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Second edition

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Chapter 2

Responsibilities of key duty holders in construction design and management

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Construction often involves a complex set of operations that culminate in the delivery of a product. Several varying human and environmental factors occur throughout the process and these often generate several independent and/or inter-dependent hazards. The process of health and safety risk management will thus need to be innovative and at par with the lifecycle of the project. It is therefore important that all participants are aware of the responsibility thrust upon them individually and severally throughout the entire process.

The Construction Design and Management (CDM) Regulations place specific duties on key participants on any construction project. This chapter describes the key duty holders whilst also giving an overview of their main responsibilities. Some inter-relationships of these roles are also examined with a view to enhance the effective understanding and implementation of one of the basic requirements of the regulations – ensuring worker safety. Construction Design and Management is always evolving and it is essential that not only do duty holders update their knowledge on emerging technology and concepts; but also processes and systems that will enhance effective health and safety management. The CDM Regulations have been revised fairly substantially since its maiden edition in 1994. At the present time, CDM 2015 has now emerged as the latest edition.

Box 2.1 Key learning points

- To review developments in the CDM Regulations and the major changes between the CDM 2007 and CDM 2015
- To describe the main responsibilities of each key duty holder under the CDM Regulations 2015

2.1 Introduction

Construction can be an intricate process, which often involves a complex network of operations that culminate in the delivery of a product. More often than not, this product (a building, a highway or other infrastructure) is unique even when the original intention was to replicate an existing prototype. This attribute of uniqueness of the product happens as a result of the varying human and environmental factors that are at interplay. These factors introduce a set of often inter-related hazards that imply that safety management will need to be innovative and in step with the lifecycle of the project. It is therefore important that all participants are aware of the responsibility thrust upon them individually and severally throughout the entire process.

Since the advent of the Construction Design and Management (CDM) Regulations 2007, the UK construction industry has been witnessing a variety of efforts aimed at giving publicity to the Regulations – which had replaced the original CDM 1994. Particularly, it was considered most important that those who would be entrusted with responsibilities under the Regulations were made to understand clearly what their responsibilities were. Also, where these had either been non-existent or a wide variant from the CDM 1994 roles, it was considered necessary that those differences were clearly understood by all involved. The CDM 2007 had thus recognised duty holders as those with specific health and safety roles to play in the procurement and delivery of construction projects. These included the client, CDM coordinator, designer, principal contractor and the contractor.

However, on 6 April 2015, CDM 2015 came into effect as a replacement to the CDM 2007, and is set out in five parts as was the case with CDM 2007. CDM 2015 also recognizes duty holders similar to the CDM 2007 but with variations to their duties and the removal of one of the roles of CDM 2007 – the CDM-coordinator. In the new Regulations there is now the addition of principal designer, with the broad remit to coordinate health and safety matters in the design phase. Also the Approved Code of Practice (ACoP) which was used to implement CDM 2007 has not been given a variant to CDM 2015 but has been replaced with the CDM 2015 Guidance Document.

2.2 CDM 2015: The major changes to CDM 2007

Some key changes from the CDM 2007 Regulations. These mostly border on the change of duties for each duty holder and also how they are to interact and inter-relate in the course of delivering a project. The CDM 2015 Regulations explanatory notes and the Guidance on Regulations Documents stipulate a lot of these and are thus hereby presented.

Of great significance is that the role of the CDM-Coordinator (CDM 2007) has been removed and the client, general and other duties have been modified.

Other major changes are also notable. One of these is that the CDM 2015 now applies to all clients of construction projects – domestic and non-domestic (who act in the furtherance of a business). This implies that every client is now a duty holder and will need to act as such. However, CDM 2007 had restricted the client duties to non-domestic clients only. In addition, unlike CDM 2007 where only in notifiable projects are clients required to make some duty holder appointments, the client (under CDM 2015) is now mandated to appoint the (newly created) principal designer and principal contractor where there will be more than one contractor working on the project. Furthermore, the client now has a duty to notify and the threshold is higher than in CDM 2007 amongst other things. It is in any case permitted that the contractor, principal contractor or principal designer can carry out most of the duties of the domestic client.

