CDM2015

The Construction
(Design and Management)
Regulations 2015

Industry guidance for

Principal designers

HSE

CDM15/2

This industry guidance has been produced by members of CONIAC (Construction Industry Advisory Committee).

Published by CITB, Bircham Newton, King's Lynn, Norfolk PE31 6RH

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First published 2015

ISBN 978-1-85751-390-5

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1 Introduction

1.1 General introduction

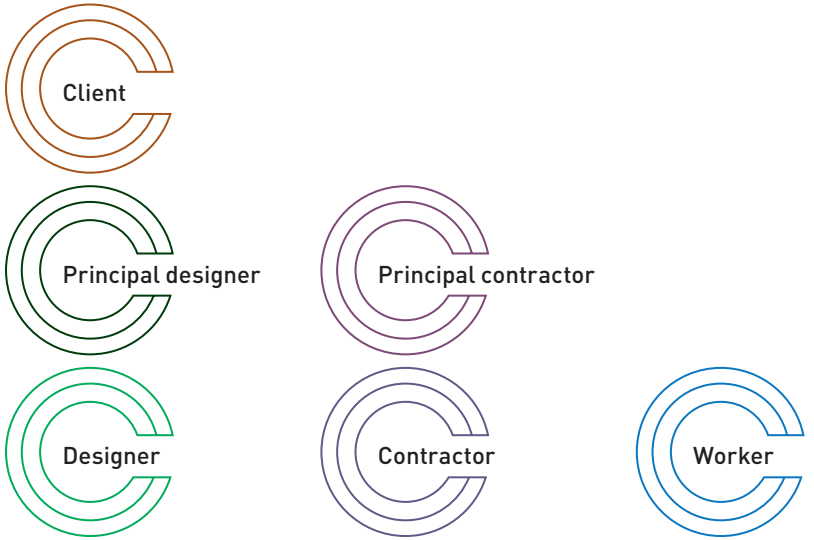
The Construction (Design and Management) Regulations (CDM 2015) are the main set of regulations for managing the health, safety and welfare of construction projects.

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, and that of other duty holders.

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 the principal designer?

The principal designer must be a designer and have control over the pre-construction phase of the project.

A designer is an organisation or individual that prepares or modifies a design for a construction project, including the design of temporary works, or arranges for or instructs someone else to do so.

The principal designer will usually be an organisation or, on smaller projects, they can be an individual with:

- a technical knowledge of the construction industry, relevant to the project
- the understanding and skills to manage and co-ordinate the pre-construction phase, including any design work carried out after construction begins.

The principal designer should have the organisational capability to carry out the role, as well as the necessary design skills, knowledge and experience.

Principal designers will need to consider whether they have any gaps in their skills, knowledge and experience for the project and, if so, seek further advice.

The principal designer needs the ability to develop good relationships with the client and principal contractor as well as the other designers working on the project.

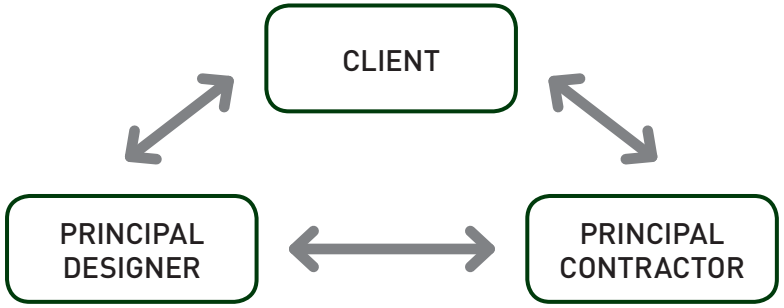
For your role as designer refer to the *Industry guidance for designers* (CDM15/4).

1.3 What is the principal designer's role?

The CDM Regulations define three main roles for managing the health and safety of a construction project.

The client has overall responsibility for the successful execution of the project, and the principal designer and principal contractor lead on different phases of the project.

The principal designer and principal contractor have an important role in co-ordinating health and safety. All three duty holders must have good working relationships from the outset if the project is to be delivered safely and without harm to health.



