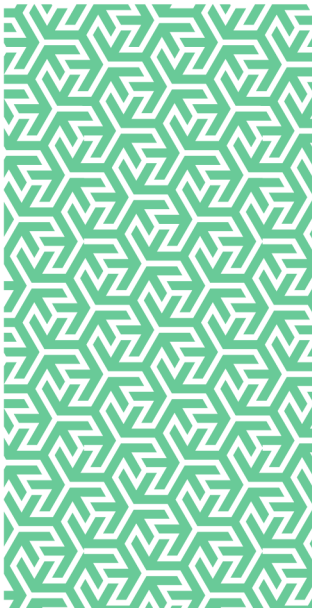


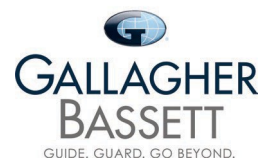


Risk control

Construction Design and Management (CDM) – The Essentials



In partnership with



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Introduction

Large organisations are regularly embarking on major programmes reshaping their property portfolios, and inevitably the Construction Design and Management Regulations 2015 (CDM) will often be involved.

The CDM Regulations came about as a response to a sizable number of fatalities and major injuries recorded¹ in the 1980's and 1990's related to construction activities. A key feature of these accidents involved health and safety being considered as an unnecessary burden of construction work. Worryingly the health and safety of workers and the public was often not considered early enough within a project lifecycle.

The Health and Safety Executive (HSE) recognised that things needed to change and required targeted legislation. To understand the form the CDM Regulations are in today, it is important to appreciate their evolution.

CDM Regulations - Origins

The CDM Regulations were made under The Health and Safety at Work etc. Act 1974 (the Act). It is designed to be a very flexible statute², creating duties on parties towards other parties involved in workplaces and when people are at work. The main parties that it covers are employer, self-employed, employee and controller of premises (otherwise known as an 'occupier').

One feature of the Act is that the Minister of State for Health and Safety can make regulations that further the scope of the Act. In the 1980's and 1990's the Regulations, although made by the UK legal system, were influenced by European Directives. In 1992 the Temporary or Mobile Construction Sites Directive³ (TMSCD) was adopted and so the Health and Safety Executive drafted the first set of CDM Regulations in 1994.

1994

This first version of the regulations introduced new roles and responsibilities on the Client, Agent, Planning Supervisor, Designer and Principal Contractor. Most of the obligations were focused on the project team, and a key element was the need for a health and safety plan (now known as the Construction Phase Plan).

In 1996, the Construction Health, Safety and Welfare Regulations 1996⁴ were implemented setting out basic standards for health, safety and welfare arrangements required for sites.

2007

Fast forward to 2007, after more than 12 years of operating the regulations the next generation of CDM comes into force. This set of the regulations now incorporated site and welfare requirements combining the prior Construction (Health Safety and Welfare) Regulations under the CDM umbrella.

The role of Planning Supervisor disappeared, and in its place was the role of CDM Coordinator. There were some similarities with the two roles, although the CDM Coordinator was expected to take a more direct approach in performing their duties. Their role was to give suitable and sufficient advice and assistance to the client on undertaking the measures needed to comply with the regulations during the project; and ensure that suitable arrangements are made and implemented for the co-ordination of health and safety measures during planning and preparation for the construction phase. After a review⁵ a revised version of the regulations was introduced in 2015.

2015

The current version of the regulations⁶ was not the first time a Construction Phase Plan was required, but it significantly reduced the roles to five parties, notably the Client, Principal Contractor, Contractor, Designer and Principal Designer.

While role and requirements might differ through each version, as changes are made, the fundamental idea of improving health and safety in construction remains.

Construction

The term "construction work" is defined in the regulations and means the conducting of any building, civil engineering or engineering construction work and includes:

- The construction, alteration, conversion, fitting out, commissioning, renovation, repair, upkeep, redecoration, or other maintenance (including cleaning which involves the use of water or an abrasive at high pressure, or the use of corrosive or toxic substances), de-commissioning, demolition or dismantling of a structure
- The preparation for an intended structure, including site clearance, exploration, investigation (but not site survey) and excavation (but not pre-construction archaeological investigations), and the clearance or preparation of the site or structure for use or occupation at its conclusion
- The assembly on site of prefabricated elements to form a structure or the disassembly on site of the prefabricated elements which, immediately before such disassembly, formed a structure

- The removal of a structure, or of any product or waste resulting from demolition or dismantling of a structure, or from disassembly of prefabricated elements which immediately before such disassembly formed such a structure
- The installation, commissioning, maintenance, repair, or removal of mechanical, electrical, gas, compressed air, hydraulic, telecommunications, computer or similar services which are normally fixed within or to a structure

Project Parties

A small project will involve a **Client**, a **Contractor**, and a **Designer** to help bring the project into reality. Depending on the complexity of the project, where more than one Contractor is engaged then a Principal Contractor will be appointed in writing. Where more than one Designer is engaged, then a Principal Designer will also be appointed in writing.