Finally, of worthy note is that with respect to pre-construction archaeological investigations, the CDM 2015 has not included this activity in the definition of construction work.

2.3 Salient points on the duty holder roles under CDM 2015

Clients

CDM 2015 defines a client as anyone for whom a construction project is carried out-whether they be domestic or commercial clients.

Three main duty holders are recognised by the CDM Regulations as those with responsibility for managing health and safety on a construction project. These include the client, the principal designer and the principal contractor. The client has overall responsibility for the successful management of the project and is supported by the other two duty holders in different phases of the project. For the successful delivery of a project, good working relationships between the duty holders are essential. Generally, the client should ensure that the project is set up so that it is carried out in a way that adequately controls the risks to the health and safety of those who may be affected from the project start to finish. On the other hand, the principal designer manages health and safety in the pre-construction phase of a project. The principal designer is also involved in the construction phase through liaison with the principal contractor and ongoing design work. The third significant duty holder is the principal contractor who mostly manages the construction phase of a project. This is achieved by liaison with the client and principal designer throughout the project.

Clients need to produce a brief to express their intentions and help them undertake their roles. These will assist those designing, constructing or using the structure or building when shared with them at an early stage. This brief could be verbal communication or a written document drafted by the client, a designer or contractor based on the client's requirements with them. The brief should: describe the main function and operational requirements of the finished building or structure; outline the motivation for the project; highlight the client's expectations during the project – especially the management of health and safety risks; explain the proposed design direction; establish a single point of contact for any client queries or discussions during the project and set a realistic timeframe and budget.

In addition to the above, clients are expected to make suitable arrangements for managing the project ensuring that all matters relating to health and safety on the project are properly managed throughout. They should also select the project team and formally appoint duty holders – appointing a principal designer and a principal contractor in writing as the need may arise (i.e. where there are more than one of each of these on the proposed project). Without these appointments the client will be assumed to have taken on these roles and the associated legal duties directly.

Clients are also expected to provide information to help with design and construction planning; notify the project to the enforcing authorities, where required (i.e. if the project is expected to last longer than 30 working days and have more than 20 workers working on the project at any one time, or exceed 500 person days) and ensure the management arrangements are working. They are to ensure also that the construction phase plan is in place. Whilst the principal contractor is required to produce a plan of how they will manage health and safety on site during the construction phase, the client has to be satisfied that this is so before the work starts on site. This will be by checking with the principal contractor that the plan is relevant and meets the requirements of the job. The client

must also ensure that suitable welfare facilities are provided on site and that the management arrangements are working. The client must also check that completion and handover arrangements are in place as appropriate and that the health and safety file has been prepared and arrangements are made to maintain it adequately.

As for domestic clients who have construction work carried out on their home, or on the home of a family member, which is not carried out in connection with a business; they are not required to carry out the duties placed on commercial clients. However, where the project involves only one contractor, the client duties must instead be carried out by the contractor as well as the duties they already have as contractor for the project. This requires doing a little more to manage the work to ensure good health and safety. In the event that there is more than one contractor, the client duties must be carried out by the principal contractor as well as the duties they already have as principal contractor. If the domestic client has not appointed a principal contractor then these duties of the client will be carried out by the contractor in control of the construction work. (Please refer to the Centre for International Development and Training Guidance Document for Clients for more information.)

Principal designers

The principal designer must be a designer and have control over the pre-construction phase of the project. The principal designer's main duties are to plan, manage and monitor the pre-construction phase in order to coordinate health and safety. The pre-construction phase is any period during which design or preparatory work is carried out for a project, which may continue during construction. The principal designer must: assist the client in collating relevant information; provide pre-construction information to other duty holders; ensure that designers comply with their duties and cooperate with each other; liaise with the principal contractor for the duration of the appointment; and prepare the health and safety file. These duties apply regardless of the contractual arrangements for the appointment of other designers and whether or not the project is notifiable to the Health and Safety Executive (HSE). Where the principal designer appoints other designers, the principal designer is responsible for ensuring that they have the relevant skills, knowledge and experience to deliver their work.

