CDM2015

The Construction
(Design and Management)
Regulations 2015

Industry guidance for

Designers

HSE

CDM15/4

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1 Introduction

1.1 General introduction

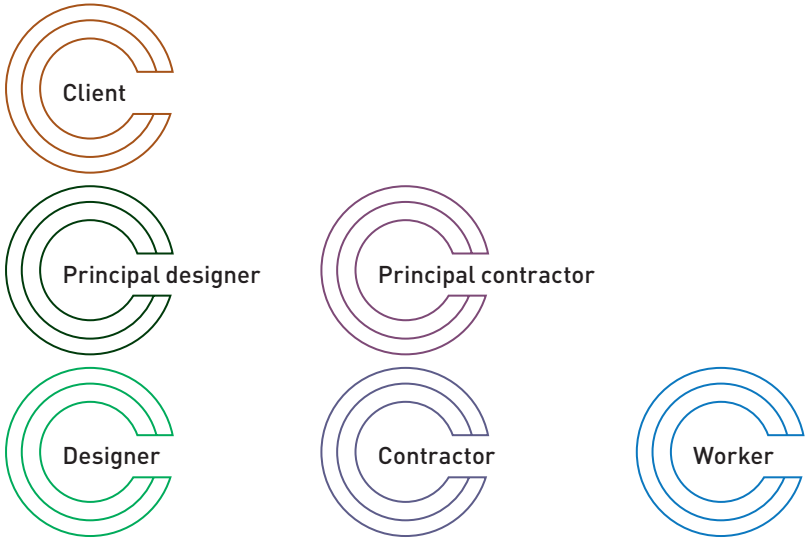
The Construction (Design and Management) Regulations (CDM 2015) are the main set of regulations for managing the health, safety and welfare of construction projects.

CDM applies to all building and construction work and includes new build, demolition, refurbishment, extensions, conversions, repair and maintenance.

This guide is based on sound industry practice and will particularly help small businesses and organisations deliver building and construction projects in a way that prevents injury and ill health.

There are six guides: one for each of the five duty holders under CDM and an additional one for workers.

The six guides are:



These guides should help you better understand your role.

The Health and Safety Executive (HSE) has produced the CDM L-series to offer further guidance. It is downloadable from the HSE website: www.hse.gov.uk/construction.

1 Introduction

1.2 Who is a designer?

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, specialist contractors and some tradespeople.

You could also be carrying out design even if you would normally not identify yourself as a designer. An example would be if you are a client or contractor specifying a particular roof system, deciding what size joists to use or selecting a type of window.

Manufacturers supplying standardised products for use in any construction project are not designers. However, the person who selects the product is a designer and must take account of health and safety issues arising from the installation and use of those products.

In situations where a product is required to be purpose-built (bespoke), then the person who prepares the specification or drawings is a designer and so is the manufacturer who develops the specification into a detailed design.

What is a design?

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).

1.3 What is the designer's role?

As a designer your decisions 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.

Taking risks arising from the design into account can positively affect the project and make it easier for these risks to be managed by contractors and those who will maintain or use the structure.

Your design forms an important part of delivering a project safely and without risks to health.

Designers must:

- understand and be aware of significant risks that workers and users can be exposed to, and how these can arise from their design decisions
- have the right skills, knowledge, and experience, and be adequately resourced to address the health and safety issues likely to be involved in the design
- check that clients are aware of their duties
- co-operate with others who have responsibilities, in particular the principal designer
- take into account the general principles of prevention when carrying out their design work (which are set out in Annex D)
- provide information about the risks arising from their design
- co-ordinate their work with that of others in order to improve the way in which risks are managed and controlled.

1.4 Being appointed and appointing others

You and anyone you engage to help you with a design must have the appropriate skills, knowledge, and experience to do the work. You may be asked to demonstrate this by providing simple evidence, such as proof of membership of a professional institution, references from previous clients or by showing examples of past work and how you have managed risks on similar projects.

If you are appointing others, you will need to consider whether they have any gaps in their skills, knowledge and experience for the project and, if so, seek further advice.

If you appoint another designer (for example, a specialist) you should make enquiries about their skills, knowledge and experience to ensure they are capable of carrying out the job in question.

