



Has the Construction (Design and Management) Regulations significantly improved health and safety in the UK Construction Sector?

By

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# Index of Contents

1.0	Introduction	04
2.0	Construction (Design and Management) Regulations 1994	06
3.0	Pre CDM Construction Legislation	07
4.0	CDM 2015 HSE Statistics	08
5.0	HSE Notices and Orders	09
6.0	Heinrich's Incident Relationship Theorem (Domino Effect)	10
7.0	HSE Construction Site Blitz Findings	13
8.0	Case Study - 2012 Olympics	14
9.0	CDM 2015 Duty Holders	16
9.0	Client	16
9.1	Principal Designer	20
9.2	Designer	22
9.3	Principal Contractor	23
9.4	Contractor	27
10.0	Maintenance	29
11.0	Conclusions	30
12.0	Recommendation	34



## Summary

**Has the Construction (Design and Management) Regulations significantly improved health and safety in the UK Construction Sector?**

### Executive Summary

Brian Lambert, managing director of Compass HSC, has worked in the industry for 30 years. His experience and competencies help architects resolve health and safety knowledge gaps and provide guidance on resolving CDM conflicts, to assist studios in achieving CDM compliance.

In 1993, the UK construction industry recorded 91 deaths; the trend of site fatalities and major injuries was increasing.

This prompted the government to introduce the Construction (Design and Management) Regulations in 1994.

Now, 27 years later, Lambert has used his experience as a health and safety professional and principal designer at Compass HSC to carry out his own assessment on whether CDM Regulations have made any significant improvements to health and safety for workers.



## 1.0 Introduction

**Brian Lambert is a practicing Health and Safety professional and the Managing Director of Compass HSC Ltd- based in Lytham St. Anne's- Lancashire.**

Prior to starting his own health and safety practice in April 2002 - he worked for ICI Chemical and Polymers division of ICI - Imperial Chemical Industries, which between 1926 when it was first formed and 1986 became the largest Chemical manufacturer in the UK and the first chemical Company to post £1bn annual tax profits in 1984.

ICI range of chemical products including ICI Fertilizers, ICI Plastics, ICI Explosives and famously ICI Dulux paint Astra Zeneca was formed out of the speciality chemicals division of ICI and have gained notoriety recently as one of the first pharmaceutical companies to develop a vaccine for use against Covid-19.

Brian's career during his employment included: -

- Electrical technician
- High voltage and electrical distribution technician
- Construction supervisor
- Site Civil Engineering Maintenance Engineer
- Head of ICI- Hillhouse Construction section

Managing projects within the high-risk chemical manufacturing environments presents many additional challenges than on a conventional construction site.

Most projects are carried out adjacent to "live" operational chemical process manufacturing plant- with many hazardous substances contained in vast quantities.

The consequence of any incident in such an environment was likely to be significant and any physical damage to process system would result in an uncontrolled release of hazardous chemical materials, with a potential for a very serious health, safety and environmental consequences.

The ICI Project, Design and Construction Management Procedures and the control of contractor's procedures implemented in the mid-1980, s (pre CDM regulations) through to the end of the 1990s were well ahead of their



time and in Brian's experience as a CDM practitioner across many industrial sectors has never seen replicated, even by the large Construction Companies in operation today.

As head of the ICI Construction department, Brian introduced the first version of the Construction (Design and Management) Regulations 1994 at the ICI Hillhouse International Site- in Thornton Cleveleys, Lancashire.

When he left ICI in 1997- he spent the next 3 years working for a privately operated Project Design and Construction Company.

In 2002, he started his own health and safety consultancy practice, Compass Health and Safety Consultants- (Compass HSC Ltd) with a business focus towards the higher risk sectors where he was best able to utilise his skills and 26 years of experience aside his professional qualifications.

Within Compass HSC Ltd range of services ([www.compasshsc.co.uk](http://www.compasshsc.co.uk)) around 75% of the practice relate directly to the application of the legislative standards and principles of the Construction (Design and Management) Regulations 2015 predominantly as the project appointed Principal Designer.

Looking toward retirement, he is now 62 and having spent 95% of his working life involved with the construction sector, and experienced many changes to legislation, societal attitudes, and the more common use of information technology he asks the following question:



**“Has the Construction (Design and Management) Regulations (CDM) provided any tangible benefit on improving health and safety in the UK Construction Sector?”**

## 2.0 Construction (Design and Management) Regulations 1994.

The Construction (Design and Management) Regulations first came into force in April 1994 derived from the EU Framework Directive 89/391/EEC of the 24th of June 1992 on the implementation of minimum safety and health requirements at temporary or mobile construction sites.

The UK response to the directive was the Construction (Design and Management) Regulations 1994.

The purpose of the regulations was to improve the relationship between all parties generally involved with the delivery of a construction project (The regulations applied if the work being undertaken met with the definition of "Construction" and that such work was also taking place on the defined meaning of a "structure".

The 1994 regulation placed specific duties on key individuals or organisations named as follows: -

### CDM 1994 Duty Holders

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» *The Client*

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» *The Designer*

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» *The Planning Supervisor*

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» *The Principal Contractor*

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» *Contractor*



## 3.0 Pre CDM - Construction Legislation

Prior to 1994 the UK Legislation relating directly to the construction sector was:

- Construction (General provisions) Regulations 1961
- Construction (Health and welfare) Regulations 1966
- Construction (Working Places) Regulations 1966
- Construction (Lifting Operations) 1961

Much of the provisions stated in these regulations are contained in the current CDM Regulations (CDM 2015)- Part 4- General requirements for all construction sites, and Schedule 2 relating to the minimum welfare facilities required for construction sites.