The principal designer must understand the client's level of knowledge and experience of the particular type of project. Where a client is unfamiliar with construction projects, they will need to be made aware that the CDM Regulations apply to their project by referring them to the appropriate industry guidance for clients (for further information that can assist them). In liaison with the client, the principal designer should plan the management of the pre-construction phase agreeing when updates will be provided, as well as the level and type of information they would like to receive. Sequel to this, they are required to provide information to the designers and ensure co-ordination with and between the designers. The principal designer should also oversee the design and ensure that the designers comply with their duties. All engagement must be early in the project and any necessary information should be pointed out to the client in good time.

Sequel to the above, the principal designer should proceed to compile and review the pre-construction information to check that the information provided is appropriate for supporting the construction phase. They should also liaise with the principal throughout their appointment, communicating with them regularly to ensure that the design, including temporary works design, is coordinated. All required information must be provided to the principal contractor when it becomes available. This information will be used to prepare the construction phase plan, as well as to develop the health and safety file. The principal contractor will also need to provide the construction information, including any changes to the original design along with the as-built drawings. When the project is complete, the health and safety file must be handed to the client. This handover is a responsibility of the principal designer.

Other duties of the principal designer include project set up and undertaking an early site visit to ensure that any significant health and safety hazards that have been identified are added to the project risk register amongst other things. This also involves encouraging safer designs through the use of red–amber–green (RAG) lists (see Table 2.1).

During the pre-construction phase, the principal designer is expected to arrange a pre-design meeting with the client and the designers. This gives an opportunity to discuss the brief and the approach to health and safety on the project. The essence of this is to ensure that the proposed project details are reviewed extensively for the appropriate management controls. They also actively encourage designers to work together as a team.

The principal designer should also attend site or progress meetings as this will help them maintain a good working relationship with the principal contractor and actively discuss queries and issues. Amongst other things, the principal designer should also be able to undertake a specific review with the principal contractor to determine how much the pre-construction information assisted them during the construction phase. (Please refer to the Construction Industry Training Board (CITB) Guidance Document for Principal Designers for more information.)

Designers

A designer is an organisation or individual that prepares or modifies a design for any part of a construction project, including the design of temporary works, or who arranges or instructs someone else to do it. Designers include architects, consulting engineers, interior designers, temporary work engineers, chartered surveyors, technicians, specifiers, principal contractors,