The Client

A fundamental responsibility of the Client is to make sure they appoint a competent Designer and Contractor. To satisfy the issue of competence, individuals or groups who have the appropriate level of knowledge, experience, and skills to complete their roles are required. Fundamental to that is also an appreciation of the limits of their skills, knowledge, and experience. This means the procurement process must be robust and may be called upon to justify why that person or organisation was appointed to that role.

The Client also has significance influence and direct control over the resources that will be required to fulfil the project, in terms of timescale and resources.

The Client is also required to share pre-construction information or information about their existing asset, so that the Contractor has the information required to help prepare the Construction Phase Plan.

Note that domestic clients' duties automatically transfer to the Contractor or Principal Contractor if there is more than one Contractor on the project.

The Designer

When the Client asks for a design, there will be features of the design that has a health and safety impact on those constructing it, as well as those that use the final construction, and even those that will eventually refurbish or demolish the structure.

The design may be complicated and rely on a number of individual designers working on sub-elements. Therefore, there must be co-ordination of Designers to ensure the whole design is fit for purpose.

The design will be using materials that are deliberately chosen, will be worked on, and may be affected by the environment throughout the life of the design.

The Designer must have a good knowledge of health and safety legislation to make sure that their design meets the requirements placed on an employer or occupier once the design is realised. A notable requirement for the Designer is maintaining valid Professional Indemnity Insurance.

The Principal Designer, who may not be involved in the design, is able to support the Client by ensuring that the Designers discharge their duties under these regulations.

The Contractor

The person or persons that undertake the project have the day-to-day responsibility for health and safety on the site during the construction phase, and therefore are key to developing a Construction Phase Plan.

The control of the site and any contractors used on site will be managed by the Site Manager. The Site Manager must ensure that there is perimeter control of the site; anyone entering the site is inducted, supervised and is competent to operate. The sequencing of elements of the build must be considered, as some activities that can coincide introduce new risks. For instance, using a crane to place parts of a structure may involve suspending a load which could fall on others while excavation work is taking place nearby.

Where more than one Contractor participates in the project, they must decide between themselves who takes on the role of the Principal Contractor.

Multiple Roles

A client must be careful because these roles can be held in a variety of ways, depending on how the project is organised. The Client could also be the Designer, or also the Contractor or Principal Contractor. Some organisations can offer to be both the Principal Designer and Principal Contractor.

The essential thing all duty holders need to show is they possess the knowledge, skills, and experience to discharge their roles. It is also useful to be able to demonstrate professional separation of those roles within their organisation so that it is clear each duty holder has the independence to fulfil their role without interference.

An organisation can have more than one duty holder responsibility depending on the size and complexity of the project.

Being clear who has what role at the outset of a project is vital, as the identities of each must be recorded on statutory notification so that in the event of a problem the HSE knows exactly who to speak to and enforce against.

Phases

There are several distinct phases involved with a project: design, pre-construction, construction, commissioning, and handover. The provision of pre-construction information enables both the Designer and the Contractor to make health and safety decisions.

In the **design phase** the Client decides on the look and feel of the structure. These choices can influence types of materials used; the construction methods available; and processes required to make the design become a reality.

Following a risk control hierarchy, some health and safety issues at this stage can be designed out, or different choices made which can significantly improve health and safety on the construction site. For instance, pre-constructed elements off-site reduce the need for dirty processes such as welding, grinding, or sanding which release fumes and dust that can contribute to a worker developing occupational asthma.

The **Construction Phase Plan** involves the builder working out the sequence of events required to go from green field (or brownfield) site to finished structure. This means they must consider the site and the surroundings. For instance, the proximity of a school may mean they need to do more to deter children from accessing the site out-of-hours.

Documentation

Documentation

There are two key documentation requirements for the Client to ensure:

The **Pre-Construction Phase Information** enables the development of how the project will be run, the sequence of events and identifies key risks which must be managed. As the project enters the construction phase, the **Construction Phase Plan** will have to adapt to changing requirements as the work proceeds.

The **Health and Safety File** is a collection of paperwork which will follow the structure through its life. It is like a black box where information is stored such as details on the materials used; construction methods; and design drawings.

This information is stored in anticipation that as the structure is used it will be necessary to access.

Notifications

The CDM Regulations apply to all projects. However, a project is notifiable if the construction work on a construction site is scheduled to: last longer than thirty working days (including weekends and bank holidays) and have more than twenty workers working simultaneously at any point in the project; or exceed five-hundred-person days.

Where a project is notifiable, the client must give notice to the HSE as soon as is practicable before the construction phase begins. This can be done via the [online portal](#).

A Client must be clear that a specific Contractor is responsible for day-to-day standards on a site. A Client will ordinarily contractually hand over the control of the physical site to a specific Contractor who takes on the role of the Occupier. The Occupier of land has a criminal and civil liability which is why they take out liability insurance.

