

CDM 3 YEARS ON

[Construction (Design and Management) Regulations 2007]

REPORT ON:-

GENERAL CONCERNS

CDM CO-ORDINATOR COMPETENCE

PRE-CONSTRUCTION INFORMATION

HEALTH & SAFETY FILE

Report dated April 2011

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EXECUTIVE SUMMARY

This report examines a number of specific aspects of the Construction (Design and Management) Regulations) 2007 (CDM) which have given cause for concern. Amongst other things it is intended that this be a useful contribution towards the CDM Review being undertaken by the Health and Safety Executive (HSE). Their senior personnel have been consulted during this report's production, have seen a near-final draft and have expressed support and consider that the report "is very helpful".

BROAD ISSUES OF CONCERN ABOUT CDM 2007

However, prior to dealing with the three main aspects addressed by the report, the authors consider first some broader issues which impinge on the ability of the Regulations to fulfill their potential as a sound risk management basis for projects. These issues touch on industry management, the manner in which projects are procured, the lack of understanding as to 'how far is far enough' to satisfy the law, and the lack of enforcement against those organizations that do not pull their weight. The report briefly summarises these concerns and concludes that without some recognition and progress on these strategic issues, raising awareness and standards generally will be severely impeded.

The main body of the report considers three specific issues in detail within CDM itself. To do this it draws extensively on industry surveys, and in-depth discussions with a range of industry bodies and individuals (as noted in the Acknowledgements).

COMPETENCE OF THE CDM CO-ORDINATOR: the 2007 revision of CDM made significant improvements to the general issues of competence, for both corporate and individual competence. However, experience since then shows that further clarification is required in respect of the latter, and particularly for the CDM-C, which is addressed in this report. The report suggests a simple benchmarking methodology for the classification of all industry qualifications so as to allow ready assessment of the key elements contributing towards occupational safety and health competence.

The report contains a table listing and evaluating/scoring the various aspects of competence that membership of the main professional organisations provide/support. If this is adopted

across the construction industry it will help Clients when choosing/appointing their CDM-C, and cut down on unnecessary bureaucracy and wasted time whilst raising standards.

It is considered to be an important contribution from the ICE to the industry as a whole, and it is intended that it will be reviewed and updated periodically by ICE.

PRE-CONSTRUCTION INFORMATION: the flow of relevant information to the right people at the right time is crucial but frequently not achieved. The report considers both the drivers and the blocks to progress. It concludes that there is a need for greater clarification as to what is required and the means of providing it. It also questions the competence and use of some CDM Co-ordinators. The report emphasises the benefits of hazard/risk registers and notes on drawings as good vehicles for the transfer of data. However it also indicates that much more needs to be done to improve designers' understanding and implementation of their obligations to eliminate hazards and reduce risks, and reduce bureaucracy.

HEALTH AND SAFETY FILE: This forward looking safety and health management document is an essential legacy of projects. However, experience shows that there are a number of issues which can militate against the production of good H&S Files. The report considers that the current statutory requirement on the CDM Co-ordinator to 'prepare' the File causes difficulties in a contractual situation. It suggests that this be considered as part of any review of the Regulations and suggests a contractual strategy in the meantime.

Some of the issues raised in this report can be classified as 'on-going' improvements and adjustments; learning from experience. It is important however that they are given due regard as it is items such as these that can often make a big difference on the ground. However, there are other issues raised which are of a more fundamental nature. It is not considered acceptable that these should remain such significant impediments after such a period of time.

ICE strongly urges all those with an interest to work towards their resolution.

ACKNOWLEDGEMENTS

This report contains the findings of an extensive and detailed review of three key areas of CDM 2007, as identified by the ICE Health and Safety Expert Panel

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ACRONYMS USED IN THIS REPORT

ACE	Association for Consultancy and Engineering
ACoP	Approved Code of Practice
APS	Association for Project Safety
CDM-C	CDM Co-ordinator
CECA	Civil Engineering Contractors Association
CHAS	Contractors Health & Safety Assessment Scheme
CIOB	Chartered Institute of Building
CONIAC	Construction Industry Advisory Committee
CPCS	Construction Plant Competence Scheme
CPD	Continual Professional Development
CSCS	Construction Skills Certification Scheme
DIOHAS	Designer's Initiative on Health & Safety
ERIC	Eliminate, Reduce, Inform, Control
HSE	Health & Safety Executive
ICE	Institution of Civil Engineers
IOSH	Institution of Occupational Safety & Health
IStructE	Institution of Structural Engineers
M&E	Mechanical & Electrical
NEBOSH	National Examination Board in Occupational Safety and Health
NOS	National Occupational Standard
NVQ	National Vocational Qualification
PC	Principal Contractor
RIBA	Royal Institute of British Architects
SEC	Specialist Engineering Contractors
SELECT	Scottish Electrical Trade Association
SNVQ	Scottish National Vocational Qualification
SSIP	Safety Schemes in Procurement
WG	Working Group

1 INTRODUCTION, GENERAL CONCERNS AND SUMMARY CONCLUSIONS

1.1 GENERAL INTRODUCTION AND SCOPE OF THIS REPORT

For about two years, the ICE's H&S Expert Panel has been discussing the need for an ICE-funded project to address some of the key areas of the Construction (Design and Management) Regulations 2007 (CDM2007)' where Civil Engineers (and other construction professionals) consider that further guidance and clarification is needed. This project was approved by ICE in December 2009.

Due to the range and scope of CDM2007 it was considered to be impractical to address every aspect of the new Regulations. Therefore it was decided to concentrate on what were believed to be three areas that have generated significant concern, confusion and discussion, namely:

- Competence of the CDM Co-ordinator
- Pre-Construction Information (the "Information Pack")
- The Health & Safety File

As this project has progressed, with discussions and views obtained from many bodies (see section 1.3) and individuals, some important general concerns about CDM have also emerged. These are included in the second part of this Introduction (section 1.2)

ICE has been working with the Construction Industry Advisory Committee (CONIAC) CDM Evaluation Working Group, and the H&S Panel are aware of and have considered the feedback surveys on Designer Evaluation (by principally ACE, IStructE and RIBA), and the Report to HSE by the Specialist Engineering Contractors' (SEC) Group. Also, ICE has consulted with Frontline (engaged by HSE to conduct background research) and provided feedback for Frontline's own large-scale survey on the impact of the CDM Regulations.

The Project team has also had very useful and constructive discussions with the Association for Project Safety (APS), which has published detailed guidance on various aspects of CDM, and its documents are referred to in this report where appropriate. The detailed guidance from APS and other organisations is not repeated in this report, which focuses on particular issues where it is considered that more clarity and guidance will benefit the various CDM Duty-holders. This will also benefit the HSE when it carries out its own review of CDM 2007, probably in 2011.

Lord Young has prepared an important report (October 2010), [1] particularly focusing on the difficulties with the management of risk in the prevailing "compensation culture" that relates to civil action. Although the Lord Young Report does not appear to be aimed at Construction, the implementation of some of the recommendations may have an effect on the implementation of CDM2007.

CDM-C Competence

The area of competence and in particular individual competence to carry out the role of CDM Co-ordinator (and Designer) appears to have become more confused than it was under the 1994 Regulations.

There was a general understanding and agreement by all bodies involved with drafting the 2007 regulations that the levels of competence were to be raised under the revised Regulations. However in Appendix 5 (and parts of Appendix 4) in the CDM Approved Code of Practice (ACoP), CDM-C competence requirements/guidance has proved to be too weak and confusing. The plethora of Training Courses claiming to provide CDM-C “competence” in only a few days of lectures (with little regard to a delegate’s knowledge etc), is evidence of the lack of understanding of the key role of the CDM-C.

Pre-construction Information “The Information Pack”.

Partially due to the change of name, and partly due to some of the ACoP text, there is uncertainty and considerable confusion as to what should be included.

The Health and Safety File

The issue with the H&S File is predominantly related to the change of responsibility to compile it. This has moved from the Principal Contractor to the CDM Coordinator. This appears to be a relatively minor change, but there are concerns about the overlap with the O&M Manuals, whose composition still remains (usually) with the PC, combined with (sometimes) the use of specialist companies to create some or all of the H&S File “package”.

This report seeks to highlight the confusion(s), propose changes to and comments on the ACoP and other Guidance Documents. It also **provides ICE-backed Guidance** for each of the three items identified above, i.e. CDM-C Competence, the composition of the Pre-Construction Information Package, and H&S File, and argues for better ways forward, with examples where practicable.

The aim has been to identify systems and guidance for the majority of construction projects, that are practical and usable. These can be added to with additional features and “layers”, but readers should bear in mind two of the fundamentals of CDM (from the CDM 2007 Introduction) which are:-

- To discourage unnecessary bureaucracy
- That any paperwork produced should help with communication and risk management

The recommendations in this Report are in line with current legislation and the current CDM Regulations and broadly in line with the ACoP.