Red lists	Hazardous procedures, products and processes that should be eliminated from the project where possible. • Lack of adequate pre-construction information (such as asbestos surveys, details of geology, obstructions, services, ground contamination and so on). • Hand-scabbling of concrete (such as 'stop ends'). • Demolition by hand-held breakers of the top sections of concrete piles (pile cropping techniques are available). • Specification of fragile roof lights and roofing assemblies. • Processes giving rise to large quantities of dust (such as dry cutting, blasting and so on). • On-site spraying of harmful substances. • Specification of structural steelwork which is not purposely designed to accommodate safety nets. • Design of roof mounted services that require access (for maintenance and so on), without provision for safe access (such as barriers). • Glazing that cannot be accessed safely. All glazing should be anticipated as requiring cleaning replacement, so a safe system of access is essential. • Entrances, floors, ramps, stairs and escalators not specifically designed to avoid slips and trips during use and maintenance, including taking into account the effect of rain water and spillages. • Design of environments involving adverse lighting, noise, vibration, temperature, wetness, humidity and draughts or chemical and/or biological conditions during use and maintenance operations. • Designs of structures that do not allow for fire containment during construction.
Amber lists	Products, processes and procedures to be eliminated or reduced as far as possible and only specified or allowed if unavoidable. Including amber items would always lead to the provision of information to the principal contractor. • Internal manholes and inspection chambers in circulation areas. • External manholes in heavily used vehicle access zones. • Specification of 'lip' details (such as trip hazards) at the tops of pre-cast concrete staircases. • Specification of small steps (such as risers) in external paved areas. • Specification of heavy building blocks (such as those weighing more than 20 kgs). • Large and heavy glass panels. • Chasing out concrete, brick or blockwork walls or floors for the installation of services. • Specification of heavy lintels. (Slim metal of hollow concrete lintels are better alternatives.) • Specification of solvent-based paints and thinners, or isocyanates, particularly for use in confined areas. • Specification of curtain wall or panel systems without provision for tying or raking scaffolds. • Specification of a blockwork wall more than 3.5 metres high using retarded mortar mixes. • Site traffic routes that do not allow for one-way systems and/or vehicular traffic segregated from site personnel. • Site layout that does not allow adequate room for delivery and/or storage of materials, including site-specific components. • Heavy construction components which cannot be handled using mechanical lifting devices (because of access restrictions/floor loading and so on). • On-site welding, in particular for new structures. • Use of large piling rigs and cranes near live railways and overhead electric power lines or where proximity to obstructions prevents guarding of rigs.
Green lists	Products, processes and procedures to be positively encouraged. • Adequate access for construction vehicles to minimise reversing requirements (one-way systems and turning radii). • Provision of adequate access and headroom for maintenance in plant room, and adequate provision for replacing heavy components. • Thoughtful location of mechanical and electrical equipment, light fittings, security devices and so on to facilitate access, and placed away from crowded areas. • Specification of concrete products with pre-cast fixings to avoid drilling. • Specification of half board sizes for plasterboard sheets to make handling easier. • Early installation of permanent means of access, and prefabricated staircases with hand rails. • Provision of edge protection at permanent works where there is a foreseeable risk of falls after handover. • Practical and safe methods of window cleaning (such as from the inside). • Appointment of a temporary works co-ordinator (BS 5975). • Off-site timber treatment if PPA- and CCA-based preservatives are used (boron or copper salts can be used for cut ends on site). • Off-site fabrication and prefabricated elements to minimise on site hazards. • Encourage the use of engineering controls to minimise the use of personal protective equipment.

Table 2.1 Red–amber–green lists
(Source: Managing Health and Safety in Construction, Guidance on Regulations, Health and Safety Executive, 2015)

specialist contractors and some tradespeople. A design could include drawings, sketches, design details, specifications and product selection, bills of quantity or calculations, prepared for the purpose of constructing, modifying or using a building or structure, a product, or system (such as a mechanical or electrical system).

The decisions of a designer can affect the health and safety of workers and others who will construct, maintain, repair, clean, refurbish and eventually demolish or remove the building or structure, as well as those who will use it as a completed workplace. Designers will need to make clients aware of their duties; prepare and modify designs for safety and health; eliminate, reduce and control risks through design and cooperate and coordinate with others.

In terms of preparations to be made for a project, a designer should check: what is needed; why it is needed; who to get it from and when it is needed. They should establish with the principal designer who is obtaining the information needed and when they are going to provide it. This will help to ensure everyone works together and that they co-operate. Suitable arrangements for receiving the information should be worked out with the principal designer. The client and principal designer are to also supply relevant information that will aid the management of the risks with the design.

Details of suitable information and formats could be found in the appropriate guidance documents. Other sources of information useful to the designers include those from other designers; contractors and other interested parties. Parties such as: planning or building control, heritage bodies, utility providers and other authorities will also need to be consulted as information relating to their requirements could affect the design.

It is essential to undertake an early site visit in order to understand the site arrangements and environmental conditions. The use of collaborative tools such as building information modelling (BIM) may also help significantly with access to: health and safety information; existing information and obtaining design information from other designers. These can be used to review health and safety hazards, obtain pre-construction information, record significant risks and how they are to be managed or controlled and avoid clashes between design elements, such as plant and structural components amongst other things. The use of the red–amber–green (RAG) list is a practical aid to designers on what to eliminate or avoid, and what to encourage (see Table 2.1). (Please refer to the CITB Guidance Document for Designers for more information.)