The joining of the common market on the 1st of January 1973 and the new influence of the EU, and the role of the European Commission

to introduce the first set of EU Directives in 1992, and the EU Framework Directive 89/391/EEC of the 24th of June 1992 on the implementation of minimum safety and health requirements at temporary or mobile construction sites.

Thus, was born into UK law the Construction (Design and Management) Regulations 1994

The establishing of these regulations was based on concerns that the number of fatalities in the construction sector was growing disproportionately to other industrial sectors such as manufacturing, mining, farming and agriculture.

**277 fatalities were recorded in the construction industry in 1964.**

## 4.0 CDM 2015

### Health and Safety Statistics

The Health and Safety at Work Act 1974 would further introduce significant improvements in workplace health and safety and is still very significant legislation to this day.

**As of writing, the number of fatalities in the construction sector in the last 5 years since CDM 2015 came into force is.**

» 2019 -2020-	40 fatalities- Total Number of death UK-111-Construction deaths as a %-36.0%
» 2018-2019-	31 fatalities- Total Number of death UK-181-Construction deaths as a %-20%
» 2017-2018	37 fatalities- Total Number of death UK-159-Construction deaths as a %-23.2%
» 2016-2017	30 fatalities- Total Number of death UK-147-Construction deaths as a %-20%
» 2015-2016	47 fatalities- Total Number of death UK-186-Construction deaths as a %- 25%

**This gives a combined total of 185 deaths in the period with an average of 37 deaths per year.**

**The number of non- fatal injuries in the same period are recorded as**

» 2019 -2020-	4526 major reportable injuries
» 2018-2019-	4911 major reportable injuries
» 2017-2018-	4932 major reportable injuries
» 2016-2017-	5097 major reportable injuries
» 2015-2016-	5306 major reportable injuries

**This gives a total of 24,772 and an average of 4954 reportable, major injuries over this 5-year period.**

In providing some context, there are approximately 2.5 million people who work in the construction sector, and the largest proportion of self- employed people than any other sector.

When the CDM Regulations came into force in 1994 the number of prosecutions directly associated with the construction sector was as follows:

- CDM 1994 - 8 prosecutions, with the largest fine being £16,000.
- Period 2007-2014 - 516 prosecutions (England and Scotland), with the largest fine being £1.5 million.
- Period 2015 - To date - 274 prosecutions (England and Scotland), of which 46 occurred in 2018. The largest fine was £800,000 and the first prison sentence. The average fine is £71,150.

#### Dispersion of prosecutions to CDM duty holders-2015

Client	108 prosecutions
Principal Designer	6 prosecution
Principal Contractor	518 prosecutions
Contractor	302 prosecutions
Designers	2

## 5.0 HSE Enforcement Notices

The Health and Safety Executive have far reaching powers in regard to the enforcement of legislation.

Within their gift is to bring about prosecutions in the Criminal courts for breaches of Health and Safety regulations. They have the power to issue legal notices and orders which command that a person, typically an employer, and any other duty holder identified under the provisions of the Health and Safety at Work Act 1974-

including, designers, manufacturers, importers, and employees to make all necessary provisions to ensure compliance with any current UK Health and Safety Workplace Regulations.

The HSE can issue 2 types of enforcement notices, these are;

- Improvement Notices, and
- Prohibition Notices.

### Improvement Notice      Prohibition Notice

An Improvement Notice is issued by a Health and Safety Executive inspector, where there has been a “material breach” of a regulation, in other words a stated regulation, or part of a regulation is not being complied with.

**The issuing of an Improvement Notices allows that a satisfactory improvement of the situation is made within 21 days.**

By contrast, a Prohibition Notice is issued under the circumstances that in the opinion of a Health and Safety Inspector there is a situation, or circumstance from which arises a serious and imminent risk to life or asset.

**The issuing of a Prohibition Notice requires the offender to cease any further activity until the situation or condition is rendered safe. Should ‘until’ be ‘and’**