This enables the provision and flow of information to ensure that health and safety is considered when making decisions.

This will be the arrangement for the majority of projects. The only exception is when the client does not need to appoint a principal designer or principal contractor because the work is to be undertaken by a single contractor.

Appointing the principal designer

The principal designer must be appointed in writing by the client. Whilst this role can be given to another designer on the project at any point, there can only be one principal designer at any given time. The principal designer role can be combined with other activities such as project management. This will assist with the integration of health and safety in the project.

1 Introduction

Main duties of the role

The principal designer's role is to plan, manage and monitor the pre-construction phase, to co-ordinate health and safety. The pre-construction phase is defined as 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 identifying, obtaining and collating the pre-construction information
- provide pre-construction information to designers, the principal contractor and contractors
- ensure that designers comply with their duties and co-operate with each other
- liaise with the principal contractor for the duration of the appointment
- prepare the health and safety file.

The principal designer's 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). If 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.

2 What do you have to do at project set up?

2.1 Carry out your duties on appointment

You will need to understand the client's level of knowledge and experience of this type of project. A client who is unfamiliar with construction projects will need to be made aware that the CDM Regulations apply to their project. You should refer them to the *Industry guidance for clients* (CDM15/1) for further information about what they need to do.

Produce a proposal for the client outlining the scope of the principal designer role and how you will fulfil it. This may include an overview of your resources, as well as your skills, knowledge and experience and will provide clarity for your client.

Obtain details of your appointment in writing, which should confirm the scope of services you will provide, including timescales and resources required. At this stage, it is useful to obtain details of the client's main contacts, as well as any designers and contractors involved in the project.

2.2 Help with the client brief

You may be asked to help the client to develop their initial brief. This is a good way of outlining the client's key requirements and expectations for the project, including any limitations or restrictions, such as budget, planning constraints and timescales. This brief is likely to be developed further as the project progresses and may include specifications and standards as well as health and safety expectations. For example, the brief could highlight safety in design, the use of risk registers and Red-Amber-Green (RAG) lists.

Refer to Annex E for further information about RAG lists.

2.3 Obtain information from the client

The client is required to identify and obtain information for the pre-construction phase. You will need to assist the client in doing this before you collate it and pass it to the designers. This information will also need to be passed to the principal contractor before construction begins.

2 What do you have to do at project set up?

For further details about the flow of information refer to Annex D.

The information from the client could include any previous health and safety file, site services, drawings, asbestos information, ground conditions and other relevant surveys as well as site arrangements and restrictions. Additional information could be obtained from the client's maintenance and operational staff.

For further details on the content of the pre-construction information, refer to Annex B.

You need to review this information as early as possible to identify any potential impacts on health and safety. Where you identify any shortfalls, you will need to advise the client on how to address them.

What to look for.

- Is the information reliable?
- Where has it come from?
- How old is it?
- Could it have been superseded by subsequent works?
- Is there any information missing (such as asbestos records)?
- Would a site visit help to confirm the accuracy of the information (such as location of manhole covers)?
- Are further surveys or investigations required?

Remember that the information was not prepared with your work in mind.

3 What you have to do during pre-construction phase

3.1 Liaise with the client

You should discuss with the client how you will manage the pre-construction phase. You need to agree when updates will be provided, as well as the level and type of information they would like to receive. This may include the status of information gathering, development of the design and whether they want to see a copy of the developing pre-construction information that will be issued to the principal contractor.

Your updates should also include feedback on any significant health and safety issues arising from their original brief, and any subsequent changes to the brief or the design. You are expected to try to resolve any problems directly with the designers. However, you should raise any concerns, such as a lack of co-operation between the designers, with the client.

3.2 Provide information to the designers

You need to provide relevant information to all the designers when it becomes available. They should tell you if there are any issues with the health and safety aspects of the client brief or in other client information that has been provided to them. The designers may have questions or queries and may identify any ambiguous or missing information. As the principal designer you will need to respond, either directly or by obtaining further information from the client.