Principal contractor

The principal contractor is the contractor in overall control of the construction phase on projects with more than one contractor. They are appointed by the client and there should only be one principal contractor for a project at any one time.

The principal contractor will need to interphase between the client and principal designer throughout the work. They will also need to talk to the client about their needs and expectations for the project to better understand the project requirements – checking also that the client is aware of their CDM duties. Planning is an essential part of managing a construction site and should start as early as possible. The aim should be to identify health and safety hazards as well as the control measures and resources needed to reduce or eliminate risk.

One of the most cardinal duties of the principal contractor is to prepare the construction phase plan. This plan should describe how health and safety will be managed during the construction phase. Pre-construction information previously received and any client requirements established should also help in drawing up the construction phase plan. The plan must be developed as soon as practical before setting up the construction site and starting the work, so that it can take into account early issues such as site set up, welfare, and other initial work such as demolition or stripping out the building. The plan should not be complicated but be designed such that it provides a clear understanding of what is needed to manage the construction phase.

Other important duties of the principal contractor are to ensure that welfare facilities are provided and are suitable and sufficient for the size and nature of the site. They must also conduct site inductions and secure the site. It is also the duty of the principal contractor to appoint and engage contractors and workers and provide the right management and supervision whilst also monitoring the hazards on site. They are to contribute to the preparation of the health and safety file and on projects where the principal designer appointment finishes before the end of the construction phase, take on the responsibility for the file and for handing it over to the client. Requirements for the health and safety file, including its structure, content and format, should be identified before the construction phase and communicated to the principal contractor by the principal designer. (Please refer to the CITB Guidance Document for Principal Contractors for more information.)

Contractor

A contractor may be an individual, a sole trader, a self-employed worker or a business carrying out, managing or controlling construction work in connection with a business. Anyone who directly engages construction workers or manages construction work is a contractor. This includes companies that use their own workforce to do construction work on their own premises. The duties on contractors apply whether their workers are employees, self-employed or agency workers.

A contractor is to mainly plan and manage construction work under their control so that it is carried out in a way that limits risks to health and safety. Other duties include managing direct work to control health and safety risks and ensuring those

CDM duty holders	Summary of role/main duties
Clients are organisations or individuals for whom a construction project is carried out.	Make suitable arrangements for managing a project. This includes making sure: ■ other duty holders are appointed; ■ sufficient time and resources are allocated. Make sure: ■ relevant information is prepared and provided to other duty holders; ■ the principal designer and principal contractor carry out their duties; ■ welfare facilities are provided.
Domestic clients are people who have construction work carried out on their own home, or the home of a family member that is not done as part of a business, whether for profit or not.	Domestic clients are in scope of CDM 2015, but their duties as a client are normally transferred to: ■ the contractor, on a single contractor project; or; ■ the principal contractor, on a project involving more than one contractor. However, the domestic client can choose to have a written agreement with the principal designer to carry out the client duties.
Designers are those, who as part of a business, prepare or modify designs for a building, product or system relating to construction work.	When preparing or modifying designs, to eliminate, reduce or control foreseeable risks that may arise during: ■ construction; and ■ the maintenance and use of a building once it is built. Provide information to other members of the project team to help them fulfil their duties.
Principal designers** are designers appointed by the client in projects involving more than one contractor. They can be an organisation or an individual with sufficient knowledge, experience and ability to carry out the role.	Plan, manage, monitor and coordinate health and safety in the pre-construction phase of a project. This includes: ■ identifying, eliminating or controlling foreseeable risks; ■ ensuring designers carry out their duties. Prepare and provide relevant information to other dutyholders. Provide relevant information to the principal contractor to help them plan, manage, monitor and coordinate health and safety in the construction phase.
Principal contractors are contractors appointed by the client to coordinate the construction phase of a project where it involves more than one contractor.	Plan, manage, monitor and coordinate health and safety in the construction phase of a project. This includes: ■ liaising with the client and principal designer; ■ preparing the construction phase plan; ■ organising cooperation between contractors and coordinating their work. Ensure: ■ suitable site inductions are provided; ■ reasonable steps are taken to prevent unauthorised access; ■ workers are consulted and engaged in securing their health and safety; and ■ welfare facilities are provided.
Contractors are those who do the actual construction work and can be either an individual or a company.	Plan, manage and monitor construction work under their control so that it is carried out without risks to health and safety. For projects involving more than one contractor, coordinate their activities with others in the project team – in particular, comply with directions given to them by the principal designer or principal contractor. For single-contractor projects, prepare a construction phase plan.
Workers are the people who work for or under the control of contractors on a construction site.	They must: ■ be consulted about matters which affect their health, safety and welfare; ■ take care of their own health and safety and others who may be affected by their actions; ■ report anything they see which is likely to endanger either their own or others' health and safety; ■ cooperate with their employer, fellow workers, contractors and other duty holders.