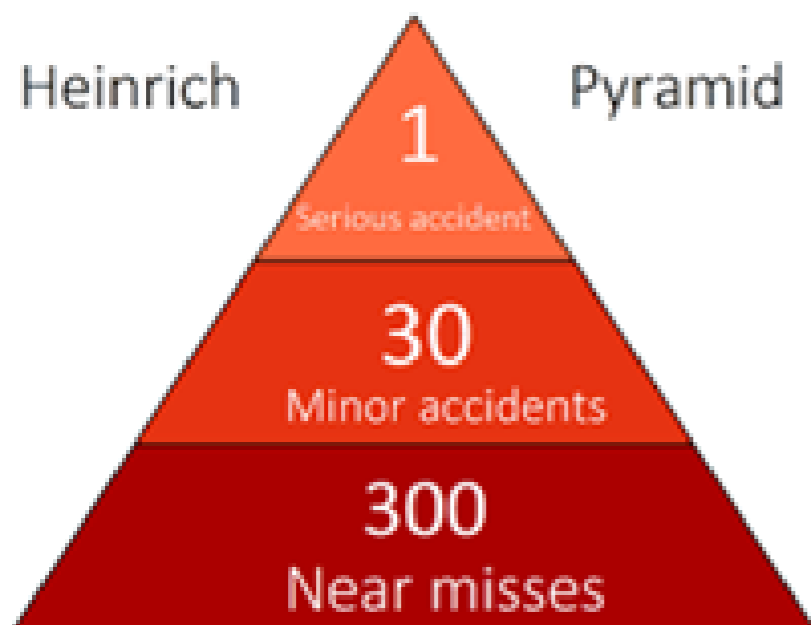
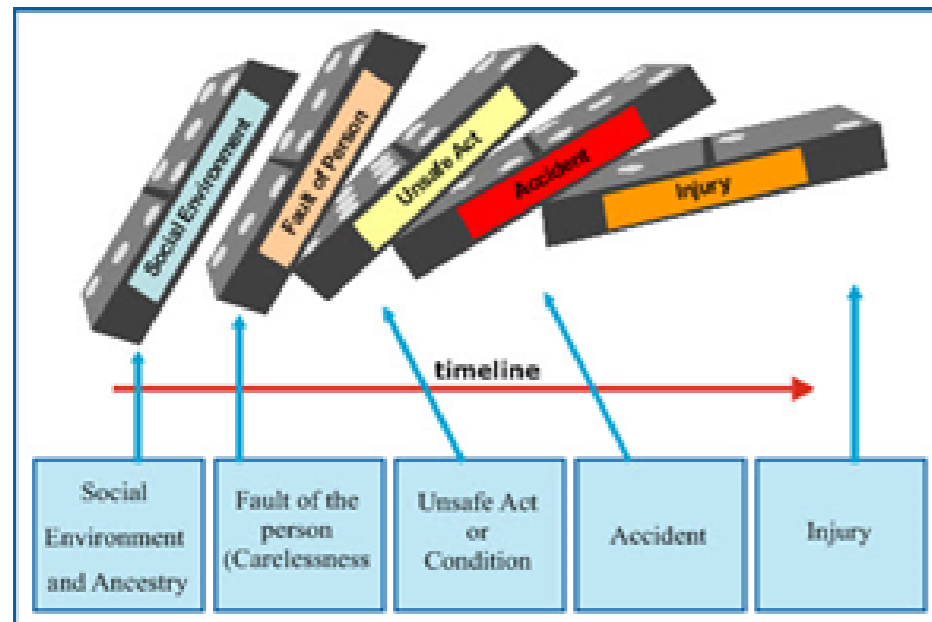
In the period of 2015 to 2020 a total of 14,251 Improvement Notices were served by HSE inspectors on the Construction Sector with 10,010 Prohibition Notices issued in the same period.

It is rarely the case that the issuing of a notice is in consequence of a major injury or disease as stated under the Reporting of Injuries, Diseases or Dangerous Occurrences Regulations (RIDDOR), instead they are typically issued as a direct result of a site visit.

## 6.0 Heinrich Incident Relationship Theory

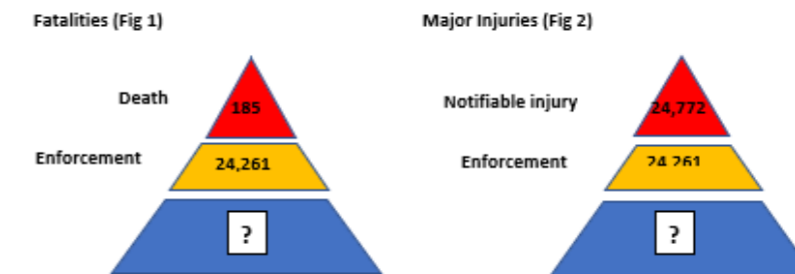
The Heinrichs (William Heinrich) accident modelling theory is well known within the health and safety profession for determining the relationship of cause and effect.

The primary model often referred to is Heinrichs 'Domino Theory' which models the relationship of a number of behavioural factors, that will increase the probability of an incident occurring and is based on the following factors.



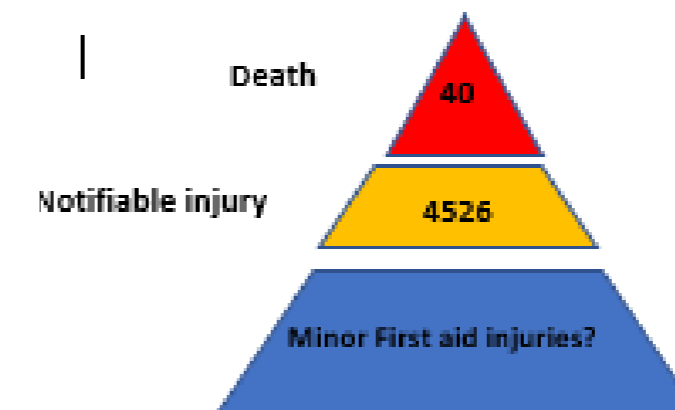
## 6.1 Accident Incident Theorems

if we were to consider applying Heinrichs Pyramid model to CDM 2015 fatalities (Fig 1) and major non-fatal reportable injury statistics (Fig 2) in the period between 2015 and 2020 against the number of combined enforcement action it would look currently something like this:



So based on the data Is It not pretty reasonable to presume that the number of other accidents, injury events brought about due to unsafe acts, or unsafe conditions that occur each year, and not identified by the HSE must be significantly higher?

### 2019-2020 comparison- Fatalities: Major non- fatal injuries-(Fig 3)



**Fig 3 gives the ratio between non- fatal reportable injuries to fatalities in the period 2019 to 2020.**

It must therefore stand that the number of non- reportable injuries and ill health must be significantly higher.