1.2. GENERAL CONCERNS ABOUT HEALTH & SAFETY RISK MANAGEMENT IN THE CONSTRUCTION INDUSTRY

Concerns have been expressed about impediments to the integrated use of good safety and health risk management within organisations offering design services and construction organisations. The concerns have been expressed by all of the CDM “duty holders”, i.e. Clients, Designers, CDM Co-ordinators, Principal Contractors and Contractors.

During the current CDM review project, four underlying problem issues have been encountered which are considered to require attention and consideration.

The four impediments described below arise from the authors’ close involvement in the industry. Two are considered to be substantially matters of fact (lack of understanding and level of enforcement). The remaining two (lack of management and conflict between contract and statute) arise partly from work by others e.g. the SEC Report, and partly from long-standing anecdotal evidence. The authors’ acknowledge the exemplars that do exist in the industry- the Olympic construction site being one of these- but as a general statement the impediments are considered to hold true.

The four items (A,B C and D on the following pages) can at times all interact and collectively contribute towards uncertainty and a lack of ‘good safety management’.

These issues have been drawn to the attention of the CONIAC CDM Working Group by the ICE representative¹.

A Lack of management and leadership

It is contended that within many organisations, whilst there may be CDM procedures in place, actual implementation is hampered because of a lack of effective management and active leadership by those running or controlling projects, and indirectly by those at a more senior level. There are exceptions to this and several excellent exemplars, but this impediment manifests itself in, typically,

At project level	Lack of interest shown No practical advice or review around actual projects Limited or no recognition, when setting budgets or timescales, of the time required to co-ordinate, co-operate, communicate Limited or no assistance given to the identification of and the practical elimination of hazards and the reduction of risks Lack of incentive and/or time to co-ordinate with other designers (particularly contractor appointed designers) or other contractors
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¹ The above text based on a draft Paper prepared for the ICE H&S Expert Panel in July 2010 by J Carpenter

At senior level	Lack of interest shown Limited or no audit of projects from this perspective Limited or no pro-active support or leadership Limited or no training in this specific aspect of CDM Limited or no feedback to Board.
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It is very difficult, if not impossible, for a middle ranking or junior member of a project team to spend time on risk management when there is no culture within the office of treating this subject seriously.

B Conflict between contract and statute

Statute overrides contract and the CDM regulations have been written to allow their application to any contractual arrangement. However, in practice, it appears to be the case that certain contractual arrangements militate against sensible application of CDM principles.

For example:

- The termination of a designer’s involvement once their design input is complete, thus preventing any discussion later with detailed designers or installers.
- The common use of management persons on construction sites in lieu of qualified engineers
- The deliberate exclusion of the scheme designer (by the client) from construction phase involvement.
- Late appointments
- Designing to a narrow brief
- The failure to pass information “down the line” from contractor to sub-contractor. ***“The information flow often just fizzles out” (SEC Report)***

C Level of enforcement

The reasons why people comply with legislation is a complex area. These reasons will include a moral belief, setting an example, peer pressure, commercial or personal benefit, and, for criminal law, fear of prosecution (and with it ‘name and shame’).

It is an unfortunate human failing that if duty holders perceive that there is little or no chance of a prosecution, and then correspondingly little effort will be put into compliance if other beliefs are not dominant. In the case of Regulation 11 (Designers’ duties), this appears to be the case. Incorrectly, many perceive designer actions, and Regulation 11 specifically, to be remote from the causation of accidents or ill health on site.

It is suggested that the combination of factors considered in this note, coupled with this attitude, detracts from any incentive to comply with Regulation 11 in any meaningful sense² for many designers. Similar situations appear to apply during construction.

² Here we are differentiating between real compliant action, and a mechanistic notional response.

D Lack of understanding

In order to discharge duties under Regulation 11 it is necessary, as for any requirement, to understand what is required. At present no-one knows the answer to this question and in particular 'how far is far enough'. This is detailed in the ICE Report [2] on this subject. The Government undertook to provide clarity on this point of 'how far is far enough' but has not done so for construction industry designers.

This subject is on the CDM Review spreadsheet for consideration (i.e. it represents an example of lack of clarity and lack of simplification, or, to turn it around, a situation where greater clarity would bring significant benefit to industry), and hence no further investigative action is proposed by ICE at this time. However it is recommended that opportunities are taken to progress this point whenever possible. It is understood that DIOHAS has carried out discussions and produced Architectural Designer Guidance on what is far enough in its Proportionate and Practicable Guidance and Case Studies,

1.3 BODIES CONSULTED

Many people and professional bodies have been consulted by the ICE project team. Their inputs, comments and help have been invaluable, and covers as wide a range of construction activities and CDM as was practicable. Thanks are due to all of the Contributors, with the principal persons and organisations listed after the Contents page at the front of this report.

1.4 CDM EVALUATION AND FEEDBACK BY VARIOUS BODIES

1.4.1 General

During this ICE project, in addition to much valuable feedback and comments from many organisations involved in the construction industry, the project team reviewed, and/or were involved with four specific bodies who have provided (or are currently working on) feedback surveys/evaluations for HSE.

1.4.2 Construction Industry Advisory Committee (CONIAC)

ICE is a member of the CONIAC CDM Evaluation Working Group (WG), and has attended WG meetings and provided inputs to the five themes selected by the WG. The ICE representative outlined the work that ICE were doing for this Report, and the three key Needs that ICE had identified. The WG reported to CONIAC in November 2010.

1.4.3 The CDM 2007 Designer Evaluation Survey

This survey was concluded in (about) July 2010, with 247 participants from Institutions and Organisations including:-

- The Association for Consultancy & Engineering (ACE)
- The Institution of Structural Engineers (IStructE)
- The Royal Institute of British Architects (RIBA)
- The Midland Construction Safety Association and The Institution of Occupational Safety & Health – East Midland Branch
- The Chartered Institute of Building (CIOB)
- WSP UK Senior Designers and CDM Co-ordinators

The Survey Report included 47 graphs that addressed a wide range of issues, focusing on Designers. These provide very interesting data, and the most relevant parts are referred to in this Report (Sections 2, 3 and 4) as appropriate. Interestingly, only 35% of respondents considered that “no changes were needed to the Regulations” and only 25% of respondents considered that “no changes were needed to the CDM ACoP”. This indicates that over half of the contributors consider that changes are required.

At the start of the Evaluation Survey are two very pertinent and useful sections, “Commentary on Responses” and “Suggested Need for change”. These support the ICE work and the 3 areas chosen for this ICE Report.

1.4.4 The SEC Report: “Experience of Working with the Construction (Design and Management) Regulations 2007” at www.secgroup.org.uk

This survey and Report, dated July 2010 was conducted by the Specialist Engineering Contractors (SEC) Group, which includes:-

- Association of Plumbing and Heating Contractors
- Heating and Ventilating Contractors Association
- British Contractual Steelwork Association
- Lift and Escalator Industry Association
- SELECT
- Electrical Contractors Association

289 Firms participated in the survey.

The report contains much valuable information and makes positive recommendations, (which support the ICE work and the three areas chosen for this ICE Report).

Relevant parts of the SEC Report are referred to in this Report (Sections 2, 3 and 4), as appropriate.

1.4.5 Civil Engineering Contractors Association (CECA)

CECA surveyed its members in 2010 and received 79 responses. Their Survey and their “Summary of Comments” are relevant, and support the need for better guidance for the areas covered by this ICE Report.

For more detail on this survey, contact the CECA and refer to their report “*CDM 2007 Review – May 2010*”.

1.4.6 APS Summary data presented to the CONIAC Working Group

This information covers the issues addressed in this report, and many other aspects, and demonstrates the justification and supports ICE’s concerns.

For more detail on this APS data, contact APS and refer to their document “*CONIAC CDM 2007 Evaluation Working Group – Template for individual short reports back to CONIAC – APS – November 2010*”.

2. CDM CO-ORDINATOR COMPETENCE

2.1 INTRODUCTION

Competence is a key component in ensuring that the CDM Regulations are successful in achieving their desired aims. Competence is the backbone on which the success of the regulations is built. Competence can also be quite difficult to measure and verify.

Competence exists at various levels: -

- Individual
- Team
- Organisational

This report will primarily address individual competence, but team and company competence will also be discussed.

Currently the official guidance is contained in Appendices 4 & 5 of the CDM ACoP although this is far from clear and in places appears to contradict itself. Although it was not intended, Appendix 4 appears to give equal weighting to the Construction Skills touch screen test; NEBOSH Construction Certificate and professional Institution membership³. Appendix 5 describes individual competence, yet the introduction talks of 'Organisations' thereby clouding the issue. The main text is also confusing with guidance given on "assessing competence of a CDM Co-ordinator for a larger or more complex project or one with high or unusual risks...". This confuses size of project with levels of risk. Also, no advice is given for the normal 'run of the mill' scheme. Appendix 5 also appears to equate as "equal competence", the possession of only a NEBOSH Construction Certificate (plus CPD), with Membership of the ICE H&S Register; clearly these are very different attainment levels.

