) – “During the pre-construction phase, the principal designer must prepare a health and safety file appropriate to the characteristics of the project which must contain information relating to the project which is likely to be needed during any subsequent project to ensure the

health and safety of any person. Reg 12(8) If the principal designer’s appointment concludes before the end of the project, the principal designer must pass the health and safety file to the principal contractor”

In simple terms:

A Health and Safety File is a collection of health and safety information that serves as a legal record, benefiting both clients and end users – from initial construction through use, cleaning, maintenance, alterations and refurbishment, and demolition.

Its purpose is to ensure that, at the end of the project, the client has information that anyone carrying out subsequent construction work on the building will need to know about in order to be able to plan and carry out the work safely and without risks to health.

Comment – the purpose, form and required content of a health and safety file should be addressed as part of the development of the Client Brief. Appendix 4 of L153 provides guidance as to the range of information which project teams should consider for inclusion - but the list is not exhaustive. Only information that will assist future project teams in planning work so that health and safety is ensured should be provided, ‘in a convenient form, clear concise and easily understandable.’ If this approach is agreed at the outset of the project, all parties can contribute appropriate information and avoid unnecessary bureaucracy.

When and who may need to take on the client duties on a domestic project?

L153 - Regulation 7 (1) – “Where the client is a domestic client the duties in regulations 4(1) to (7) and regulation 6 must be carried out by—

- (a) the contractor for a project where there is only one contractor.
- (b) the principal contractor for a project where there is more than one contractor: or
- (c) the principal designer where there is a written agreement that the principal designer will fulfil those duties.

7(2) If a domestic client fails to make the appointments required by regulation 5—

- (a) the designer in control of the pre-construction phase of the project is the principal designer;
- (b) the contractor in control of the construction phase of the project is the principal contractor.

In simple terms:

*A domestic client is any individual who has construction work carried out on their home, or the home of a family member, that is **not** done as part of any business.*

Comment – the guidance to Reg 7 in L153 makes clear that in the normal course of events ‘the builder’ (either the contractor or principal contractor) would be expected to take on the duties normally required of a domestic client:

- allowing sufficient time and resource
- notifying the HSE if the project is notifiable
- arranging construction work so it can be carried out safely
- ensuring adequate welfare facilities are provided

- providing pre-construction information.

For domestic projects where there are no complex design issues, this approach should work well. However, where the design development needs to take account of challenging site conditions the lead designer may feel it is in the best interests of both the client and the project team to take on what is effectively the project management role (L153 para 55). Refer to the 'How CDM 2015 Applies to Domestic Clients' flowchart in the Appendix.

Any designer contemplating taking this route should be aware that in doing so they would attract additional legal responsibilities so should be confident that they have the capability and resources to discharge their legal and professional duties. The contractor or principal contractor would still be responsible for site safety, provision of welfare facilities etc. The Client Brief setting out these arrangements should be shared with the domestic client, who can influence the site culture, even without taking on the project management role.

Comment – unlike a commercial client, if a domestic client does not make an appointment in writing, they do not take on the duties themselves. Any designer taking on a commission for a domestic project should clarify with the client whether they have or intend to make a written appointment. The Client Brief template can be used in the same way as with a commercial client to clarify the management arrangements and ensure all parties are clear where the legal responsibility for managing risk lies.

Appendix

Schedule 3. Work Involving Particular Risks

Regulation 12(2)

- 1. Work which puts workers at risk of burial under earthfalls, engulfment in swampland or falling from a height, where the risk is particularly aggravated by the nature of the work or processes used or by the environment at the place of work or site.*
- 2. Work which puts workers at risk from chemical or biological substances constituting a particular danger to the safety or health of workers or involving a legal requirement for health monitoring.*
- 3. Work with ionizing radiation requiring the designation of controlled or supervised areas under regulation 16 of the Ionising Radiations Regulations 1999.*
- 4. Work near high voltage power lines.*
- 5. Work exposing workers to the risk of drowning.*
- 6. Work on wells, underground earthworks and tunnels.*
- 7. Work carried out by divers having a system of air supply.*
- 8. Work carried out by workers in caissons with a compressed air atmosphere.*
- 9. Work involving the use of explosives.*
- 10. Work involving the assembly or dismantling of heavy prefabricated components.*