## 7.0 HSE Construction Site Blitz

It has been the Health and Safety Executive's policy over the past 5 years to carry out a regional construction sector blitz where Inspectors target the construction sector over a period of 2 weeks to sample the level of compliance and equally the level of non-compliance within the sector.

Between 2015 and 2020 the HSE conducted 2-week construction site safety campaign, referred to as 'Construction Site Blitz', approximately 1,800 sites were visited, and around 43% failed to meet basic health and safety compliance requirements.

Around 400 Improvement Notices were issued in each inspection, and 250 improvement notices.

The most common failings related to; working at height, dust exposure, control of asbestos, and site welfare.

Smaller construction sites are most likely to be found wanting in terms of legislative compliance failings.

However, these failings were identified over a very small sampling window of 2 weeks, and the HSE pre-notified of the campaigns, so what then do these figures tell us?

I think it's fair to say that the health and safety compliance of any construction site regardless of size, duration, number of persons on site, won't ever be 100% fully

compliant, instead the best we can hope to achieve is reasonable compliance, after all most of us don't keep to the national speed limit when driving.

Of course, the HSE inspectors have a greater knowledge and understanding of UK health and safety regulations, and in the main, are actively looking to identify compliance failings, with perhaps one eye on the HSE fee for intervention charges that could be levied against some construction contractors.

Accident investigation models, and specifically root cause analysis teach us that 90% of all incidents and accidents are as a direct result of a failure of management #. It is a concern that even with the introduction of the Construction (Design and Management) Regulations, a defined health and safety management system whose whole purpose is to provide a collaborative approach either in the pre-construction stage or construction stage of the project to identify and then reduce the risks of serious injury or ill health to anyone working in the construction sector.

Therefore, the actual influence of CDM to manage risks is failing, as it is quite evident based on the HSE Blitz findings, and when factoring the annual fatality and major injury statistics.

## 8.0 Case Study

### London 2012 Olympic Village

Sources of information- HSE report RR896- Leadership and worker involvement on the Olympic park 2011

As in every case, there are exceptions to the rules, and in more recent times the delivery of the Olympic village in preparation for the London 2012 Olympics, brings a glimmer of hope that large scale projects can be delivered safely.

This project involved the renovation of large parts of the East End of London to create the Olympic village arenas and sporting venues, to be completed in time for the opening ceremony in July 2012.

The construction period commenced in May 2008 and was completed by the end of 2011. 46,000 workers were employed on the project.

Available data indicates positive health and safety outcomes for the Olympic Park and by June of 2011, the Olympic Delivery Authority (ODA) had recorded around 62-million-man hours worked with an accident frequency rate (AFR) of 0.17 (calculated per 100,000 hours worked).

In addition, 22 periods of one-million-man hours had been completed without a RIDDOR reportable injury or accident.

Behavioural safety initiatives sought to engage workers with health and safety, in order to make health and safety personal to them.

In addition, specific initiatives were aimed to encourage workers to observe and provide feedback on other work areas. Good safety practice was recognised

through incentives and awards (breakfast vouchers, and branded badges and fleeces).

The success of the project no doubt can be attributable to many things directly and indirectly influencing the prevailing attitude of the project health and safety performance.

Not only was this a high-profile project under constant scrutiny from Government, it also had a huge national interest. From my experience, when you are being watched you tend to be more careful.

The HSE played a significant role within the project team not so much as an enforcer, but instead as a partner.

Additionally, there was no shortage of funding and there was no shortage of resource.

If every project large or small in the UK had this type of health and safety support infrastructure, then similar results would likely be obtained, but that is not and won't ever be the reality.

In many ways the Olympic Village project could not fail, unlike most projects taking place day to day across the UK.

But whilst this is true, the Olympic Park case study does tell us, that despite health and safety rules, written safe systems of work, procedures, and policies, the success of anything, is entirely reliant on one thing, and that is attitude, the prevailing attitude and subsequent culture that can be developed such that everyone believes in the plan.

There are clearly lessons to be learnt from this project, and many of these could be introduced into the CDM Regulations as a mandated requirement.

For example, a mandate to set a project health and safety objective, as success is hard to achieve if you don't know what it looks like.

Establishing a project leadership team – over and above the current list of duty holders, the health, safety, and delivery leadership team will focus specifically on meeting the project's health and safety performance and health and safety goals.





## 9.0 CDM Duty Holders

The success of any construction project is entirely reliant upon the attitude and perspectives of the individuals involved, that is the Duty Holders.

The following sections look at each of the defined CDM Duty Holders and considers their actual relationship with the CDM Regulations and their influence on health and safety.

### 9.1 The Client

The CDM Client is the person, or organisation that stands to benefit most from the construction work. The client pays for the work to be done.

It is necessary to recognise the relationship between the CDM Client and the Health and Safety at Work Act 1974

#### 9.1.2 Section 3.0 of the Health and Safety at Work Act 1974.

Duties of Employers to Employees other than their own”- This section of the HSWA makes clear the legal obligations on the “Host Employer” to operate their undertaking in such a way so as to not give rise to unnecessary risk and to provide and maintain a safe place of work, such that when engaging “third party” contractors, for whatever purpose, construction or maintenance, they can carry out that work safe from harm or ill health.

All the versions of the CDM Regulations, 1994, 2007 and 2015, require that prior to any construction or maintenance work being undertaken as defined by the CDM Regulations, that “Pre-Construction Health and Safety Information” is to be provided to those who will be engaged in the construction (maintenance) work, including designers.