The Industry Guidance documents also help to clarify some aspects of CDM.

Hence, whilst the competence of designers and contractors has, over time, been reasonably well defined, the relatively new function of CDM-Coordinator (previously Planning Supervisor) is not so clearly identified. However, it can be argued that the designers' competence with regards to design risk management is less well defined.

It was disappointing to find that the importance of competence of the CDM-C was diluted with late changes from the then draft to the published ACoP accompanying the 2007 Regulations. The ICE considers that it is fundamental that competence of construction professionals must be maintained at an appropriate high level. In an industry dealing with Designers, (including Civil & Structural Engineers, M&E Engineers and Building Services Engineers, Architects etc) the

³ The intent was to give examples of then currently available options; no ranking or comparison was intended

majority of whom are educated to degree level and are members of professional institutions, it is essential that CDM-Cs are of an equivalent level of competence⁴.

Qualifications, certificates and membership of learned bodies do not necessarily tell the full story, as knowledge of all sides of the construction industry and an ability to communicate and influence complete the picture.

All competent persons must be committed to a planned 'Continual Professional Development' programme.

2.2 INFORMATION FROM CDM EVALUATION AND FEEDBACK FROM OTHER SURVEYS AND BODIES

These are listed in Section 1.4 of this Report.

The following paragraphs are just a few of the many comments and findings from other bodies, relevant to the "Competence of the CDM Co-ordinator".

2.2.1 From the Designer Evaluation Survey

Graph A 9 – *"To what extent has the 2007 revision to the CDM Regulations simplified the assessment of competence (both for organisations and individuals) and helped raise standards and reduce bureaucracy?"*

- Only 20% found it "To a large extent"
- 48% found it "To a limited extent"
- 22% found it "Not at all"

With 70% indicating limited support, clearly the ACoP needs improvement.

Graph D 1 k – *"How useful in relation to your role do you find the ACoP Appendices 4&5 on Competence?"*

- Only 18% found them "very useful"
- 46% found them "fairly useful"
- 30% found them "Of very limited use, or Not at all"

With this feedback, this section of the ACoP is far from satisfactory.

⁴ Lord Young of Graffham's Report "Common Sense, Common Safety" recognises the importance of competence and recommends that health and safety consultants should be accredited to professional bodies.

2.2.2 The SEC Report

Various concerns on Competence were raised, obliquely and directly

Para 2.8 includes “...concern (expressed particularly in comments from respondents) over the lack of visibility of the CDM co-ordinator particularly in the design and change processes. This was apparent in the widespread failure of CDM co-ordinators to engage contractors in design reviews.”

2.2.3 The CECA Report

Comments that reflect on CDM-C competence include:-

“Question 12 Greatest concern is that CDM-Cs are doing little other than collate a PCIP or Pre Tender H&S Plan [of variable quality]”

“Unqualified CDM coordinators being appointed who are unaware of their duties”

“Not enough emphasis on designers and CDMC competence.”

2.3 WHAT IS COMPETENCE?

2.3.1 Introduction

This sounds a simple question, but it is far from simple to give an all-encompassing definition of competence. Competence is a combination of factors (knowledge, experience, ability, application) some of which are difficult to measure quantitatively or with any degree of certainty. We all know that competence is the ability to do something well or effectively but in such a diverse industry as construction how can it be judged?

The executive summary of HSE Research Report 422 [3] gives guidance on this:

“The adequacy of competence and resource cannot be precisely determined. The best one can set out to do is set some benchmarks, guidelines and requirements which, generally speaking and with sensible judgment, will ensure that those which satisfy them will be of a suitable minimal standard. Although this approach maybe simplistic it will create the certainty, efficiency and cost effectiveness that the construction industry needs. It is considered a good business model. As the brief to this study indicated, the intent is to ‘eliminate the incompetent, not identify the most competent’.

The choice we have is either a simple system that has faults, but which is flexible and workable (and does not involve case by case assessments), or a sophisticated system that takes account of, say, aptitude, but no-one will use because it is bespoke and complicated!”

The former of these choices i.e. ‘a simple system’ is the preferred option.

When assessing competence it is also essential to be clear about the difference between training, education, qualification and experience, attributes that come with membership of a professional body.

Training is (normally) a structured way of imparting information to a person; but it does not always measure the amount of information the delegate has retained. An attendance certificate is not necessarily a qualification. Training can be part of the process that leads to a qualification but may prove little on its own. It is usually about application.

Education is usually different; it is about fundamental principles and retained knowledge. For the purpose of this report, education and training are considered together.

A qualification is awarded after a candidate has been assessed and deemed to have achieved the required level. The assessment may be an exam or test, an interview, on the job monitoring or other recognised ways of confirming applied knowledge. The degree of rigour of the assessment process goes a long way to confirming the credibility of the qualification, consequently multiple-choice tests are not considered to be on the par with written exams or peer reviews.

Membership of a professional body is in most cases the culmination of years of training, acquisition of qualifications and experience. Professional bodies have rigorous admission standards that are audited and held up to scrutiny.

2.3.2 Individual Competence

There is a definition of competence given in RR422 [3]:

A competent person is a person who can demonstrate that they have sufficient professional or technical training, knowledge, actual experience and authority to enable them to:

- *Carry out their assigned duties at the level of responsibility allocated to them;*
- *Understand any potential hazards related to the work (or equipment) under consideration;*
- *Detect any technical defects or omissions in that work (or equipment), recognise any implications for health and safety caused by those defects or omissions, and be able to specify a remedial action to mitigate those implications.*

A competent individual will also know the limits of their competence and not be afraid to acknowledge the fact. This means that even a very experienced CDM-C may not be competent to act in specialist areas, such as the Rail or Nuclear industries, and may need additional specialist advice to complement their own knowledge

The factors that can contribute to individual competence include: -

- **Qualifications**

Relatively easy to quantify and confirm; there are however a whole collection of them that measure differing aspects of one's knowledge; not all test this with rigour. For CDM the qualification needs to measure both health and safety knowledge and construction project knowledge. Qualifications cover a vast spectrum of abilities from CSCS cards to Higher Degrees; the relative levels of these qualifications need to be understood and qualifications given the credibility they deserve.

- **Member of a Chartered Institution or Professional Body**

The chartered construction institutions have detailed entrance procedures normally based on qualification and experience and have rigorous entrance procedures. However, membership will not usually confirm levels of both health and safety risk management and construction project knowledge to perform all the duties required of a competent CDM-C.

- **Training**

Training is only a way of gaining knowledge that may later lead to qualifications; however, it does not prove competence on its own.

- **Experience**

This is one of the most crucial, yet most difficult to measure, aspects of competence. We all know a competent practitioner but trying to quantify why they are competent is not easy. In fact it is often easier to recognise incompetence. One key aspect of an experienced and competent person is their ability to recognise their own limitations in knowledge and ability.

National Occupational Standards and National Vocational Qualifications

National Occupational Standards (NOS) set out measurable performance outcomes to which an individual is expected to work in a given occupation. Developed by employers across the UK, NOS set out the skills, knowledge and understanding required to perform competently in the workplace.

In the UK NOSs are used as the basis for National Vocational Qualifications (NVQ) and Scottish National Vocational Qualifications (SNVQ). NOSs are not qualifications, but they set the standard that NVQs and the like have to attain for their qualification to be recognised.

It is recognised that the government is promoting the use of NVQs and SNVQs in its drive to produce a competent workforce. In pursuit of this, new qualifications that are not mentioned in the ACoP are being developed. A National Occupational Standard for CDM Coordination (sic) has been developed, and from this a level 3 CDM Qualification (NB This is a CDM qualification, not a CDM-C qualification) has been produced. This is a development that has the potential to “dumb down” the standards required if the Institutions and industry are not vigilant and assessors are not of a sufficiently high standard.

Experience with higher-level construction NVQs is difficult to assess as few people have yet enrolled and even fewer have completed the qualification. Anecdotal evidence with trade NVQs (i.e. levels 2 and 3) gives concerns as the ability of assessors is variable and the qualification appears to favour younger students rather than the experienced tradesperson. This is primarily down to the currency of qualifications; young people have recent and up-to-date qualifications, whereas older people may have difficulty in locating their certificates.

Higher-level NVQs may have a future but the Institutions need to involve themselves to ensure that standards are sufficiently high and are then maintained and monitored.

A National Occupational Standard (NOS) for Construction Design and Management Coordination ~ Level 4 was issued in July 2008 by the Construction Industry Council.

Professional institutions in general have had concerns about NVQs especially at Level 4 and 5, i.e. non-trade NVQs although it is recognised that these qualifications are high on the government's agenda. The concerns are that the NVQs at levels 4 and 5 need high level assessment and that the institutions already have these standards for membership.

As a consequence of the difficulty in assessing the standing (absolutely and comparatively) of these various threads, the authors have developed a rating chart which is described in section 2.4.