3 What you have to do during pre-construction phase

3.3 Ensure co-ordination with and between the designers

You have a responsibility to co-ordinate health and safety with all the designers, including temporary works designers. You should inform the designers of your expectations of how the pre-construction phase will be managed, including methods of communication, circulation of information and attendance at meetings.

You need to be sure that designs are co-ordinated between the different designers to identify any potential impacts on health and safety during the full project lifecycle. This includes construction, maintenance, cleaning and, where relevant, its use as a workplace.

Designs include drawings, design details, specifications and bills of quantities (including specifications or articles or substances) relating to a structure, and calculations prepared for the purpose of a design.

3.4 Oversee the design

You must ensure that the designers comply with their duties. You should talk to them at an early stage to find out how they will consider health and safety and how they will review its effectiveness.

The designers should give you regular updates, including information about issues or design changes that could potentially impact on health and safety. You may need to inform the client about these, especially where changes have been made to their original brief.

The designers must provide information about significant risks that are unusual, not obvious, or difficult to manage, including details of the key assumptions and decisions they have made. Examples could include risks identified on drawings, specific sequencing of erection, any phased handovers and any temporary support that is required. This information is an important part of the pre-construction information that will be provided to the principal contractor.

You will need to undertake a review of the health and safety information provided; however, you are **not** expected to review everything during design development. You should focus your attention on areas where there is a high risk to health and safety, including changes made to the original design.You can do this by sampling designs or by attending design review meetings.

Even if you do not have a technical knowledge of all aspects of the design, you should be prepared to challenge the designers on their decisions and the process they followed, including any assumptions they have made.

3.5 Develop the pre-construction information

You need to compile and review the pre-construction information to check that the information provided is appropriate for supporting the construction phase. It should be specific to the project, highlight any significant health and safety issues and not include information that a principal contractor familiar with this type of work would be expected to know.

For further details on the content of the pre-construction information, refer to Annex B.

Some of the pre-construction information will also need to be included in the health and safety file. This should include information that would be required for the post-construction life of the building, such as during cleaning, maintenance, alteration or demolition.

4 What do you have to do during the construction phase?

4.1 Liaise with the principal contractor

You must liaise with the principal contractor throughout your appointment, communicating with them regularly to ensure that the design, including temporary works design, is co-ordinated. This provides you with the opportunity to raise any potential issues.

You should agree how you will communicate with the principal contractor, including how you will communicate with contractors when they are responsible for aspects of the design or have questions about the design.

4.2 Provide information to the principal contractor

You must provide the pre-construction information 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.

Annex B outlines the content required for the pre-construction information, which will include existing information as well as design information.

The principal contractor may have questions or queries and may identify ambiguous or missing information. As the principal designer you will need to respond, either directly or by obtaining further information from the client or the designers.

4.3 Receive information about design changes

The principal contractor needs to provide information about any potential issues or proposed changes to the design. As the principal designer, you need to understand the impact that this could have on health and safety during the structure's construction, maintenance, cleaning and, where relevant, its use as a workplace. Where necessary, you should discuss this with the designers and the client.

4 What do you have to do during the construction phase?

4.4 Prepare and develop the health and safety file

It is your responsibility to prepare and develop the health and safety file, including the information required for cleaning, maintenance, alteration or demolition of the building. You will need to provide the principal contractor with details of the agreed format, structure and required content.

The principal contractor will then need to provide the construction information, which should include 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.

It is your responsibility to hand over the file to the client unless your appointment ends before the project finishes. In these circumstances, you must hand the file to the principal contractor, who will continue to develop it and then hand it to the client at the end of the project.

A principal designer must be in place while any design activity is ongoing, including temporary work design.

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

5 What could it look like in practice?

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

5.1 Project set up

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. This will help plan what you need to do to ensure that the client is clear about what to expect and to reassure them that you are fulfilling your role.

Develop a good relationship with the client
This will assist you in managing health and safety risks and resolving any issues. It will take time to develop the relationship 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.

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.

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

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?

Undertake an early site visit
This should assist you with the review of the existing information, as well as helping you to understand the site arrangements and conditions. The context provided by a site visit should also aid you with the design co-ordination. Where possible, involve the client in your site visit to identify and understand any potential issues.