Pre-Construction Health and Safety Information is, any information relating to the Clients (CDM) undertaking that would be reasonable for the Client to hold or

obtain, but with the primary purpose of giving due warning to any other person such as a contractor of any dangers, hazards, and associated risks that may exist and has the potential to affect or be affected by the contractor in the carrying out of their work and how such hazards, risk etc. are controlled.

CDM 2015 extended the previous duties on the CDM Client to be ultimately responsible for the health and safety attitude of the construction project, this no doubts gives some recognition of section 3.0 of the HSWA 1974, and further requires the Client to:

- Prepare Pre-Construction Health and Safety Information.
- Notify the project to the Enforcing Authority i.e. HSE (where the duration of the work meets the notification period- 30 days of continuous work but will involve at some point a minimum of 20 persons, or where the work will exceed 500-man days).

I would like to make note here that the number of Clients, and indeed the number of professional consultants, particularly Designers still have a very poor understanding of the requirements for notification of construction, or maintenance projects to the Health and Safety Executive.

The Client is also mandated by the regulations to monitor the effectiveness and adequate discharging of the CDM roles of the Principal Designer- where appointed- and the Principal Contractor where appointed.

In any circumstance where neither a Principal Designer nor Principal Contractor is appointed then the respective duties default to the Client.

So, let’s look at these duties individually.

#### 9.1.3 The Client is ultimately responsible for the prevailing health and safety attitude of the project.

The statement is certainly open to interpretation – the regulations legally require the Client to provide adequate resource and finance for CDM Duty Holders to fully discharge their duties.

To provide adequate resource means to allow adequate time and money in both the Pre-Construction stage and the Construction stage for all third-party consultants and contractors to subsequently discharge their duties such that no role or service is compromised in complying with the regulations.

Setting project health and safety goals and objectives to be achieved in my experience only ever occurs in those higher

risk sectors such as Nuclear enrichment, Chemical process manufacturing and the Aeronautical sector, where there already exists a high and prevailing attitude to health and safety.

I have never yet met any Client who has set the health and safety standard for a project outside of those previously prescribed higher risk industries.

It is most likely that most clients will be completely oblivious to the fundamental requirements of the Health and Safety at Work Act 1974- and specifically Section 3.0- Duties of Employers to Employees other than their own, and sadly most Clients (Employers as defined under the HASWA 1974, will be completely unaware of any Health and Safety Goals stated and recorded in section 1.0 of their own Company Health and Safety Policy and as required under section 2.(3) of the Health and Safety at Work Act)- to which the Managing Director, Chief Operating Officer of any company employing 5 or more persons must sign the Health and Safety Policy Statement of Intent thereby demonstrate their commitment to operating their business with all necessary consideration to the health, safety and welfare of their employees, and lawful visitors.

Businesses with less than 5 employees, the self-employed “one-man bands”, are under no legal obligation to prepare a Health and Safety Policy and therefore are unlikely to have any knowledge of UK health and safety law, let alone the Construction (Design and Management) Regulations.

#### 9.1.4 Provide Pre-Construction Health and Safety Information.

In all versions of the CDM Regulations the preparing and providing of Pre-Construction Health and Safety Information has been provided by

- 1994 - The Planning Supervisor
- 2007 - The CDM Co-ordinator
- 2015 - The Client, however it is almost certain that the Principal Designer-only where appointed, will provide this vitally important document.

It is obvious that well-formed and detailed Pre-Construction Health and Safety Information helps any contractor better understand the health and safety issues to be faced on the construction site, and that forewarned is forearmed so far as making the necessary provisions and arrangements to deal with such prescribed hazards, as well as helping define the project costs and program.

I am afraid that I have experience of situations where Contractors, or Principal Contractors have quoted work, or even started work without having received any Pre-Construction Health and Safety Information at all.

#### 9.1.5 Client to provide adequate resource – time and money for all CDM appointed duty holders to properly discharge their duties.

In a commercial and profit driven industry such as the Construction Sector, and where there is often a prevailing attitude for selecting a contractor based on the lowest bid wins (NHS for example)- the requirements for Clients

to ensure adequate resource is provided, particularly on small projects-inevitably introduces an obvious, potential contradiction in principles.

#### 9.1.6 Client to monitor the discharging of duties by the appointed Principal Designer and Principal Contractor.

This seems to be a reasonable requirement- not least as the Client is being charged for these services but as to how to measure the adequacy of the Principal Designer, or Principal Contractor discharging of a commissioned service would require some understanding and appreciation of what to reasonably expect.

The construction sector is a very complicated industry due to the myriad of regulations and standards and codes, it would be unreasonable to expect a client to know that, for example Approved Document B Volume 1- Building Regulations -Dwellings, fire compartmentalisation is being properly complied with by the Architect.

#### 9.1.7 In the absence of any formal appointment of a Principal Designer or Principal Contractor the Client will assume these roles.

This is certainly a contradiction in terms- one of the key features of CDM is that all duty holders are deemed to be competent- but by making the client legally responsible for the role of Principal Designer, or Principal Contractor would only highlight their incompetence due to the fact that they failed in their CDM Client duties by not making such appointments in the first place.

This then brings us to the role of Client for domestic projects- CDM 2015 introduced for the first time the utilisation of the CDM Regulations for domestic clients.

The reason given was that most accidents in the construction sector occurred to the self-employed person carrying small domestic type works.