For smaller jobs, you should look for straightforward evidence, for example by requiring references from previous construction work they have carried out.

For more complicated or higher risk jobs, further enquiries will be needed. For example, the Public Available Specification PAS 91 provides a set of health and safety questions that can be asked by construction clients and those who appoint designers and contractors as part of the pre-qualification process for construction projects.

Only make enquiries relating to information that will address the anticipated risks and capability of the supplier – excessive or duplicated pre-qualification and other paperwork should be avoided because it can distract attention from the practical management of risks.

2 What do you have to do?

2.1 Make clients aware of their duties

When the client engages you to carry out design work you must make sure that they understand their responsibilities under CDM 2015 before you start. If the client needs more details about their responsibilities, you can refer them to the *Industry guidance for clients* (CDM15/1). Where a principal designer has been appointed, check with them that they have made the client aware of their duties.

On projects with more than one contractor the client must appoint a principal designer. If you are working as one of a team of designers, it is important that you know who the principal designer is, and that you co-operate with them.

If you are the only designer involved on a project then you may have additional responsibilities. Refer to the *Industry guidance for principal designers* (CDM15/2) for further information.

2.2 Prepare and modify designs for safety and health

You can help to avoid and reduce the risks that arise during construction and associated work.

When preparing or modifying designs, your first aim is to eliminate risks to anyone who may be affected by your design or, if that is not possible, to reduce or control the risks.

Design is rarely a simple one-step operation. It usually involves you making changes as a result of discussion with others and as more information becomes available. Your design may also become more detailed as the project goes from concept to fully detailed proposals.

Your design will require you to apply your professional or trade expertise to produce information needed by others who will be relying on you to do this. You will need to make sure that the information can be clearly understood by those who will use it.

2 What do you have to do?

2.3 Eliminate, reduce and control risks through design

As a designer you will need to take account of the general principles of prevention (which are set out in Annex D) when preparing or modifying your design. The principles provide a framework within which a design is considered for any potential health and safety risks which may affect:

- workers, or anyone else who may be affected during construction
- those who may maintain or clean the building once it is built
- those who use the building as a workplace.

Health and safety risks must be considered alongside other factors that influence the design, such as cost, fitness for purpose, aesthetics and environmental impact.

When considering health and safety risks, you are expected to do what is reasonable at the time that the design is prepared, taking into account current industry knowledge and practice.

Risks that cannot be addressed at the initial stage of a project should be reviewed later on, during the detailed design stage.

You should take into account the requirement for maintenance, cleaning and access to the finished project. Discussing this with those who will be carrying out this work is important. They may have established methods of working or specific needs or suggestions which you will need to consider in your design.

The level of detail required in passing on information about risks should be proportionate to the risks involved. Insignificant risks can usually be ignored, as can risks arising from routine construction activities, unless the design compounds or significantly alters these risks.

You could offer suggestions for inclusion in the pre-construction information about how elements of the final structure can be utilised during the construction phase, for example by installing the permanent stairs early in the build to reduce the need for scaffolding or temporary access. This will not only have health and safety benefits but could also reduce the project's overall time and cost.

Any records you wish to keep should not be overcomplicated, but proportionate to the risks involved so that you can go back and remind yourself or explain why decisions were made if you are challenged about them. Examples you may wish to record include minutes or notes of meetings, notes on drawings and sketches, as well as risk registers and similar items on more complex projects.

If you are unsure how the design might be constructed, or are not aware of certain construction or maintenance techniques, talk to possible contractors, specialists, manufacturers or suppliers before completing your design.

2 What do you have to do?

2.4 Co-operate and co-ordinate with others

You must co-operate with the client, other designers and anyone else who provides you with information, in particular the principal designer.

You should co-ordinate and communicate with others to provide clear information on how to control any remaining risks. This includes temporary and permanent works designers, who should themselves co-operate to ensure that their designs are compatible with each other.

Depending on the nature and extent of design work, there may be a need to carry out design reviews in order to focus on areas of the design where there are health and safety risks requiring resolution.

On projects where more than one contractor is involved, the principal designer should take the lead in managing this review process. For example, they may ask you to review your design when a subsequent designer or contractor asks for a change. On smaller projects these reviews could be part of normal project meetings.