* Organisations or individuals can carry out the role of more than one duty holder, provided they have the skills, knowledge, experience and (if an organisation) the organisational capability to carry out those roles in a way that secures health and safety.

** Principal designers are not a direct replacement for CDM co-ordinators. The range of duties they carry out is different to those undertaken by CDM co-ordinators under CDM 2007

Table 2.2 A summary of roles and duties under CDM 2015

(Source: Culled from Managing Health and Safety in Construction – CDM 2015 Guidance on Regulations)

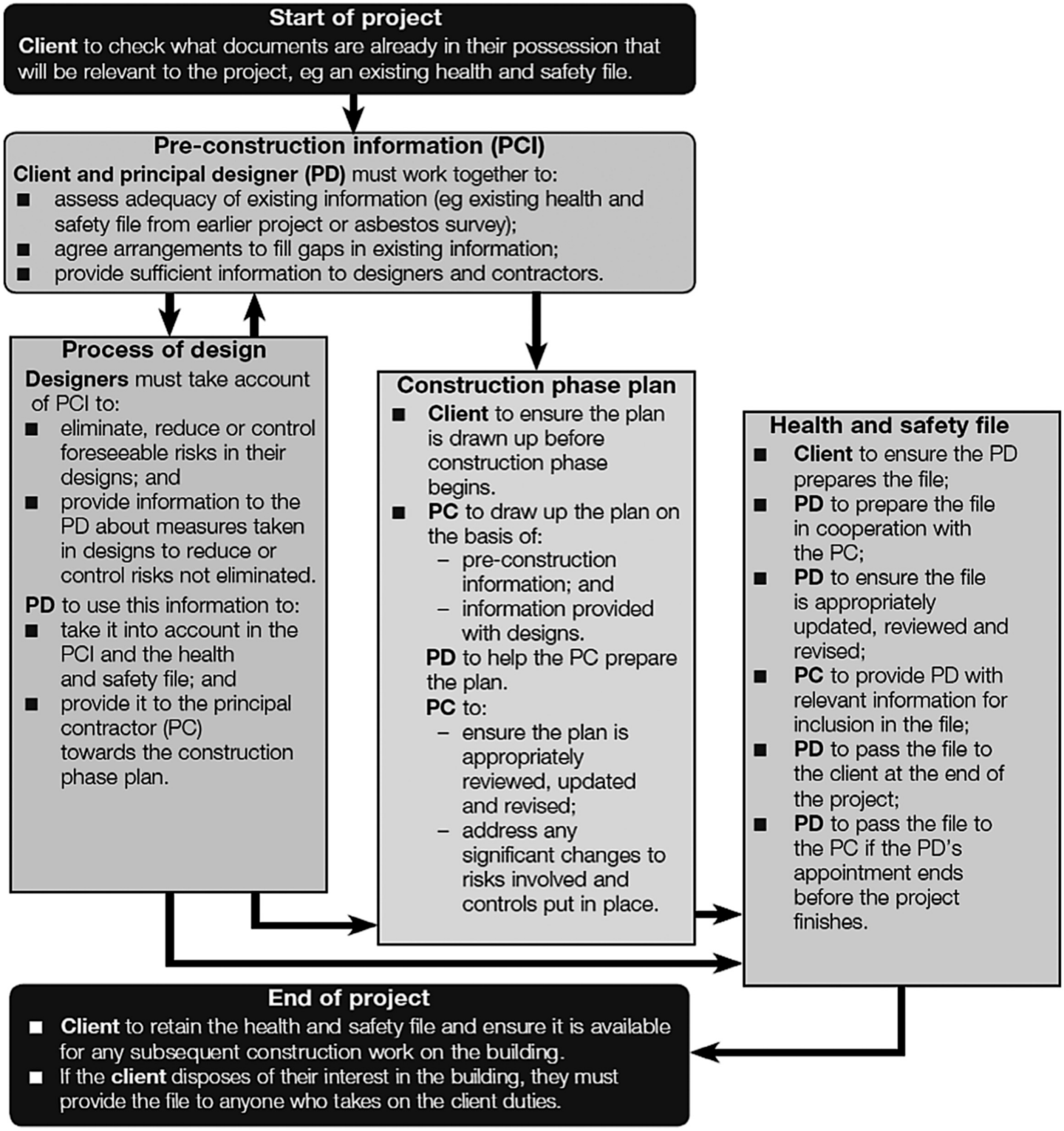

Figure 2.1 Duty holder and information flow relationships on a construction project with many contractors.(Source: Managing Health and Safety in Construction, Guidance on Regulations, Health and Safety Executive, 2015)

carrying out work as part of the contractor team have the right skills, knowledge, training, experience, supervision, plant, tools, equipment, materials and personal protective equipment. The contractor must also pass on relevant and timely information and instructions to workers as appropriate. In all, coordination with the principal contractor and other duty holders must be undertaken by the contractor.

The contractor should also ensure that a site induction is provided and that the site is secure. (Please refer to the CITB Guidance Document for Contractors for more information.)

Workers

As people working for or under the control of contactors on a construction site the workers have duties as well as their employers. Workers must be consulted about matters which affect their health, safety and welfare; take care of their own health and safety and others who may be affected by their actions; report anything they see which is likely to endanger either their own or others' health and safety and cooperate with their employer, fellow workers, contractors and other duty holders.