The application of the Construction (Design and Management) Regulations 2015 imposes an unfair and disproportionate cost burden on a domestic client.

The domestic client has no legal CDM responsibilities as the homeowner- so under the provisions of CDM 2015 the Client duties must be taken on by other CDM duty holders – such as the Contractor, the Principal Contractor, or indeed the Principal Designer depending upon the various scenarios.

However, the costs of undertaking the client duties are borne by the domestic client- and is extremely difficult to explain- or justify particularly on simple, small scale and relatively low-cost projects such as fitting a new kitchen- and more likely to encourage the domestic client to seek an alternative and less expensive quote regardless of the legal requirements to apply the CDM Regulations.

Having had personal experience of working on a number of domestic projects- I have never yet met a “domestic contractor” who has even heard of the Construction (Design and Management) Regulations – let alone heard of the term method statement, or Construction Phase Health and Safety Plan, and would never even dream of taking on the role of Principal Contractor and becoming responsible for the sub- contractors most of whom would be selected by the domestic client in the first place.

CDM regulation for domestic clients is illogical, badly thought through and above all unfair on the domestic client so much so that the vast majority of small-scale projects don't even recognise CDM at all.

#### 9.1.8 F10 Notification

CDM 15 Regulation 6.0-identifies that the Client must “give notice” where a project is notifiable to the Health and Safety Executive, in the 2007 version of the regulations, this duty fell upon the CDM Co-ordinator.

That I come across so many different professional CDM duty holders who still do not know when a project is notifiable, a relatively simple and uncomplicated process, does in many ways point us to the heart of the matter, and the main issue with the proper application of the CDM Process.

Architects so often the lead professional, or contract administrator on a project, apply CDM sparingly, and perhaps begrudgingly, and generally as an afterthought by way of a box ticking exercise and so pretty low down on their list of “to do” items or priorities.

I make no apology for this view, as I speak from experience, present yourself as the project appointed Principal Designer at the first design team meeting and introduce a discussion on the CDM Regulations compliance and observe how the body language of design consultants quickly changes.

Architects often chair design team meetings, the heading CDM on the agenda will almost certainly be found towards the bottom.

## 9.2 The Principal Designer

A new role defined under CDM 2015- and a confusing term – as to the uninitiated the term would point towards the Architect on a project who ordinarily would be the lead designer, the dictionary definition of Principal is cited as- “first in order of importance”, “the most important or senior person in an organisation”, much as the meaning of Principal dancer in a ballet- meaning the main dancer, or the star, but not so for CDM 2015.

### The term Principal Designer as given in the CDM Regulations is:

- “Principal designer” means the designer appointed under regulation 5(1)(a) to perform specified duties in regulations 11 and 12.
- The term Designer as given in the CDM Regulations is
- “Designer” means any person (including a client, contractor or other person referred to in these Regulations) who in the course or furtherance of a business—
- (A) prepares or modifies a design; or
- (B) arranges for, or instructs, any person under their control to do so, relating to a structure, or to a product or mechanical or electrical system intended for a particular structure, and a person is deemed to prepare a design where a design is prepared by a person under their control.

In addition, the term Principal Designer as stated in CDM Regulations refers to any person, individual or organisation who takes control of the Pre-Construction Phase of the project and has to apply the CDM “Principles of Prevention” – a well-intentioned risk hierarchy to be adopted throughout the life of the project..

How many Designers – Architects, Consulting Engineers, etc. could state the principles of prevention as defined under the regulations?

It is almost impossible to say, but I would suggest a number so low as to be close to zero.

The Principal Designer is charged with the responsibility for managing the Pre-Construction Phase of the project, but what does that actually mean?

For me, it means establishing the health and safety attitude of the project beginning with the Pre- Construction

Phase of the project process, regardless of the size complexity or cost of the scheme.

The role is to establish a collaborative project team ethos, where complying with CDM Regulations and adopting a “health and safety first” approach is at the heart of every decision that the team makes.

As health and safety is the primary consideration of CDM by virtue of the Principles of Prevention, then the effectiveness and indeed the success of the Principal Designer will fall to their knowledge and qualifications within the construction sector / built environment.

To that end the PD must have a high level health and safety qualification, as without a practical and working knowledge of current UK workplace health and safety regulations, is like driving a car without knowledge of the highway code.

Most fatalities each year are caused by falling from height, yet most construction projects involve working at height. Designers armed with the knowledge that falls from height attribute for the most fatalities should consider this in their design decisions, so far as they are able.

Does it not then stand to reason that the Principal Designer, in order to be effective in their influence on the design team have a practical working knowledge of the Work at Height Regulations 2005?

Would it not be an advantage to the CDM Principles of Prevention if the Principal Designer had full practicable knowledge of the Control of Substances Hazardous to Health Regulations (COSHH) to prevent an unsafe product or material being selected by the designer, when an alternative and safer product was available to use instead?

Simply put, you realistically cannot be effective as required by the provisions of regulation 11 CDM 2015 in the capacity of Principal Designer if you cannot hold the designers to account when their design proposals do not adequately recognise risks to health or safety of workers constructing the design or, anyone else who in the future would be exposed to the same risk.

Architects regularly take the opportunity

to offer the role of PD and I have no issue in stating that they are the least suitable to undertake this role due to:

- A. They generally have a poor regard or appreciation of the fundamental requirements of CDM
- B. They have insufficient practical working knowledge of health and safety regulations relating to construction work.