Use building information modelling (BIM)
If the project is using building information modelling (BIM), consider how you could utilise this in your role as principal designer. It could help you to:

- consider the co-ordination of health and safety information when developing the BIM execution plan
- obtain existing information in order to review it and pass it to all designers
- obtain design information to review health and safety risks
- provide pre-construction information to the principal contractor
- monitor and gather information for the health and safety file
- develop a database of good practice guides and prompt lists.

Be proactive
Here are some examples.

- Where the client does not produce an adequate brief, you should spend time with them to help develop it.
- You should raise any significant health and safety concerns with the client as soon as possible – do not wait for the next meeting.
- Consider how elements of the final structure can be utilised during the construction, for example by installing stairs early in the build to reduce the need for scaffolding. This will not only have a health and safety benefit but could also reduce time and costs.
- Ensure any significant health and safety risks that have been identified are added to the project risk register.
- Encourage safer designs through the use of Red-Amber-Green (RAG) lists.

5.2 Pre-construction phase

Arrange a pre-design meeting with the client and the designers
This is an opportunity to discuss the brief and the approach to health and safety on the project. This will ensure that everyone fully understands what is required and provides an opportunity to ask questions and make suggestions. It will also start to build relationships.

Where possible, seek contractor input during the design phase
This helps to anticipate potential construction issues, and to identify opportunities for improving the design. Where a contractor has not yet been appointed, you could consult any contractor with relevant knowledge.

Participate in design co-ordination meetings across all disciplines
This helps you to better understand how the design is being developed, allowing you to ensure that health and safety is integrated into design meetings and provides an opportunity to challenge the design by asking: 'Can this be done more safely and can we reduce harm to health?'

5 What could it look like in practice?

Actively encourage designers to work together as a team
Encourage designers to regularly talk and listen to each other throughout the design period. You could support their communication by providing breakfast for early meetings or by celebrating project milestones.

Encourage the designers to involve end users from the early stages of the design
This helps them to further understand the proposed use and maintenance requirements. This could also provide an opportunity to test the original client brief and ensure all aspects have been considered.

Embed health and safety into everything
Health and safety risks will be actively managed as part of the project and are not seen as a bolt-on. You should suggest that it is integrated within project reporting and in meetings as a standard agenda item. By avoiding additional reporting and more meetings, this also creates efficiencies.

Encourage a consistent approach to how information is provided by the designers
This will assist in producing the pre-construction information and the health and safety file. Using a consistent format, including the same software, is a more efficient way for you to review and collate the information. This should also benefit those who receive the information. Where practical, consider asking the principal contractor for their preferred format for the pre-construction information, as this may help them to understand the content more quickly and reduce their queries.

Evaluate the process
Undertake a review towards the end of the design stage to determine any design-related lessons learnt that may benefit the client, designers and you on future projects. You could also take this opportunity to review the way in which you have undertaken the principal designer role and identify areas for improvement. This could include obtaining feedback from the client and other designers.

5.3 Construction phase

Attend site or progress meetings
This will help you to maintain a good working relationship with the principal contractor. This should also allow you to actively discuss queries and issues.

Prepare content for the health and safety file early
Gather information for the health and safety file as soon construction progresses, rather than leaving it until the end of the project. This is more efficient and recognises that it may be difficult to obtain certain information once the project has been completed.

Identify lessons learned
Undertake a review towards the end of your involvement in the project to determine any lessons learnt. This should include whether the risks identified during the design stage were relevant and whether any other unusual risks arose that were not identified. You could also undertake a specific review with the principal contractor to find out whether the pre-construction information assisted them during the construction phase.

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.