Reviews enable the project team to focus specifically on health and safety matters. They are most effective when held at the earliest opportunity so that risks can be identified and then eliminated or reduced in good time. The need for such reviews is likely to continue throughout the project. This is particularly necessary where there are changes to requirements or designs later in the project.

3 What information do you need?

You will need key pieces of information in order to carry out your work. These should be provided by the client and, where appointed, by the principal designer and any other designer working on the project.

3.1 Preparation

You will need the right information at the right time; otherwise you cannot do your job properly, and you may miss the opportunity to take into account relevant risks which will affect others. You are best placed to know what you need, so you may need to take the initiative to obtain it.

Ask yourself the following.

Question	Possible answers
What information do I need?	Surveys, trial pits, others' designs or calculations.
Why do I need it?	To inform the design decisions.
Who do I get it from?	Client, principal designer, utility companies, other designers, or existing users of the building.
When do I need it?	Early enough to consider it in the design.

Establish with the principal designer who is obtaining the information you need and when they are going to do it. This will help to ensure everyone works together and co-operates.

If there are no suitable arrangements for receiving the information you need, raise it with the principal designer.

3.2 Information from the client and principal designer

To manage the risks with your design you will need a number of key pieces of information from the client. Ideally these should come via the principal designer, where appointed.

3 What information do you need?

Depending on the type and scope of the project you can reasonably expect the following.

- Pre-construction information (see Annex B).
- A client brief, including how the finished project will be used.
- Information on the site and ground conditions, any existing structures or operational activities, noise levels, any restrictions on working hours, existing utility services and ecological, environmental or heritage constraints.
- Details of the project team (such as the client, other designers, specialist suppliers, contractors, principal contractor, existing users and so on).
- The methods for communicating during the design, including how you will communicate information such as design risks and the level of detail. Methods could include drawings, registers, electronic systems, email and web-based systems.
- Information held by others (such as other designers) which may affect your design, including any changes you will need to consider.
- The format required for information that will be included in the health and safety file.

3.3 Information from other designers

Where other designers are working on the project, you may need to know about any parts of their design that will have an impact on your work. This information should be given to you.

The information you receive should be clear and concise with the significant health and safety issues clearly identified. For example:

- designers' drawings and reports with special requirements, such as temporary loadings, access or build requirements for installation or maintenance
- sequences of construction where this may affect your design, for example a wall may need to remain in place until a beam has been installed
- specialist guidance if appropriate, such as fire prevention or commissioning requirements
- any residual risks (risks which they have not designed out) such as unusual shapes, openings, exposed edges, materials or loads, along with information on controlling these risks, such as required sequences of installation or stability requirements .

3.4 Information from contractors

You may need to work with the principal contractor, other contractors or specialist contractors to help you understand and deal with risks, in particular where these people or companies carry out design. Information may include:

- details of construction plant and access which may affect the design, for example the position of cranes and hoists, locations where materials might be unloaded, stored and distributed, or traffic management and public protection measures
- arrangements for deliveries which may require additional protection or design, such as on weak structures, on roadways or near members of the public
- details of proposed sequencing which may introduce additional risks that you, as designer, may be able to reduce (for example through detailing) information on materials or methods of work which may be introduced to avoid health risks, such as wet-cutting masonry or off-site painting

What information do you need?

- details of any interface with temporary works, such as excavations and scaffolds, and including working space
- specialists' drawings and details, which may include loadings, details of any restrictions relating to the construction, installation, commissioning, maintenance or replacement of specialist works. For example, walls may have to be constructed out of sequence to allow equipment to be taken into a building but this may affect stability or detailing
- workers' views on how the risk management of certain tasks should be improved, for example how certain elements may be handled, installed or maintained.

3.5 Information from other interested parties

Other requirements or constraints in your design from parties such as planning or building control, heritage bodies, utility providers and other authorities will need to be considered.

4 What information must you provide?

You are expected to provide information about your design to help protect those constructing and subsequently using or maintaining the building or structure.

4.1 Preparation

You need to provide the right level of information to the right people at the right time.

Information should be project specific and of suitable detail to those who need it.

You should agree with the principal designer how information will be exchanged.