Note: RIBA- The Royal Institute for Building Architects have at last recognised this issue – refer to section 9.3.1.



## 9.3 Designers

CDM Regulation 9. Designers Duties requires designers to apply the principles of prevention in the development of their designs, and to give all due regards to the health and safety of those persons constructing or building the design, those persons or individuals who use the completed design in their workplace, and to further consider the health and safety of those persons and organisations who will be required to maintain or clean the completed design in the future.

So, let us turn to the misused phrase “design risk assessment”, and to be absolutely clear, this term has never actually been written in any version of the CDM Regulations. In fact, the regulations currently require designers to: -

*(2) When preparing or modifying a design the designer must take into account the general principles of prevention and any pre-construction information to eliminate, so far as is reasonably practicable, foreseeable risks to the health or safety of any person—*

*(a) carrying out or liable to be affected by construction work.*

*(b) maintaining or cleaning a structure; or*

*(c) using a structure designed as a workplace.*

What constitutes a significant design decision is of course open to any number of views or interpretations, and although there is a number of CDM Designer guidance which set out to help designers better understand the hazards presented by their design decisions, it must be recognised that without an understanding of health and safety legislation, predominantly applicable to the Construction Sector such as COSHH, Manual Handling, Working at Height, Confined Spaces, Noise and Vibration Regulations or having a fully competent Principal Designer, designers will continue to struggle in meaningfully meeting with the CDM Principles of Prevention.

This situation has at last come to light following the Grenfell fire disaster- RIBA (Royal Institute Building Architects required that all Architects should attain a general health and safety qualification.

### 9.3.1 The Way Ahead

Outlines RIBA’s new Education and Professional Development Framework. The framework signifies a new direction for architectural education and continuing professional development, with a greater emphasis on health and life safety, the climate emergency and professional ethics.

The health and safety competency test will go live online in early 2021, on a voluntary basis initially. Details of how to take the test will be made public when this happens. Although at this point the

test will be voluntary, any successful passes by RIBA Members who take it will be recorded and will count.

The test becomes compulsory for members from the end of 2021 and it will be a pre-condition of the 2023 membership subscription year renewal.

The HSE emphasises that professional bodies should demonstrate that their members are competent to undertake the duties imposed on them, particularly with regard to the Principal Designer role within the construction industry.

## 9.4 Principal Contractor

The role of Principal Contractor exists where during the pre-construction stage of the project it is realised that the construction work will involve a minimum of 2 contractor organisations, and as such a Principal Contractor must be appointed.

The Principal Contractor manages the construction stage of the project as defined under regulations:

*12 - Construction Phase Health and Safety Plan and Health and Safety File- Duty to prepare, review, and update the construction phased health and safety files.*

*13 - Duties of a Principal Contractor in relation to health and safety at the Construction Phase Health and Safety Plan, manage and monitor and co-ordinate health and safety during the construction phase.*

*14 - Principal Contractors duties to consult and engage with workers- duty to consult and engage with workers or their representatives*

Further duties are detailed in Part 4 General requirements for all construction sites, and schedules 2 and 3.

The regulatory requirements on the Principal Contractor are generally well detailed and leave little to interpretation, however as we have already seen in section 8.0 HSE Construction Site Blitz, failings in fully discharging reasonable standards of health and safety are apparently all too common.

It should strike us as strange that in light of this, historically there have been relatively low number of successful CDM failings made against Principal Contractor under regulation 12,13, or 14 as they relate to CDM 2015, and similar regulations made on the Principal Contractor in 1994, and again in 2007.

Let’s consider the role of the PC and the requirements of CDM and how well the requirements are discharged- Construction sites are by their very

nature dangerous places, unlike any other place of work, it is constantly changing as are the hazards introduced during the work. The use of heavy plant and machinery, and the need to work at height introduce significant risks and sadly, all too often, serious, life changing injuries occur on a regular basis more than in any other sector.

The 3 most common causes of major injury as reported by the HSE on an annual basis are:

- Struck by a moving vehicle
- Falling from height
- Struck by a falling object.

The introduction of ever changing sub-contractor organisations can cause interruptions in the control of health and safety behaviour standards as the incumbent contractor adjusts to the demand and requirements of the Principal Contractor and the project environment.

Program pressures can affect health and safety attitude, particularly where project completion is program critical, or liquidating damages are applied to the contract for late delivery of the program.

Commercial factors, every aspect of a project is costed – time and materials, overheads, profits and there may be many reasons why a project can have an adverse effect on any of these with a

resulting negative financial impact- for example, dealing with sub-contractor disputes, mainly concerning financial issues, late design changes, unrealistic project program, to name but a few, can lead to significant financial losses to the Principal Contractor, or sub-contractor- or both, where one is directly affected by the other.

CDM requires the PC to be competent- and to have the necessary experience, knowledge or training to undertake the type of work within the sector in which the work will take place. e.g. in the NHS.

Let's look in more detail and the requirements stated under current regulations.

#### 9.4.1 Regulation 12 - simply requires the appointed Principal Contractor to prepare a Construction Phase Health and Safety Plan- and the appendix 3 of the Regulations gives the typical structure of the Plan.

I often liken a Construction Phase Health and Safety Plan to a Health and Safety Policy as required under section 2(3) of the Health and Safety at Work Act 1974- CDM Regulations would do well to consider the sections of the Health and Safety Policy and apply them to the CDM Construction Phase Health and Safety Plan.