[NOTE: Although this Report focuses primarily on Individual CDM-C Competence, there are parallel and overlapping issues for Team and Corporate Competence, and the authors have decided to give brief comment on these areas in sections 2.2.2, 2.2.3, 2.3.2 and 2.3.3 of this Report]

2.3.3 Team Competence

All the factors listed above in individual competence count towards team competence and in some cases where team members complement each other the competencies can be aggregated and even enhanced.

However, there are also human factors that come into play and these can affect how efficiently a team functions. If for whatever reason team members cannot work with each other the outcome can be detrimental. Managers must constantly be vigilant to ensure conflicts within teams are avoided or resolved and if necessary individuals moved around.

Although teams can be kept together it is unusual for them to survive more than one project without evolving and changing, not necessarily for the better.

2.3.4 Corporate Competence

This has been defined [3] as:

'A culture within an organisation that actively considers the health, safety and welfare of its own people, and of those that its work activities affect, with this being achieved through active management and participation of employees.'

When corporate (organisation) competence is measured, problems of assessing in any meaningful way are encountered, which is partly the reason, along with commercial expediency, for the plethora of assessment schemes that have evolved within the industry in recent years.

The assessment of organisations will by default include an assessment of the monitoring and training frameworks used to ensure individual competency of the individuals that they employ. Individual CVs to demonstrate individual competence of key H&S personnel are usually

required. In the overall corporate assessment these should be combined with the company's health and safety ethos.

Good companies are open about their failings, learn from their mistakes, implement change and improve. Which is the better firm, one that shows no accidents or one that has had a fatality and other accidents in the recent past? At first the response would appear obvious, the company with no accidents must be better, but one should be suspicious of any company reporting no accidents. Are their reporting systems robust? Are employees encouraged not to report accidents?

However, careful consideration may lead to the opposite conclusion. Any company that has had a fatality will have normally undergone a rigorous investigation by the police and the HSE, prosecutions and significant fines may have followed; the company's insurance premiums will have risen. Therefore to be still trading after such a tragedy inevitably means that the company has changed, improved, and updated procedures to ensure as far as possible no repeat occurs. Now, which company is the better?

There is no standardised answer to this question. However, it does illustrate that assessments need to be made on a pragmatic basis by competent persons using their judgment.

2.4 ASSESSMENT

2.4.1 Assessing an individual

Introduction

Accepting the fact that this is far from an easy task, let us try to consider the types of evidence that can be used to build up a picture of a person's capabilities to carry out a function or trade. This report is based on the duties of the CDM Co-ordinator and so the emphasis will be very much on the 'professional' qualifications rather than trade qualifications.

It should be remembered that the various duty holders require differing skills; the CDM-C requires a detailed and wide knowledge of health and safety risk management and of the design and construction process, whereas designers require perhaps a lesser knowledge of health and safety risk management, some knowledge of construction but detailed knowledge of design.

It also is apparent that the competencies required will vary from scheme to scheme; consequently larger and/or complex schemes will require a different calibre of individual.

Hence the competence of an individual can be broken down into various categories, in particular the following: -

- Health and safety risk management knowledge
- Design knowledge
- Construction knowledge
- Experience in the above categories
- Communication skills

Designers have recognised Institutions that award qualifications, are regulated by strict rules of governance, often covered by a Royal Charter and certainly have professional codes of conduct to which their members must adhere. Unfortunately, CDM-Cs have no such formal recognition. Although the ACoP does give guidance, membership of the Association for Project Safety has come to be the most recognisable qualification pathway and certainly the most commonly requested by clients and employers. However, few Clients and employers fully understand the level of competence offered by the various grades of APS qualifications.

It is the aim of this section to look at the various qualifications, training courses, NVQs, etc that are currently available, discuss their merits and drawbacks and try to give each qualification a grading which will help towards understanding their relative merits.

Professional CDM-C Membership ~ High Level

For the purpose of this exercise professional qualifications are defined as qualifications required to practice at a high level in CDM-C and as part of the entry process there will be a peer assessed interview.

Two qualifications that fall into this category have been identified: -

- Member of The Institution of Civil Engineer's H&S Register (Advanced)
- Fellowship of the Association for Project Safety

Both these qualifications require the candidate to submit a detailed history of their experience as a CDM-C or in health and safety related construction work followed by an interview by the candidates' peers on the submission.

The ICE's H&S Register is not specifically for CDM-Cs; it is for construction professionals who have a significant involvement in health and safety risk management. The APS Register is aimed solely at CDM-Cs.

Other CDM-C Memberships ~ Other Levels

For the purpose of this exercise these are qualifications that are assessed following an application but with no interview. However, all Register members and many APS members will have undergone an interview in achieving institution membership as part of the qualifications submitted with the application.

Qualifications that fall into this category include: -

- Registered Member of the Association for Project Safety
- Member of the Institution of Civil Engineer's H&S Register (Level 1)

Association for Project Safety (APS)

The longest established, best known and most widely quoted qualifications are offered by the APS. However there are a wide range of membership levels and therefore a wide range of competencies covered. Entry to the lower levels needs no assessment, entry to the intermediate levels is based on the APS 'Credit' system; the top level is by peer review and interview. The membership levels range from Student to Fellow as follows: -

Student: As the name suggests this is the level open to all people in full time education in a construction related subject. No assessment of competence is needed for this level of membership.

Affiliated: Is not a route to membership; this is for information subscribers, consequently there is no assessment of competence is needed for this level of membership.

Associate: A small amount of credits are needed for this level of membership although they are easily obtained by anyone in construction management. Recording of CPD is also a requirement.

Registered: A much more challenging level of credits is required for this level of membership including showing experience as a CDM-C. This is then followed by an on-line examination. Recording of CPD is also a requirement. We understand that in the near future all new Registered Members will have to undergo an interview.

Fellow: To achieve fellowship an individual must have been an APS Member for at least 5-years and demonstrate their competence with a peer reviewed interview. Again a commitment to CPD is required.

So to summarise, the Student and Affiliated levels of membership prove nothing as far as competence is concerned; Associate membership starts to address the issue but is at too low a level to prove competence to act as a CDM-C. Registered membership, because of the credit requirement, does address the competence issue better, but the credibility of an apparently un-monitored on-line multiple-choice examination leaves a lot to be desired.

Fellowship does challenge a member's competence and is indeed a high level CDM-C qualification.

Institution of Civil Engineers' Health & Safety Register

Although this is recognised in the CDM ACoP, it has been seen as a somewhat elite qualification for H&S practitioners. However, the ICE's H&S Register has recently undergone a re-launch and now includes a new "First-Level" grade of membership.

The first level of membership is an assessment of document submission that focuses on H&S, following a professional review/examination that involves other professionals reviewing (on a direct one-to-one basis) the candidate's experience and competence in H&S and risk management).

The Advanced level is assessed through an interview.

National Vocational Qualifications

As noted above, currently there is no NVQ that relates purely to CDM-C; although there is an award in Construction (Design and Management) Regulations at Level 3 developed by the Open University Awarding Body. The fact that it is at level 3 indicates that it is not suitable for CDM-Cs unless supplemented with other qualifications.

It should be stated that because a Level 4 NOS exists that has so far not been adopted as an NVQ.

Training Courses

There are many and varied training courses available. It appears that adding the phrase 'CDM' to a course will boost its popularity substantially. There are many very good courses run by accredited trainers, but as has been stated previously, training is appropriate for acquiring knowledge and may add to an individual's competence; but on its own it does not lead to competence. Nevertheless, on some occasions, there is an inference that "...if you attend our XX day course on CDM you will be a competent CDM-C".

2.4.2 Assessing a CDM-Coordinator team's competence

This is an area often not recognised and certainly not addressed to any degree in the current ACoP. However as with any team the dynamics, friendships, respect within it and how it is managed can have a profound effect on the quality of the output. An individual's poor performance in one team may not necessarily be a measure of their level of competence.

Assessing a team's competence could be said to be impossible in a practical sense; in most instances the team is not fixed, members come and go as the project evolves; key individuals can be lost and disruptive individuals join. Project teams are unlikely to come together again, certainly not in their entirety so the benefit of assessing their competence long term is of dubious value anyway.

Assessment of team competence must be down to the manager(s) to measure on a regular basis, making changes as required.

The CDM-C is often seen as a relatively minor player within the project team, but can have a huge influence on it. Pedantic CDM-Cs who are quick to condemn and criticise, but slow to recommend and advise can be disruptive to a team and soon lose respect. This reinforces the need for CDM-Cs to have good communication skills as part of their armoury as good CDM-Cs can have a significant influence.

The key issue seems to be the Individual competence of the person with the lead CDM-C role in the team.

Team competence is not considered further in this Report.

2.4.3 Assessing corporate competence

Guidance is given in Appendix 4 of the ACoP and because this is now accepted good practice clients and independent assessment bodies alike now follow its criteria. The criteria covered

are all valid, however there is little guidance on the interpretation of the responses (the recently issued PAS91 [4] does address this issue).