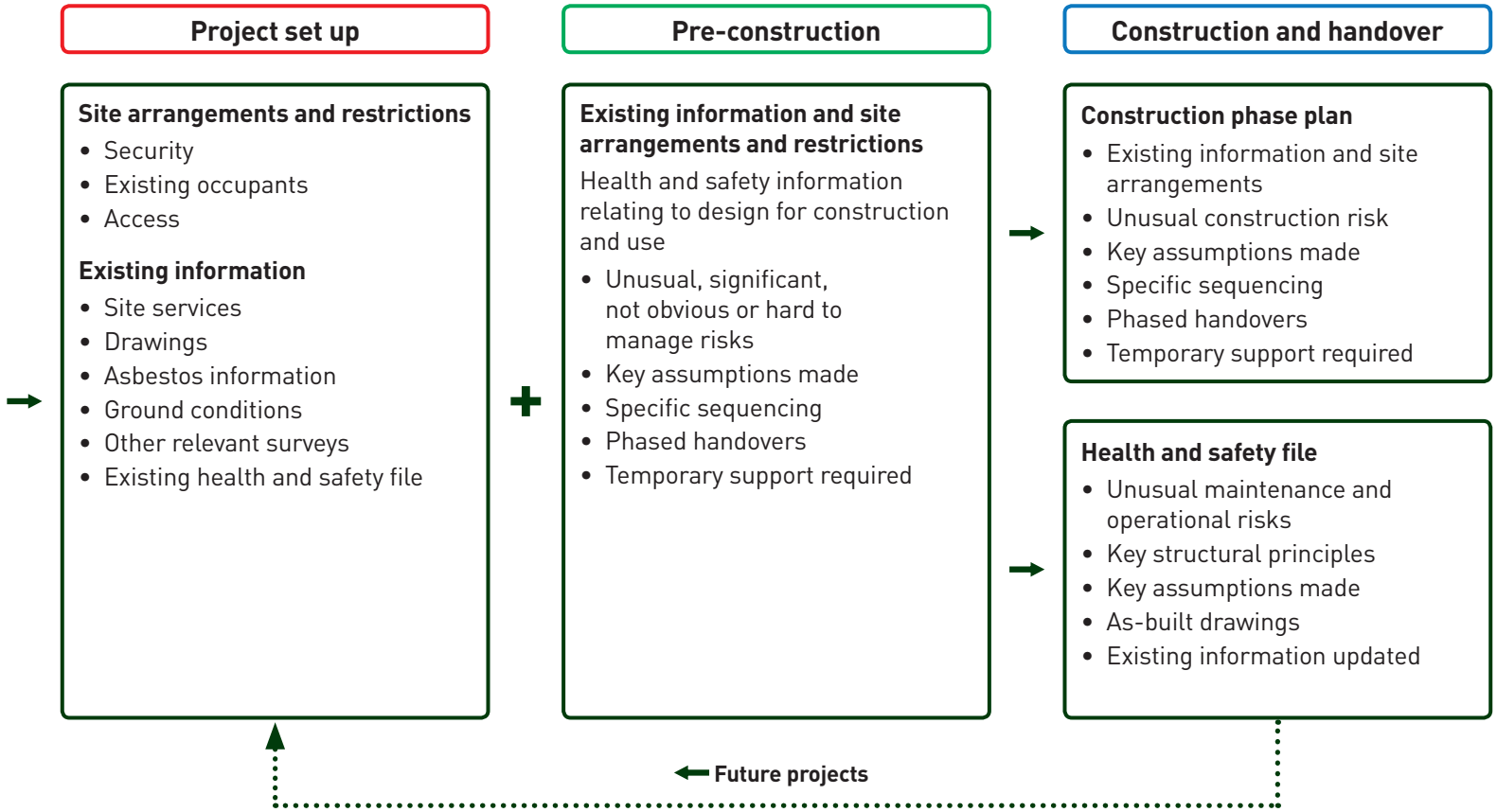
h. Information and as-built drawings of the building, its plant and equipment (for example, the means of safe access to and from service voids, and the position of fire doors).

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 Information flow

This chart illustrates the information flow during the key stages of a project, including information received from set up to completion and handover.



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.