Site Conditions

Every Site Manager should have a comprehensive checklist⁷ to make sure the following, where applicable to the project, is checked and any inadequacies resolved.

This includes:

- **Safe places of construction work** ensuring safe access / egress from site and that should be in good order with space to work
- **Good order and site security** by considering perimeter issues in relation to risk posed such as signage and fencing erected
- **Stability of structures** to prevent the collapse from new or existing structures, and that they are designed to withstand foreseeable loads
- **Explosives** are stored, transported, and used safely. Explosive charge can be used only when sufficient steps have been taken to prevent exposure to injury from the explosion or projectiles
- **Demolition or dismantling** activities must be planned to prevent danger, and those plans must be recorded in writing
- **Excavations** can collapse trapping workers and all practical steps to prevent collapse, dislodging of materials, burying or trapping
- **Cofferdams and caissons** are used, and are designed, constructed, inspected to withstand water ingress

- **Energy distribution installations** must be in a suitable location, periodically checked, and clearly indicated. The same applies for overhead power lines
- **Prevention of drowning** by preventing a person falling into water, and minimise drowning by the provision of rescue facilities and equipment
- **Traffic routes** must be organised so that pedestrian and vehicle routes are without risk to health and safety. The separation or control of vehicles and pedestrians starts with a traffic management plan
- **Vehicles** should be prevented from unintended movements
- **Fire, flooding, asphyxiation**
- **Emergency Procedures** must be prepared for dealing with any foreseeable emergency and, where necessary, implemented, and those arrangements must include procedures for any necessary evacuation of the site or any part of it
- **Emergency routes and exits** must be of sufficient number to enable any person to reach a place of safety quickly in the event of danger
- **Fire detection and firefighting** provided and located in suitable places
- **Fresh air or purified air** on each construction site, or approach to a construction site, to ensure that the site or approach is safe and without risks to health or safety
- **Temperature and weather protection** so that indoor construction workers have a reasonable temperature to work in
- **Lighting** so that each construction site and approach and traffic route to that site is either lit by artificial or natural light. The colour of any artificial lighting provided must not adversely affect or change the perception of any sign or signal provided for the purposes of health or safety
- **Reports of inspections** to record site and features such as excavations, scaffolding and raised with the person who ordered the inspection before the end of the shift

Assessing the Risks

The starting point for any Client, Designer and Contractor is to consider a suitable and sufficient assessment of risk to their employees and other persons affected by the project.

This in practice means also considering how contractors, visitors, members of the public, and unlawful visitors may be put at risk. These 'other persons' are often service users of the organisation.

Common reasons for the HSE taking action on a project are:

- Risk assessments have not been completed
- Risk assessment not reviewed after significant changes to personnel, tasks or the environment
- The Principal Contractor fails in their legal duty to plan, manage and monitor the construction phase, and conduct work without risk to health and safety
- Proceeding with activities with a lack of design drawings or conducting suitable checks on site structures
- Failure to protect the public during construction work activities

Managing the Threat

The public perception is that construction health and safety is a big issue for large construction companies, however many smaller sites encounter problems. The construction sector involves a transient workforce, with limited investment in equipment and personal development of the workforce, and all of this can result in poor site standards.

For all projects, large and small, organisations should ensure that:

- The selection process for appointing the Designer, Principal Designer, Contractor, and Principal Contractor is robust and their competence is formally established
- In situations where more than one role is fulfilled by an organisation, there is clear separation of those functions
- Key insurance covers are in place for all parties
- Notification of the project is made to the Health and Safety Executive if required
- Time is taken to consider risk assessment during the design phase, and the construction phase, to make sure risks are being managed effectively
- The Designer is following the principles of prevention and control from Regulation 4 and Schedule 1 of the Management of health and Safety at Work Regulations⁸ 1999
- The specific Contractor has an effective health and safety management system operating on the site
- An effective health and safety and site induction takes place for anyone entering the site
- Risk assessments are reviewed as the project progresses
- On completion of the project a review is undertaken to ensure are lessons learned for future projects

References

1. Proceedings of ICE Civil Engineering 160 February 2007
Pages 82–88 Paper 14431
2. The Health and Safety at Work etc Act 1974
3. Directive 92/57/EEC - temporary or mobile construction sites
4. The Construction Health, Safety and Welfare Regulations 1996
5. Evaluation of the Construction (Design and Management) Regulations 2007
6. The CDM Regulations 2015
7. HSG 150, Health and Safety on Construction
8. The Management of Health and Safety at Work Regulations 1999, as amended

Further information

For access to further RMP Resources you may find helpful in reducing your organisation's cost of risk, please access the RMP Resources or RMP Articles pages on our website. To join the debate follow us on our LinkedIn page.

Get in touch

For more information, please contact your broker, RMP risk control consultant or account director.

contact@mpartners.co.uk



Risk Management Partners

The Walbrook Building
25 Walbrook
London EC4N 8AW

020 7204 1800
rmpartners.co.uk

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