In assessing corporate health and safety competence it is recommended that recognised 3rd Party schemes be accepted as satisfying the core criteria (Stage 1); this should then be supplemented by experience in the type of works being carried out (Stage 2) and supplemented by references from previous clients.

Companies have rightly complained at the amount of 'evidence' they have to provide to even secure a place on a tender list and the industry assessment schemes were an attempt to reduce this paperwork. However, in many cases the assessment process has continued as before but with an added question along the lines of, "Are you registered with CHAS/ConstructionLine, etc"

It is also thought that some of these assessment schemes do not understand the differing qualifications and their strengths and weaknesses. Additionally few of the schemes cater for CDM-Cs in any detail.

Recently an umbrella organisation has been formed (SSIP)⁵. Its members, all of which are industry 'assessment schemes', undertake to satisfy the CDM ACoP corporate competency requirements, and to recognise each other in this regard. The intent is to reduce the amount of unnecessary duplication in scheme membership by contractors and others. We wish SSIP well.

A move towards further standardisation has been made with the publication of PAS91 [4]. The aim of this government sponsored publication is to standardise the questions used in pre-qualification questionnaires.

Again, as outlined above for team competence, the key issue seems to be the Individual competence of the person with the lead CDM-C role in the company.

Corporate competence is not considered further in this Report.

2.5 GRADING COMPETENCE

2.5.1 Introduction

It can be seen from previously in this section that assessing an individual's competence is not an easy task. As noted also, whatever method is adopted it must be simple to understand and implement; the authors do not currently believe that this is the case

Clients and others are unsure which qualifications are best suited to the role of CDM-C and by implication which individual is best suited to carry out the CDM-C role on a scheme. Even people wishing to obtain CDM-C qualifications are uncertain which path to follow.

⁵ Safety Schemes in Procurement(SSIP) at www.ssip.org.uk

This section will attempt to grade qualifications into a hierarchy based on a scoring system that has been developed using the three components given in the CDM ACoP, i.e. Task Knowledge, Health and Safety risk management knowledge, and Experience.

Components are marked out of 10 and the combined score will be in the form X:Y:Z, where X is the health and safety knowledge score, Y is the task knowledge and Z is the experience score. The examples are given scores based on the contribution each gives based on a qualitative assessment by a number of experienced professionals in construction and H&S. Where more than one qualification is held the highest score for both is taken; so if an individual had two results giving scores of 5:7:2 and 4:4:8 their aggregated score would be 5:7:8.

The scores have then been used to place entries into one of three colour codes: green for skilled (scores of greater than 7), yellow for basic skills (3-6) and red indicating unskilled (2 or less). Candidates that show areas of red should only be appointed if it can be demonstrated, in some supplementary way, adequate 'safety, task or experience' (as appropriate).

Task Knowledge (of Design and of the entire Construction project Process)

This will be demonstrated by the person having a good knowledge of design and an understanding of the complex design process that exists on construction projects, including the interaction between the various disciplines, the iterative process of design and the effect of design and brief changes. It will also include the issues associated with the construction phase, supply chains and temporary works, and the influence of programme and resource. The CDM ACoP para 229 amplifies the requirements for Design knowledge.

The ACoP also suggests for high risk and complex projects that this is best demonstrated by Chartered membership of a construction related Institution that includes design in its entry criteria.

H&S Knowledge

This should demonstrate not just knowledge of CDM but also other health and safety legislation and its practical application in construction. Suggestions are made in the CDM ACoP Appendix 5 as to how this can be simply demonstrated.

Experience (of Construction on site and of the entire Construction project Process)

Good experience on site and of the construction process overall (including procurement, design, programming and any design processes that may occur on site) which demonstrates experience of applying the Task Knowledge in the construction environment. The ACoP para 231 expands on this, and the ACoP also speaks of 'evidence of significant work on similar projects with compatible hazards, complexity and procurement routes'.

Clients can judge an individual's CDM-C competence (within the level of accuracy described earlier) by referring to Figure 1 (overleaf).

	Safety H&S	Task Design	Experience Construction
H&S Register ~ Advanced	10	8	7
APS Fellow	10	7	7
H&S Register ~ Member	8	8	7
MICE/FICE	4	10	10
MIStructE	4	10	9
RIBA	3	10	10
RMAPS	7	4	3
RICS	3	6	8
CIOB	4	5	10
MAPS	6	4	1
NVQ Level 3 in CDM	5	1	2
CMIOSH	10	0	1
MIOSH	9	0	1
NEBOSH Diploma	9	0	1
NEBOSH Const Cert	8	1	2
NEBOSH Cert	8	0	1
CSCS/CPCS Card	1	0	1

Figure 1: Assessment of CM-C Competence

2.5.2 Scoring

The quantitative manner in which the scoring has been recorded, and hence the determination of the ratings will inevitably generate debate. The ratings were not given lightly and were arrived at after consultation with key stakeholders in the industry.

As a broad indication of CDM-C competence, the table has been highlighted to provide 3 grades (the individual entries in each column are not competence, but elements of competence):-

- GREEN Satisfactory/good
- YELLOW Marginal with room for improvement
- RED Generally unsatisfactory/weak

Some qualifications rely on the candidate already having other qualifications that are taken as accepted rather than re-assessed. An example of this is the ICE’s H&S Register; where members need to be a member of an approved Institution to achieve membership of the Register.

The Construction Skills Certification Scheme cards have been scored low as it is felt that in many cases they are not appropriate as strong evidence of competence, or at a significant level. The authors are aware of the recently introduced “Professional cards”; however these are again relying on existing qualifications that should be included in the master list elsewhere.

It is intended that the ICE H&S Expert Panel will keep this table under review and update the website version of this Report in due course. It is not the intention that these scores should be viewed as absolute or static. The intention is to illustrate in broad relative terms how industry standards compare to assist the Client and others in assess their worth.

Clients should use these indicators in the first stage of an assessment of a CDM-C's competence; it is recommended that appointments be finalised through an interview.

3. PRE-CONSTRUCTION INFORMATION

3.1 GENERAL INTRODUCTION

The Pre-Construction Information Package (PIP) was introduced in the 2007 Regulations to replace the pre-Tender H&S Plan. Some people considered that this was purely a name change. But, is that the case? Opinions across the construction industry vary on this, but fundamentally, the intention is much the same with CDM 2007 only requiring in essence the same communication of important information that CDM 1994 required, but with more emphasis on “appropriateness” to avoid the large and relatively useless H&S Plan documents that CDM 1994 sometimes engendered.

The 2007 ACoP includes, in Appendix 2, some guidance on ‘Pre-construction information’. Additionally, there was planned to be a guidance document issued on the Construction Skills website – Appendix D (The Pre-construction Information Pack) – but this has not yet materialised.

The APS has produced good guidance documents (see 3.3 final paragraph below)

This report focuses on the passing on of hazard and risk information.

3.2 KEY PHILOSOPHIES

It is considered that there are three fundamental statements in the ACoP relating to this issue.

These are:-

- **“Discourage unnecessary bureaucracy”** [ACoP Introduction 2(d)]
- **“Paperwork which adds little to the management of risk is a waste of effort, and can be a dangerous distraction.....”** [ACoP Introduction 4]
- **“The level of detail in the (pre-construction) information should be proportionate to the risks involved in the project.”** [AcoP- Appendix 2]

From all the evidence and surveys that have been carried out, it is clear that for many aspects of CDM, and particularly the provision of Pre-construction information, these fundamentals have either not been met at all, or at best only partially (see section 3.6 for more information from the surveys etc).

3.3 RESPONSIBILITIES AND WHY IT DOES NOT WORK

The responsibility for providing information starts with the Client (and many are either ignorant of this, or reluctant to spend the time and money. This is despite the fact that Clients should have been advised by their Designers, and Contractors). Then, the CDM Co-ordinator appears, and has very significant responsibility for this (Regulation 20(2)). The CDM-C has to “take all reasonable steps to identify and collect the pre-construction information” and to “promptly provide it in a convenient form.....

Also, the CDM-C has a “policing” role, to “take all reasonable steps to ensure that Designers comply with their duties.....” In practice, this may be a “consultant” role to “ensure that designers comply with their duties” by influence and advice.

And, so enter the Designers.....CDM Regulation 6 requires Designers to “take all reasonable steps to provide with his design sufficient information about aspects of the design of the structure or its construction or maintenance.....”

It is noted from the three Surveys (see section 3.4) that:-

- There is a need to *“Clarify what information should be provided in pre-construction information”*
- *“it is staggering that over 53% of respondents had not been given pre-construction information either at all, or on less than 10% of their projects.”*
- *“Information is gathered but not interpreted and risks not prioritized. A scatter-gun approach is used in the hope that all risks are covered in the PCI”*

So, why is it not working effectively (on many/most projects)?