This may include risks that, due to the nature of the project or design, could be difficult to manage, are unusual or not likely to be obvious to a designer or contractor with the appropriate skills, knowledge and experience.

Difficult to manage	These may be common risks but be in awkward locations, such as: • lack of space for the erection of standard scaffolding or for deliveries • proximity of gas mains or overhead power lines. They may also relate to the nature of the risk, for example working in close proximity to the public could present a risk of injury.
Unusual	These may be common risks occurring in unusual circumstances. They might also be unusual because of the nature of the construction method or site conditions, for example: • unstable or contaminated ground • asbestos • lead paint • silica dust.
Not likely to be obvious to a contractor or designer	You may have had some time to familiarise yourself with the project but the contractor, at the pricing stage, may not be aware of some of the less obvious risks, such as: • structural issues associated with working around existing foundations • fragile roofs or fragile surfaces.

4 What information must you provide?

4.2 Information for the client

You must provide the client with health and safety information that might affect them or future users, during or after construction, for example, details of how to clean, access or maintain parts of your design.

4.3 Information for the principal designer

You must provide certain information to the principal designer.

- Information relating to your designs, including any unusual remaining risks and the key assumptions and decisions you have made. **This is an important part of the pre-construction information which will be provided to the principal contractor.**
- Details of significant risks that are a part of your design. This could include sequencing of erection, any phased handovers or temporary support that is required.
- Information for inclusion in the health and safety file. This might include information which you have gathered during the preparation or in the course of your design that could be of future use to the client or end user in the use, maintenance, future work on, or demolition of the structure.

For further information on the health and safety file, see Annex C.

4.4 Information for other designers

You must provide the following information to other designers.

- Design loads, where you are responsible for the selection of plant, equipment, materials or civil and structural design.
- Design parameters, where they could affect how others design their elements of the work, for example the need for maintenance access, ventilation, power and waste, sequences and stability.
- Key principles used in your design, such as loads, and stability, principles used for avoiding disproportionate collapse, principles and precautions relating to fire, and assumptions of the ground conditions.
- Design drawings relevant to their designs, with significant risks, such as existing services, clearly identified.
- Specifications, but only to the extent that these will inform their designs.
- Information you have obtained to aid your design that could be useful to others, for example information from structural and asbestos surveys, highways authorities, utility owners, site security history and contaminated land information. Some of this information may have originally come through the principal designer.

4 What information must you provide?

4.5 Information for principal contractors and contractors

You must provide the following information to the principal contractor and contractors.

- Any relevant assumptions your design makes, such as temporary works or sequencing required where these are not obvious to a contractor with suitable skills, knowledge and experience. For example, you should identify whether a wall will become unstable if it is unsupported while carrying out work nearby, or the way in which you have assumed temporary props or platforms will be installed or used.
- Any survey or report obtained as part of your appointment that could be useful to others in the management of health and safety.

You should consider the user of the information and how best to provide it. For example information that a contractor needs on site is probably best shown on drawings and not in specifications or margin notes. You should respond promptly to any queries about information you have provided.

5 What could it look like in practice?

This section identifies examples of good practice which illustrate how the designer can contribute to the success of the project.

5.1 Provide a schedule on appointment

As soon as you have been appointed, you should provide the client with a detailed schedule of services and resources to help plan what you need to do to ensure the client is clear about what to expect and to reassure them that you are fulfilling your role.

5.2 Develop a good relationship with the client

This will assist you in managing health and safety risk and resolving any issues. It will take time but should be worthwhile. Talk to the client so that you understand their needs; this is easier at face-to-face meetings than by phone or email.

5.3 Ensure you understand the brief

Talk to the client about their brief, to receive a further insight into their requirements. This will also give you an opportunity to ask questions and offer suggestions.

5.4 Clarify roles

To avoid confusion, you should distinguish between the purpose of the principal designer and the designer roles by separating the scope of service and resources required for each.

5.5 Hold regular meetings

Leadership from the client is important and they should be encouraged to hold regular progress meetings to bring all parties together. Involving the client and principal contractor in meetings should improve co-ordination and understanding, particularly when making decisions.