Table 2.2 shows a summary of the CDM 2015 duty holder roles described above, whilst Figure 2.1 is a flowchart showing the information flow requirements as they relates to the various duty holders and their interactions.

2.4 Summary and Conclusion

This chapter has highlighted the specific duties on key participants on construction projects. Key duty-holder responsibilities were given and some inter-relationships of these roles were also examined as a basis for enhancing the effective understanding and implementation of one of the basic requirements of the CDM 2015 – enhancing worker safety. Construction Design and Management always evolves and this trend creates attendant challenges, which mean that duty holders will need to consistently update their knowledge on emerging technology, concepts, processes, and systems that will enhance effective health and safety management. As part of efforts to ensure that the CDM continues to add value to the management of construction health and safety the Regulations have been subject to several consultation-based reviews since their inception. In the light of this, CDM 2015 is proposed to further consolidate on the effectiveness of the Regulations by reviewing the key duty holder designations and roles. Specifically, the introduction of the principal designer who, in the place of the now defunct CDM coordinator is the one who is to facilitate the coordination of health and safety management from an earlier stage in the project lifecycle. Also the substitution of the ACoP with specific industry guidance is seen as a more efficient way of assisting duty holders to understand and undertake their duties. It is recommended that readers familiarize themselves with the details of their requirements.

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Efficiency and Reform Group (formerly Office of Government Commerce) www.gov.uk/government/organisations/efficiency-and-reform-group
Construction Industry Training Board (CITB) www.citb.co.uk
Institution of Civil Engineers (ICE), Health and safety website www.ice.org.uk/disciplines-and-resources/professional-practice#search-list