It is the authors’ view that:-

- The CDM-C, who is a key player, often does not have the required level of competence to be able to ensure “The right information for the right people at the right time”.
Competence is addressed in Section 2 of this Report. Other issues, including the late appointment of the CDM-C, lack of resources, and the issues below, can also be important.
- There is much confusion as to what information needs to be provided. (The CDM ACoP advice (para 134[a]) is unhelpful as it prioritises *“notes on drawings – this is preferred”*. This is **not** what most contractors need as a first alert to the significant or unusual hazards and risks. Notes on drawings are very useful, but are a “second-step” for many contractors, even though they may be a “first-step” for Designers in recording hazards and risks. Contractors need to be advised at a prominent and early stage of the PIP to the significant and unusual hazards and risks not immediately obvious to a competent contractor, by a simple summary list/register that tells them and alerts them that *“here may be dragons....”*
- Many Designers are unclear and uncertain about effective risk assessment, and adopt a “scatter-gun” approach, including many normal issues that a competent contractor is used to dealing with on a day-to-day basis. This masks the really important hazards and risks.

[A suggested Hazard and Risk Register is provided at the end of this Section of the Report]

- The general issues highlighted in section 1.2 of this Report, i.e. (a) lack of management and leadership, (b) Conflict between contract and statute, (c) level of enforcement, and (d) Lack of understanding of ‘how far we need to go’, and what “so far as is reasonably practicable” (SFAIRP) really means in practice need to be tackled in order to make progress.

What about existing Guidance documents?

Much useful information has been provided by various bodies, but despite this, confusion and lack of understanding remains. Particularly helpful documents are those issued by APS, including their “Design Risk Management” and “Guide to the Management of CDM “Co-ordination”, those issued by ConstructionSkills[5]) and the ICE [6]) There is much helpful and practical guidance given in these documents (those from APS are currently under review and it is hoped that this ICE Report will help APS in that review).

3.4 INFORMATION FROM THE CDM EVALUATION AND FEEDBACK FROM OTHER SURVEYS AND BODIES

These are listed in Section 1.4 of this Report, and:-

- All provided useful information
- All identified the “needs” identified by ICE and this Report
- Most suggested additional guidance was needed

The following paragraphs are just a few of the many comments and findings from other bodies, relevant to “Pre-construction Information”.

3.4.1 Designer Evaluation Survey

Graph D1 i – **“How useful in relation to your role do you find ACoP Appendix 2 on Pre-construction Information”**

Only 22% found it “Very Useful”
 51% found it “Fairly Useful”
 18% found it “Very Limited”

Suggested needs (from Report):-

- “Provide better guidance for designers in respect of design risk management issues”
- “Clarify what information should be provided in pre-construction information and H&S Files”

3.4.2 The SEC Report

There are many concerns regarding Specialist Engineering Contractors’ involvement in the receipt of pre-construction information. These include:-

Q.2 *“On what % of projects (where you have been involved in design or design development) have you engaged with consultants in risk assessing the design outcomes?”*

45 % of respondents reported “NIL”

23% of respondents reported on less than 10% of their project

This indicates little or no effective management of H&S risks.

Q.3 “On how many projects do you receive information from consultants (as Designers) on aspects of the design (relevant to your work) of the structure or its construction or maintenance to help you to comply with your duties?”

30% of respondents indicated that they had never received this information

25% of respondents indicated that they had received information on less than 10% of their projects

So, the pre-construction information may exist, but it is not being passed on.....

Q.7 “On what % of projects were you given pre-construction information....”

31% of respondents reported NONE

22% of respondents reported on less than 10% of their project

The Report says “it is staggering that over 53% of respondents had not been given pre-construction information either at all, or on less than 10% of their projects. This calls into doubt the competence of some Principal Contractors.

3.4.3 The CECA Report

Comments on pre-construction information (PCI) include:-

“Information is gathered but not interpreted and risks not prioritized. A scatter-gun approach is used in the hope that all risks are covered in the PCI”.

“Further guidance from the HSE and from within our own industry would be a possible solution” (to the inability to interpret or apply the principles of the Regulations).

3.4.4 Summary of current position

Thus it appears that there are significant issues relating to:

- The content and timing of the Pre-Construction Information
- The competence of the CDM-C
- The means of undertaking ‘risk assessments’ from which this data is in part derived

This report attempts to deal with these issues

(There are also issues with the competence of Designers, Principal Contractors and Contractors, but these are outside the scope of this report)

3.5 RECOMMENDED PROCESSES

Pre-construction information is derived from a two sources:

- Base data held by the Client (or which should be obtained by the Client)
- Data arising from the design process

The former should be agreed with the Designers and the CDM-C has a key role in its identification and collection. The latter is covered in section 3.7 below.

3.6 DESIGN RISK MANAGEMENT – THE ESSENTIALS

Much has been written, but many are still unclear..... The APS Guide on “Design Risk Management” is a useful source of detailed guidance, and has been critically reviewed by the authors of this Report.

Also, another key reference document is the Industry Guidance for Designers (published by ConstructionSkills, and available as a free download from www.cskills.org/uploads/CDM_Designers4web_07_tcm17-4643.pdf).

The use of **ERIC** (see S2.3 of the ConstructionSkills guidance) will greatly assist the process.

To help to better clarify these issues in this report, it was considered prudent to summarise the essentials of Design Risk Management.

3.7 DURING THE ONGOING DESIGN PROCESS

3.7.1 Generally

Designers should:-

- Endeavor to identify themselves what information they might need from others (e.g. Client, CDM-C, and other Designers etc).
- Communicate, co-operate and co-ordinate with other CDM duty-holders (as above).
- Hold meetings/workshops (Design Review Meetings) where hazard and risk issues can be discussed openly and freely. Invite the CDM-C to important meetings. He/she could chair the meeting.

3.7.2 Hazard and risk registers

The regulations require all hazards and risks to be considered. However, the means by which hazards are eliminated and risks reduced are not spelt out in the Regulations or ACoP, neither is there any meaningful guidance on how far a designer should go in this endeavour.

i) Through the design process

Many Designers find it helpful to establish two “live” Hazard and Risk Registers_(one for Construction issues, and one for Operation/Maintenance/Decommissioning (extracts of which

will go in the H&S File – see Section 4 of this report). The regulations require all hazards and risks to be considered. Hence the fundamental question is whether these registers should be for “all risks” or for only “significant and unusual risks”. However, if they are the former they will become unwieldy in length and cease to be useful.

A useful way to proceed is to think through the hazards and risks (using the Industry Designer Guidance advice on this as a prompt) and identify the ones which are:

- Unusual, major impact or of other particular concern
- Others where the designer may reasonably take some action to eliminate or reduce

Include these categories in the register. The initial thinking process is best done as a 'brainstorming' exercise as recommended in the Designer Guidance. It is prudent to have record notes from these meetings which list the hazards discussed and rejected as not being of sufficient significance to be included in the Hazard and Risk Register.

On larger projects it may be beneficial to have separate registers for different areas of the works, or phases (or to use other techniques) so as to keep the amount of data on any one register to a reasonable level.

(Note: as hazards and risks are progressively eliminated (see ERIC), these items can be deleted from the Hazard and Risk Registers, with copies of earlier versions kept in electronic or paper files)

ii) Major Hazards in Construction

Designers are usually concentrating on the “normal” everyday hazard identification, elimination etc – but are less good at identifying the “major” hazards which could lead to catastrophic events.

The CIRIA and Loughborough University work on this subject [7] is suggesting that Designers in the Civil Engineering and Building sectors are almost exclusively unable to address such issues due to lack of experience, competence and guidance. However, areas of good practice exist in sectors such as tunneling.

The practice of identifying and addressing “**what is the worst thing that could happen on this project**” may be put forward as a good start. It should be remembered that “catastrophic” may not be just e.g. explosion etc, but a series of “more normal” events that combine to produce a catastrophe, e.g. progressive collapse. In this context however ‘catastrophic’ is limited to construction phase accident hazards which could cause multiple fatalities⁶.

⁶ The study also included some non-occupational safety hazards e.g. major disruption to infrastructure, loss of business, and political implications.

iii) Towards the end of the Design Process

When the need arises to provide “Pre-construction Information” to contractors, the Hazard and Risk Register for construction should be reviewed critically and all items that are not “Significant and Unusual” (to a competent contractor – see ACoP para 133) should be removed, leaving a minimal core of items containing the “alerts” that a competent contractor might not otherwise pick-up in the pre-construction rush.

The Hazard and Risk Register for the H&S File should also be updated and all trivial or low residual risk items removed. It should be kept “live” and passed to the CDM-C. (See Section 4 of this Report)

iv) Temporary Works

Although the Contractor(s) have significant responsibilities for eliminating hazards and reducing risks for temporary works, permanent works Designers often have major contributory roles in considering the interaction of permanent/temporary works and in providing information to enable safe systems of work to be established. The CDM-C also has an important role with Temporary Works with regard to ensuring cooperation between permanent and temporary works Designers..... (see the Industry Guidance for Designers for more detail).