5 What could it look like in practice?

5.6 Undertake an early site visit

This will assist you with the review of the existing environment , as well as helping you to understand the site arrangements and conditions. A site visit should help you determine how your work interacts with others. Where possible, involving the client or principal designer and other designers in your site visit will help to identify and understand any potential issues arising from your design.

5.7 Use building information modelling (BIM)

If the project is set up to use building information modelling (BIM) there may be opportunities to use this in your role as designer. It could help you to:

- access health and safety information
- obtain existing information in order to help with your design
- obtain design information from other designers to review health and safety risks
- obtain pre-construction information
- access a database of good practice guides and prompt lists
- access the health and safety information for the project
- record significant risks and how they are to be managed or controlled
- co-ordinate temporary and permanent work designs
- avoid clashes between design elements, such as plant and structural components.

5.8 Use Red-Amber-Green (RAG) lists

Using Red-Amber-Green (RAG) lists is a practical aid to designers on what to eliminate or avoid, and what to encourage. For an example, refer to Annex E.

6 Working for domestic clients

The role of principal designers, designers, principal contractors and contractors when working on a project for a domestic client is normally no different to their role when working for a commercial client. They have the same duties and should carry them out in the same way as they would for a commercial client. However, the effect of regulations is to transfer the client duties to other duty holders when working for domestic clients.

Guidance for domestic clients in relation to CDM 2015 can be found in the *Industry guidance for clients* (CDM15/1). The following paragraphs set out what other duty holders need to do as a result.

Annex F shows the transfer of client duties from a domestic client to other duty holders involved.

6.1 Domestic projects involving only one contractor

On these projects, the client duties are transferred to the contractor, who must carry out the client's duties as well as their own. In practice, this should involve contractors doing no more than they have done in the past to comply with health and safety legislation. **Compliance with their own duties as a contractor will be taken as compliance with the relevant client duties** to the extent necessary given the risks involved in the project.

As a result of the contractor taking on the client duties, any designers involved in the project will work with the contractor in their role as the 'client'.

6 Working for domestic clients

6.2 Domestic projects involving more than one contractor

Transfer of the client duties to the principal contractor
On these projects, the principal contractor will normally take on the client duties and they will need to comply with these duties as well as their own. If the domestic client does not appoint a principal contractor, the role of principal contractor falls to the contractor in control of the construction phase of the project.

As a result of a principal contractor taking on the client duties, the principal designer involved in the project will work with the principal contractor in their role as the 'client'. If the domestic client does not appoint a principal designer, the role of the principal designer falls to the designer in control of the pre-construction phase of the project.

Transfer of client duties to the principal designer
Domestic clients can choose to have a written agreement with the principal designer in order to transfer the client duties to the principal designer. In this case, the principal designer must fulfil the duties of the client as well as their own and the principal contractor will work with the principal designer as the 'client'.

The co-ordination and effort required should be proportionate to the scale of the project. For example, the health and safety file could include information on any equipment installed, such as manufacturer instructions. Where drawings or sketches exist, these should also be included.

For example, a client wishes to have a bathroom refurbished and asks a builder to do the work and plan the layout. The builder carries out the work but appoints a plumber and an electrician. As the builder is in overall control, they are the principal contractor as well as the principal designer. In this case, planning and co-ordination for the design could be through having conversations to understand the work required, such as the potential for using existing electrical and water supplies.

The health and safety file for this work may include the manufacturer's instructions for a new shower and a sketch of the new bathroom layout.

Annex A CDM duty holders and their roles summarised

CDM duty holders* – who are they?	Summary of role/main duties
Clients Organisations or individuals for whom a construction project is carried out.	Make suitable arrangements for managing a project. This includes making sure that: • other duty holders are appointed • sufficient time and resources are allocated. Clients must also make sure that: • 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 People who have construction work carried out on their own home, or the home of a family member, that is **not** done in furtherance 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 for the principal designer to carry out the client duties.

CDM duty holders* – who are they?	Summary of role/main duties
Principal designers 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 co-ordinate 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 duty holders. Provide relevant information to the principal contractor to help them plan, manage, monitor and co-ordinate health and safety in the construction phase.
Designers Those who, as part of a business, prepare or modify designs for a building or product, or prepare or modify designs to systems relating to construction work.	When preparing or modifying designs, 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.