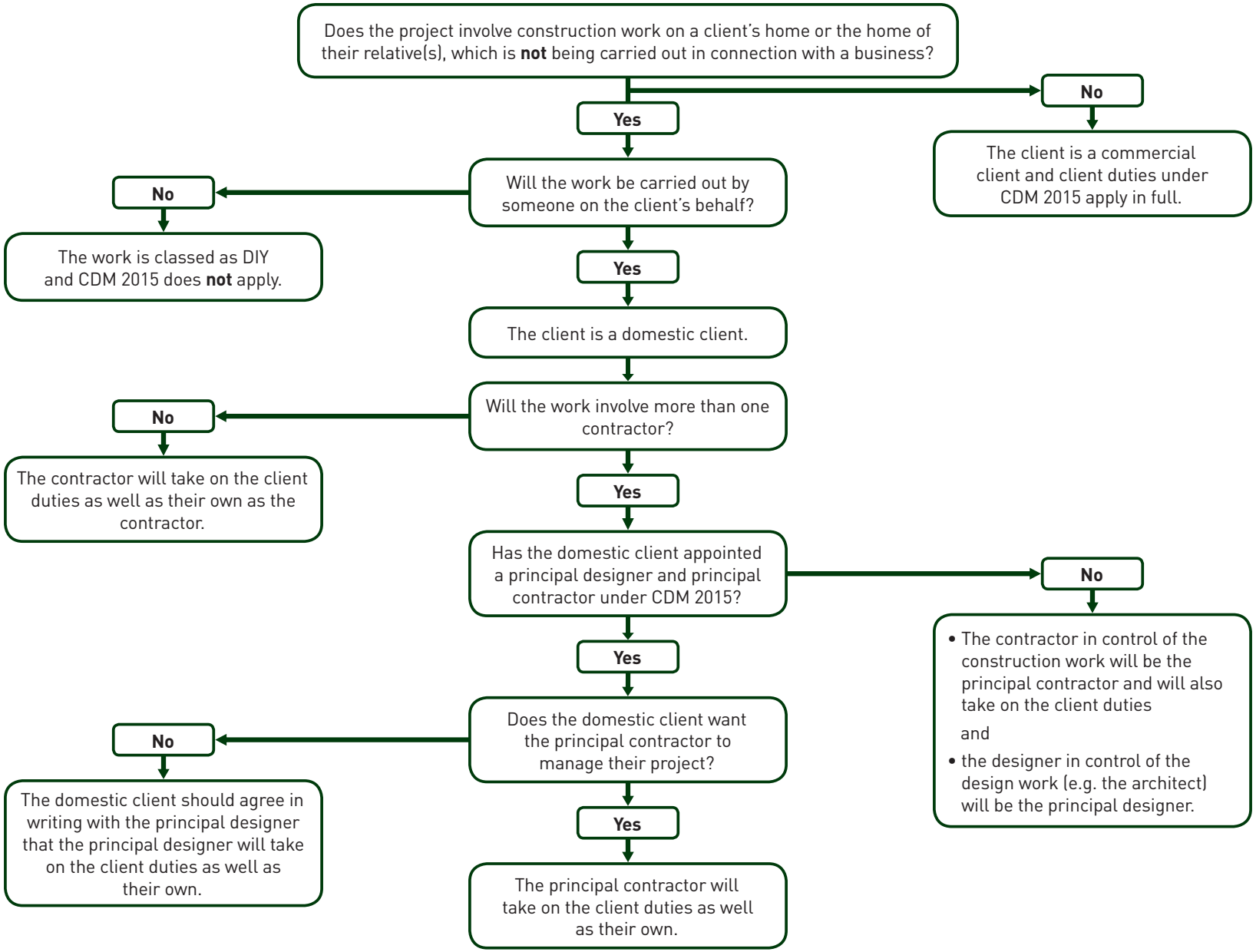
Annex E CDM Red-Amber-Green (RAG) lists

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



Acknowledgements

The Construction Industry Advisory Committee (CONIAC) wishes to acknowledge the assistance offered by the following organisations and people in the preparation of the CDM industry guidance.

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
Worker working group (WG)	Unions	Daniel Shears (Joint WG chair & SG) – GMB Peter Wilson (Joint WG chair & SG) – UCATT Susan Murray (Joint WG chair & SG) – Unite the Union