3.7.3 Notes on Drawings

As designs are developed, it is useful to progressively annotate a set of drawings to show significant or unusual hazards, using standard symbols and a panel on each drawing to convey hazard information. Cross references should be made to the Hazard and Risk Registers. Notes on Drawings are a good way of providing information to the people on site in a clear and graphical format. There may be a separate set of drawings for this, or this information may be incorporated into all drawings as appropriate. There are advantages to the latter, in that the hazard information becomes an integral part of the drawing and is less likely to be missed or overlooked in the sometimes intense pace of construction on site,

The drawings and the Hazard information should be progressively reviewed and updated and be part of the pre-construction information passed on to contractors.

3.8 ELIMINATING HAZARDS AND REDUCING RISKS

3.8.1 General

The ICE has welcomed the prospect of CDM 2007 leading to the end of unnecessary Design Risk Assessment paperwork and the production of numerous pages of risk assessments, which included many low-risk issues. ICE fully supports the emphasis in CDM 2007 on eliminating unnecessary bureaucracy and focusing on the provision of information on significant and unusual hazards, which may not be obvious to contractors, maintenance workers or end-users.

ICE believes that the process of design ‘risk assessment’ remains an essential designer's tool but supports the emphasis in CDM 2007, the ACOP and the Notes for Guidance on producing an effective end product, not on the process itself.

In the ICE's view this end product should be the application of engineering judgment to eliminate hazards and where it is not reasonably practicable, to reduce risks within the construction and subsequent phases. This should be recorded in simple, short Residual Significant Hazard and Risk Registers to be passed to the Principal Contractor for construction and others e.g. Clients etc. for operation, maintenance and decommissioning as noted in the previous sections.

3.8.2 The process

There are many different approaches to risk management using a 'hazard and risk register', but it is considered essential that a competent procedure by Designers will typically produce, in accordance with 3.7.2, the data shown on the example register in Figure 2. This should include:-

- Details of the item and hazard
- The possible consequences (worst-case and other)
- Who might be at risk
- *An assessment of risks including the "worst case scenario" if applicable (see Section 3.7.2(ii) above), and an assessment of the level of risk (either in words or numerically) taking into account the likelihood and the possible consequences*
- Some information from the Designer may be required where there is a critical buildability issue and/or the residual risk is significant and unusual or not obvious to a competent contractor and an assessment of residual risks, with risk reduction measures implemented
- Who is responsible for further action to manage the residual risks
- A timescale or timeframe for the action to be taken

[Footnote/Comment: – there is still much debate and disagreement about the desirability of Designers quantifying risks. Many consider that without some "Descriptor" or "Alert" about the potential seriousness of the risks, then how can you make others aware of a possible worst-case scenario (where this is applicable), and how can you alert others to significant and unusual residual risks (both during construction, and also during operation and maintenance, e.g. roof edge work/maintenance, high-level windows etc).

It isn't necessary to have the "Likelihood" and "Severity" quantified on the Hazard & Risk Register, but some simple easy to understand words (e.g. High, Medium, Low, rather than numbers) to indicate Risk levels seems good risk management, and helpful on the finished article. Some consultants also use colours for the risk levels (red for High risk, yellow for Medium risk etc) and this is also considered helpful.

Some Designers do understand that Risk is effectively a consideration of Likelihood and Severity, but many staff don't yet understand the fundamentals (and even the meaning of "Hazard", let alone "Risk"), so that is why they are included in the suggested proforma. It is only a "suggested" format, but it might focus some minds on the fundamentals of good and effective "risk management". Is this increasing bureaucracy? The authors of this report do not think so.]

3.8.3 The outputs

Following the ERIC process, there will be hazards and risk issues that have not been eliminated entirely. It is important that these are:-

- Assessed
- Passed on to those who might be affected where the data will be of practical use. (either the Contractor or Client for aspects affecting future work)

3.9 A TYPICAL HAZARD AND RISK REGISTER

This should be progressively developed as described in sections 3.4.(i) and (ii) of this report

Please see the following page for a suggested proforma (Figure 2)

"ERIC" Symbol (see Designer Guidance S 2-3)		E							R			I					
Ref.	Activity / Area / Process / Material or Element	Hazard	Can this be Eliminated? Yes or No	Risks associated with hazards not eliminated (including Worst Case Scenarios – see ICE Report section 3.7.2 (ii))					Risk Reduction Measures	Residual Risk			Information to be passed to CDM-C		Date last amended	Status (Active /Closed)	Notes
				Details of Risks	At Risk Constr Public Env	Likelihood	Severity	Risk		Likelihood	Severity	Risk	For Constr	For H&S File			

- Note**
1. Users may wish to add additional columns for comments or similar use.
 2. This Register can be used for Construction (as part of the "Pre-construction Information"), or for the Health & Safety File, with appropriate Headings

FIGURE 2 – A Suggested Hazard and Risk Register

4. THE HEALTH & SAFETY FILE

4.1 GENERAL

The Health and Safety File was introduced in the 1994 Regulations and there has been little change in the 2007 Regulations.

There is guidance within the main body of the ACoP on the contents of the H&S File. Additionally, there was planned to be a guidance document issued on the Construction Skills website – Appendix C The Health & Safety File – but this has not yet materialised.

There has been very good information produced by APS (currently under review – see also 3.3 final paragraph) and it is hoped that this ICE Report will assist in their update.

Despite the existing guidance, there are still three main issues that we believe cause concern in the construction industry:-

- a. Responsibilities
- b. How does the H&S File relate to O&M Manuals and/or Building Manuals?
- c. Content of H&S File

These are addressed in the following sections

4.2 INFORMATION FROM CDM EVALUATION AND FEEDBACK FROM OTHER SURVEYS AND BODIES

These are listed in Section 1.4 of this Report.

The following paragraphs are just a few of the many comments and findings from other bodies, relevant to the “H&S File”.

4.2.1 From the Designer Evaluation Survey

Graph D1h – *“How useful in relation to your role do you find the ACoP section on the H&S File?”*

Only 18% found it “Very Useful”
50% found it “Fairly Useful”
18% found it “Very Limited”

Clearly the ACoP needs improvement.

4.2.2 The SEC Report

Q.3 “On how many projects do you receive information from consultants (as Designers) on aspects of the design (relevant to your work) of the structure or its construction or maintenance to help you to comply with your duties?”

30% of respondents indicated that they had never received this information

25% of respondents indicated that they had received information on less than 10% of their projects

The apparent level of information-flow to and from the Specialist Engineering Contractors is disturbing, and brings the quality of their inputs into the H&S File into question.

4.2.3 The CECA Report

Comments on the H&S File include:-

“CDM-C’s should be more active in ensuring that residual risks are noted on drawings and other Designer output”

“Conflict between CDM and contract conditions”.

4.3 RESPONSIBILITIES

4.3.1 Background

The main concern relates to the change in responsibilities in CDM 2007 which has led on many contracts to a fundamental conflict between contract (i.e. what most contracts stipulate) and legislation (i.e. what the CDM Regulations require).

The wording in CDM 2007 says:-

Reg 20(2) (e) The CDM Co-ordinator shall prepare, where none exists, and otherwise review and update a record (“the health and safety file”) containing information relating to the project which is likely to be needed during any subsequent construction work to ensure the health and safety of any person, including the information provided in pursuance of regulations 17(1), 18(2) and 22(1) and Reg 20(2)(f) at the end of the construction phase, pass the health and safety file to the client.

The wording in CDM 1994 was thus: -

Reg 14(d) The planning supervisor appointed for any project shall ensure that a health and safety file is prepared in respect of each structure comprised in the project containing....

The different duties imposed by the subtle and almost unnoticed change from “shall ensure... is prepared” to “shall prepare” and the requirement to “ensure the health and safety of any person” are onerous for the CDM Co-coordinator. The normal procedure under the 1994

regulations was for the Planning Supervisor to oversee and manage the production of the H&S File. In many ways the H&S File is an extension of the O&M Manuals that the main contractor had been producing well before the CDM Regs were even thought of. It therefore made eminent sense for the Principal Contractor to compile the H&S File at the same time as the O&M Manuals were being compiled.

Recently, many electronic versions of the O&M and Building Manuals, including the H&S File, have entered the market. Companies have emerged who collate and compile these manuals on behalf of the PC, and this can further complicate the “responsibility” issues. The new Regulations have created a situation where there are now often various parties with similar duties to compile ‘end-user manuals’ (albeit that some requirements are contractual), with a significant amount of overlap between them.

4.3.2 A way forward

The structure of the H&S File should be stipulated in the contract (based on Client requirements and/or advice from the CDM-C). It can then be priced by tendering Principal Contractors. The threat of withholding monies from the PC does provide some incentive to produce the File and Manuals on time.