Annex A CDM duty holders and their roles summarised

CDM duty holders* – who are they?	Summary of role/main duties
Principal contractors Contractors appointed by the client to co-ordinate the construction phase of a project where it involves more than one contractor.	Plan, manage, monitor and co-ordinate 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 co-operation between contractors and co-ordinating their work. Ensure that: • suitable site inductions are provided • reasonable steps are taken to prevent unauthorised access • workers are consulted and engaged in securing their health and safety • welfare facilities are provided.
Contractors Those who do the actual construction work. They 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, co-ordinate 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 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 that of 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 • co-operate 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 necessary to carry out those roles in a way that secures health and safety.

Annex B Pre-construction information

What is pre-construction information?

1. Pre-construction information provides the health and safety information needed by:
   a. designers and contractors who are bidding for work on the project, or who have already been appointed, to enable them to carry out their duties
   b. principal designers and principal contractors in planning, managing, monitoring and co-ordinating the work of the project.

It also provides a basis for the preparation of the construction phase plan. Some material may also be relevant to the preparation of the health and safety file (see Annex C).

2. Pre-construction information is defined as information about the project that is already in the **client's possession or which is reasonably obtainable by or on behalf of the client.** The information must:
   a. be relevant to the particular project
   b. have an appropriate level of detail
   and
   c. be proportionate, given the nature of the health and safety risks involved.
3. Pre-construction information should be gathered and added to as the design process progresses to reflect new information about the risks to health or safety and how they should be managed. Preliminary information gathered at the start of the project may not be sufficient where further design and investigation has been carried out.
4. When pre-construction information is complete it must include proportionate information about:
   a. the project, such as the client brief and key dates of the construction phase
   b. the planning and management of the project, such as the resources and time being allocated to each stage of the project and the arrangements to ensure there is co-operation between duty holders and that the work is co-ordinated
   c. the health or safety hazards of the site, including design and construction hazards and how they will be addressed
   d. any relevant information in an existing health and safety file.
5. The information should be in a convenient form and be clear, concise and easily understandable to allow other duty holders involved in the project to carry out their duties.

Annex C The health and safety file

The health and safety file is defined as a file appropriate to the characteristics of the project, containing relevant health and safety information to be taken into account during any subsequent project. **The file is only required for projects involving more than one contractor**.

The file must contain information about the current project that is likely to be needed to ensure health and safety during any subsequent work such as maintenance, cleaning, refurbishment or demolition. When preparing the health and safety file, information on the following should be considered for inclusion.

a. A brief description of the work carried out.

b. Any hazards that have not been eliminated through the design and construction processes, and how they have been addressed (for example, surveys or other information concerning asbestos, contaminated land or buried services).

c. Key structural principles (for example, bracing or sources of substantial stored energy including pre- or post-tensioned members) and safe working loads for floors and roofs.

d. Hazardous materials used (for example, lead paints and special coatings).

e. Information regarding the removal or dismantling of installed plant and equipment (for example, any special arrangements for lifting such equipment).

f. Health and safety information about equipment provided for cleaning or maintaining the structure.

g. The nature, location and markings of significant services, including underground cables, gas supply equipment and fire-fighting services.

h. Information and as-built drawings of the building, its plant and equipment (for example, the means of safe access to and from service voids, and the position of fire doors).

There should be enough detail to allow the likely risks to be identified and addressed by those carrying out the work and be proportionate to those risks. Information must be in a convenient form that is clear, concise and easily understandable.

The file *should not* include things that will *not* help when planning future construction work, such as pre-construction information, the construction phase plan, construction phase risk assessments or contractual documents.

Annex D The general principles of prevention

You, as designer, must take into account the general principles of prevention when preparing or modifying a design.

	General principles of prevention	Examples of applying them in practice
A	Avoiding risks by asking if you can get rid of the problem (or hazard) altogether.	Move air conditioning plant on a roof to ground level, so that work at height is not required for either installation or maintenance. Position a door away from a traffic route. Design a roof with a high parapet to eliminate the risk of falls.
B	Evaluating the risks that cannot be avoided.	Work out whether the effort and expense of installing a fixed access system is appropriate if an area is only occasionally reached and the work can be done using a MEWP.
C	Combating the risks at source.	Arrange for services to be isolated and diverted to where they will be away from the work area.
D	Adapting the work to the individual, especially the design of workplaces, the type of work equipment and the choice of working and production methods, with a view, in particular, to reducing the health effects of monotonous work and work at a predetermined rate.	Provide workstations at an appropriate height. Position lighting so it can be accessed easily for maintenance, such as by positioning bulkhead lights on landings and not halfway down staircases.
E	Adapting to technical progress: consider new techniques or technologies.	Specify self-cleaning glass. Prefabricate elements off site.
F	Replacing the dangerous with the non-dangerous or the less dangerous.	Switch to using a paving block that is lighter in weight. Substitute solvent-based products with water-based equivalents. Recycle tyre kerbs instead of using heavy concrete ones.
G	Developing a coherent overall prevention policy which covers technology, organisation of work, working conditions, social relationships and the influence of factors relating to the working environment. Set standards.	Specify that all blocks should be cut using block splitter techniques rather than mechanical cutting, which produces large amounts of harmful silica dust.
H	Giving collective protective measures priority over individual protective measures, and making provisions so that the work can be organised to reduce exposure to hazards.	Make provision for traffic routes so that barriers can be provided between pedestrians and traffic. Provide fixed edge protection (barriers) rather than running lines.
I	Giving appropriate instructions to employees.	Provide information on drawings or instructions, such as intended sequencing.

Annex E CDM Red-Amber-Green (RAG) lists

RAG lists are practical aids to designers on what to eliminate, avoid and encourage.

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.