It is recommended that at least two items are priced:-

- Preparation of the draft H&S File and supporting Manuals, for the CDM-C’s review and approval in principle, some weeks before practical completion/handover, and
- Preparation of the final documents, and handover to the CDM-C of all the required copies

At present one cannot escape from the statutory requirement ‘to prepare’ and to ‘ensure’ as noted above, but the CDM-C can at least make reasonable provision for compliance, as follows.

Although the CDM-C will always have the statutory responsibility for compiling and delivering the H&S File, it is often the case that the Principal Contractor is requested to undertake the former, with the File then being overviewed by the CDM-C prior to delivery. The Principal Contractor’s involvement in this manner is a contractual arrangement.

In such cases it is important that the arrangements and responsibilities are spelt out in detail in the construction contract with the Principal Contractor (including the required contents and style-see 4.4 below), and in the CDM-C’s contract with the Client.

Bearing in mind the implied responsibility for the correctness and adequacy of the content of the H&S File, despite the fact/reality that the CDM-C may have had little input into the detail (and may have limited competence to assess the adequacy of specialist areas (e.g. M&E issues), the following words (or similar) are suggested for the contract between the Client and the Principal Contractor, and similar words are used in the Introduction to the H&S File, when it is compiled entirely by the Principal Contractor (and his specialist subcontractors and sub-consultants):

“The H&S File is to be produced by the Principal Contractor, to meet the requirements of the Client and the CDM Regulations, in a format and media agreed with the Client and the CDM Co-ordinator.

The CDM Co-ordinator will monitor the production of the File and carry out a general review of the File, but the detailed checking and approval of the adequacy of the content such that it “ensures the health and safety of any person....” is in practice the prime responsibility of the Principal Contractor.”

Whenever practicable, significant hazards and residual risks should be annotated clearly on the “As-built” drawings with information provided by the Designers, and with information that arises during construction activities.

In addition it is recommended that the actions described in S2.7 of the guidance on the ICE website at <http://www.ice.org.uk/Information-resources/Document-Library/Guidance-for-CDM-Cordinator> be followed.

Clearly, this anomaly of the frequent conflict between Statute and Contract is a concern, and it is recommended that the situation be considered and addressed by HSE when they review and update CDM 2007]

4.4 HOW DOES THE HEALTH AND SAFETY FILE RELATE TO OPERATIONS AND MAINTENANCE MANUALS AND/OR BUILDING MANUALS?

Neither the Regulations nor the ACoP state how the H&S File should be linked to other documents e.g. O&M Manuals. There is no objection to the use of separate documents and some Clients may insist on it. However, combining documents offers potential benefits, as outlined below.

The H&S File is combined with the O&M and other Manuals

There is much to commend this approach, because:-

- There are usually many H&S issues related to operation and maintenance in the M&E O&M Manuals, and to “cherry-pick” these for a “free-standing” H&S File is difficult and simply increases bureaucracy. Therefore to have the H&S File as part of the “Manual family” (including As-built drawings) avoids the possibility of errors and missed items.
- It makes good practical sense for, say, a building caretaker, who has all the information more or less together with the electronic words and drawings

It is recommended that the H&S File element is clearly accessible, probably at the front of the final document package, with cross-references to the O&M/Building Manuals as appropriate. It is a requirement of the ACoP that the ‘H&S File’ data is easily locatable.

4.5 CONTENT OF THE HEALTH AND SAFETY FILE

Paragraphs 256-268 of the CDM ACoP give a useful summary. The APS Publications provide comprehensive, practical and useful information, and should be consulted by those involved in producing the Health and Safety (H&S) File.

A notable clause is 263(b) which suggests “any residual hazards” should be included. This does not appear to be entirely correct.

The file is created to assist in future ‘construction’ work during operation, maintenance and decommissioning of the “structure”. It may be assumed that construction work activities are undertaken by competent persons. Hence the data should include ‘hazards and residual risks’ which would not be necessarily expected, or which may be unusual in some way as seen by competent persons.

The authors of this report consider that this is one of the fundamental requirements for the H&S File. However, it should be noted that this data can be selective on the basis that subsequent work will be carried out by competent persons.

If a Hazard and Risk Register has been produced by the CDM-C, using information from the Designers (see Section 3.4(i) & (ii) in this Report), and updated with information from the PC during construction, then this should be included, preferably towards the front of the H&S File, where it is obvious and clearly accessible.

4.6 AS-BUILT DRAWINGS AND INFORMATION

One key issue that is related to the H&S File is who produces (or is responsible for) as-built information (particularly the “As-constructed” drawings), i.e. the Designer or the Principal Contractor. This is a source of many problems / arguments. The suggested solution, short of a specific requirement in any future Regulations, is that this should be agreed very early in the appointment process and must be priced accordingly by either designers or as a tender item for the contractor to include.

4.7 A TYPICAL HAZARD AND RISK REGISTER FOR THE H&S FILE

This should be originated during the design stage, and updated as appropriate during construction as in Sections 3.4(i) & (ii) of this Report. This is illustrated in Figure 2.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 GENERAL CONCLUSIONS

CDM establishes good business principles for project management with potential benefits beyond those of reducing accidents and incidents of ill health. However, there remain significant areas of uncertainty and impediments to progress in key aspects of CDM. For this to be the case some 15 years after its introduction is unacceptable. It will not be possible to make real progress whilst these uncertainties and impediments remain.

5.2 SPECIFIC CONCLUSIONS AND RECOMMENDATIONS

5.2.1 Broad issues of concern and Impediments to the success of CDM 2007

The ICE specifically, and industry generally, is keen to improve and move forward in its application and understanding of occupational health and safety issues. However in order to give this real effect, underlying fundamental concerns must be tackled, and, importantly recognised. These relate to management, understanding, conflict between contract and statute, and enforcement.

5.2.2 Competence

This Report focuses on the competence of the CDM Co-ordinator, and raises concerns about the lack of clarity in this respect. Further discussion and development is needed in this area, specifically:

- The need to review the ACoP in the light of experience
- The adoption of Figure 1 (indicating through a colour code the 'value' of qualification components) as an accepted means of benchmarking individual competence.
- The need to recognise new qualifications and grades of qualification as they arise
- The need for Figure 1 to be reviewed periodically and updated as appropriate (probably by the ICE H&S Expert Panel)

5.2.3 Pre-Construction Information

There is still much debate about this, raising some fundamental issues. This Report sets out recommendations and suggestions, but further dialogue with relevant bodies is needed. Specific recommendations include:

- The need for improved clarification on the 'hazard elimination and risk reduction' process'
- Promotion of hazard/risk registers (structured to reflect the above bullet)
- The joint use of registers and notes on drawings
- The need to concentrate on the "significant and unusual" hazards and risks
- Reduction in bureaucracy

5.2.4 Health and Safety File

The Report explores the conflict between Statute and Contract (and the usual way of producing the H&S File). Whilst Statute will always have precedence in legal proceedings, better clarification of responsibilities for the adequacy of the technical content, and for the provision of the File and its contents is needed on many construction projects. The report has general guidance on these issues. In due course, these issues need addressing in a revision of the CDM Regulations.

Specific conclusions include:

- Improvements to the ACoP to provide greater clarity
- The need to improve information flow
- A further consideration of the responsibility for compilation of the H&S File having regard to the potential for conflict between contract and statute.

5.3 RECOMMENDATION FOR FUTURE WORK WITH CDM AND ASSOCIATED ISSUES

It is recommended that the issues raised in this report are addressed by the various Professional and Industry bodies and further examined and developed, in conjunction with the existing initiatives by HSE, CONIAC, DIOHAS, APS and others.

One of the most encouraging aspects of this study has been the co-operation of key industry bodies in identifying and debating matters of mutual concern and interest. It is intended to consolidate this communication, co-operation and co-ordination by establishing a series of small Contact Groups to allow further discussion. A number of bodies have indicated a willingness to join e.g. APS, IOSH, IStructE, RIBA, HSE (via the existing representation on the ICE Panel), ConstructionSkills.

REFERENCES

1	Lord Young of Graffham's Report " Common Sense, Common Safety " http://www.number10.gov.uk/wp-content/uploads/402906_CommonSense_acc.pdf
2	A review of, and commentary on, the legal requirement to exercise a duty ' so far as is reasonably practicable ' with specific regard to designers in the construction industry. ICE January 2010.
3	Developing guidelines for the selection of designers and contractors under the Construction (Design and Management) Regulations 1994 HSE Research report RR 422
4	PAS91 A new Specification for pre-qualification criteria in the construction industry at http://www.bis.gov.uk/policies/business-sectors/construction/specification
5	Industry CDM Designer guidance at http://www.cskills.org/supportbusiness/healthsafety/cdmregs/guidance/Copy_5_of_index.aspx
6	CDM-C Guidance at http://www.ice.org.uk/Information-resources/Document-Library/Guidance-for-CDM-Cordinator
7	Major Hazards in Construction HSE Report RR834 - Preventing catastrophic events in construction at http://www.hse.gov.uk/research/rrpdf/rr834.pdf