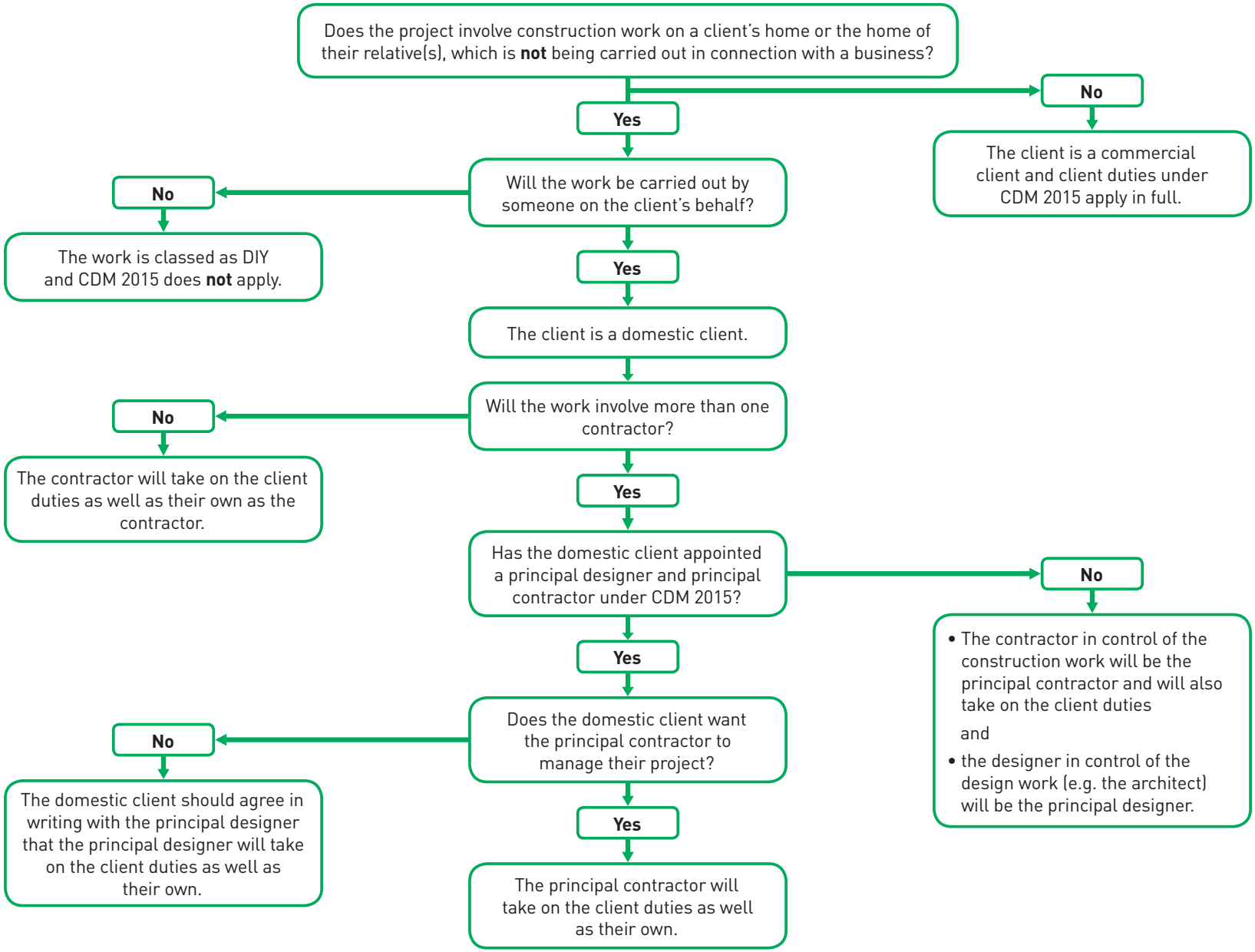
Annex E CDM Red-Amber-Green (RAG) lists

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.

Annex F How CDM 2015 applies to domestic clients



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Industry guidance group	Organisations	Company/individual
Steering group (SG)	Clients Principal designers Designers Principal contractors Contractors Workers Health and Safety Executive (HSE) Construction Industry Training Board (CITB)	Clive Johnson – Land Securities Richard Hulland – Atkins David Lambert – Kier Group plc John Scott – Morgan Sindall Group plc Paul Haxell – Bovis Homes Limited Daniel Shears – GMB Peter Wilson – UCATT Susan Murray – Unite the Union Philip White – HSE Chief Construction Inspector Russell Adfield – HSE CDM Unit Simon Longbottom – HSE CDM Unit Gordon Crick – HSE CDM Unit The Revd Kevin Fear (SG Chair) – CITB Lee Fisk – CITB
Client working group (WG)	Construction Client Group (CCG)	Clive Johnson (WG chair & SG) – CCG James McClune – AWE plc Patrick Brown – British Property Federation Gren Tipper – Construction Client Group James Preston-Hood – Grosvenor Ltd David Pyle – Heathrow Airport Limited Ian Simms – Royal Mail plc Dylan Roberts – Skanska UK plc
Principal designer working group (WG)	Consultants' Health and Safety Forum (CHSF)	Richard Hulland (WG chair & SG) Louise Page – Atkins Steve Jones – Hyder Consulting Ltd Laura Hague – Mott MacDonald Richard Habgood – APS Paul Bramley and Brian Street – AstraZeneca Andrew Norton – Formm Ltd Thouria Istephan – Foster + Partners Billy Hare – Glasgow Caledonian University

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Industry guidance group	Organisations	Company/individual
Designer working group (WG)	Institution of Civil Engineers (ICE) Institution of Structural Engineers (ISE) Royal Institute of British Architects (RIBA) Designers' Initiative on Health and Safety (DIOHAS) UK Contractors Group (UKCG)	David Lambert (WG chair & SG) – ICE, UKCG Russ Charnock – Amec Foster Wheeler plc Janet T Beckett – Carbon Saver Consultancy Ltd Simon Collins – IStructE, collinshallgreen David Allsop – GSS Architecture Geoffrey Austen – Pebbles Consultancy Ltd Paul Bussey – Scott Brownrigg Ltd, RIBA, DIOHAS
Principal Contractor & Contractor working group (WG)	Civil Engineering Contractors Association (CECA) Federation of Master Builders (FMB) Home Builders Federation (HBF) National Federation of Builders (NFB) National Specialist Contractors Council (NSCC) Specialist Engineering Contractors Group (SEC Group) UK Contractors Group (UKCG)	Paul Haxell (Joint WG chair & SG) – HBF, IOSH John Scott (Joint WG chair & SG) – NSCC, UKCG Edward Fendt – SEC Group, B&ES and ECA Alan Muddiman – CECA Rob Gutteridge – FMB David Parsons – NFB Paul Reeve – SEC Group
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