The current requirement stated for a Construction Phase Health and Safety Plan as stated under CDM 2015 are as follows:

A Construction Phase Health and Safety Plan is a document that must record the:

- health and safety arrangements for the construction phase.
- site rules; and
- where relevant, specific measures concerning work that falls within one or more of the categories listed in Schedule

3. The Plan must record the arrangements for managing the significant health and safety risks associated with the construction phase of a project. It is the basis for communicating these arrangements to all those involved in the construction phase, so it should be easy to understand and as simple as possible.

The following list of topics should be considered when drawing up the plan:

(a) a description of the project such as key dates and details of key members of the project team.

(b) the management of the work including:

(i) the health and safety aims for the project.

(ii) the site rules.

(iii) arrangements to ensure cooperation between project team members and coordination of their work, e.g., regular site meetings.

(iv) arrangements for involving workers.

(v) site induction.

(vi) welfare facilities; and

(vii) fire and emergency procedures.

(c) the control of any of the specific site risks listed in Schedule 3 where they are relevant to the work involved

Compare the above with the requirements for preparing a Health and Safety Policy as stated under the Health and Safety at Work Act 1974

#### Section 2(3) Health and Safety Policy

Except in such cases as may be prescribed, it shall be the duty of every employer to prepare and as often as may be appropriate revise a written statement of his general policy with respect to the health and safety at work of his employees and the organisation and arrangements for the time being in force for carrying out that policy, and to bring the

statement and any revision of it to the notice of all of his employees.

The health and Safety Policy are set out in 3 sections.

- Section 1- Statement of intent
- Section 2- The organisation for health and safety
- Section 3- The arrangements for health and safety

The similarities between the CDM Construction Phase Health and Safety Plan, and the Health and Safety at Work Act, Health and Safety policy 9 Section 2 (3), should be readily obvious with one significant omission- nowhere within the CDM Regulations is there any stated requirement placed on the Principal Contractor to establish a statement of intent which must be signed by Principal Contractors Managing Director.

CDM Reg 12 only require a recognition of health and safety aims. Simply replacing the word aims with the term goals and objectives brings a greater emphasis on necessary objectives and the expected performance necessary to achieve it.

While goals create a vision with a wide range, objectives focus on the individual, achievable outcomes. Objectives are the concrete deliverables that make the goal come to life. Progress towards them helps measure advancement to reaching the larger end goal.

The Construction Phase Health and Safety Plan is prepared and developed based on the information contained in the Pre Construction Information Pack provided by the Client, or as is more commonly the case by the Principal Designer. It therefore stands to reason that if the PCIP is poorly defined, or in many cases does not exist at the tendering stage of the project, it is almost inevitable and by default that the

Construction Phase Health and Safety Plan will almost certainly be flawed or superficial.

Who determines the suitability of the Construction Phase Health and Safety Plan? – CDM places a responsibility on the Client only to ensure that before the construction phase begins, a construction phase plan is drawn up – there is no stated, mandated requirement that the construction phase plan be to any acceptable standard.

Of course, it is correct that the client should be provided with a copy of the CPHSP, as they have had an input into preparing the Pre-Construction Health and Safety Information Pack, and beyond CDM Regs have stated legal responsibilities under the Health and Safety at Work Act section 2.0 to ensure that the construction work does not introduce any uncontrolled hazard and hence risks to their own employees and legal visitors as well as contractor organisations carrying out the works.

The Client responsibility is to ensure that the project work can be managed and controlled so that anyone directly or indirectly affected by the works has been recognised and adequate controls put in place to ensure ongoing health and safety is not unnecessarily compromised.



#### 9.4.2 Reg 13 Duties of a Principal Contractor in relation to health and safety at the construction phase

*The principal contractor must plan, manage and monitor the construction phase and coordinate matters relating to health and safety during the construction phase to ensure that, so far as is reasonably practicable, construction work is carried out without risks to health or safety.*

The Principal Contractor role is to manage their appointed sub-contractors to deliver the project with health and safety as the first and only significant objective, alas, nowhere within the regulations will you find this statement.

Standard established project deliverable may be historically cited, as:  
On time, On Cost, and to the specified design

In my opinion, carried out safely and with due consideration to health is not given as much credence or imperative as the first 3 objectives as they are all tangible and measurable outputs however, carried out “safely” has no tangibility unless as previously stated in section 9.4.1 by having a written Principal Contractor statement of intent against which health and safety performance can be both focused and significantly, measured.

The Principal Contractor has to manage the construction program-invariably this process involves many challenges but at the heart of the process is the relationship between individuals all with different perspectives, motives and objectives.

The CDM requirements of a Principal Contractor are primarily based on their competence, which has to be determined

or established by the Client.

Determining competence is a very difficult thing to do, consider any license, certificate, or standard that is currently in place to establish a Principal Contractor's competence and you will quickly determine that there is none that are really effective.

By contrast with the United States of America, every Contractor, including “main builders/managing contractors organisations has to be licensed- the only licensed contractor organisation working within the construction sector in the UK are specialist trades such as gas fitters who are required to be gas safety registered, plant and machine operators have to hold operator licenses but, currently this requirement does not extend to a Principal Contractor.

The Health and Safety Executive would on visiting any construction site wish to establish that the incumbent site manager holds a suitable health and safety qualification, typically - IOSH Managing Safely, Site Managers safety training scheme (SMSTS), or holds an appropriate CSCS card- Construction Skills Certification Scheme, but it has to be pointed out that none of these are identified or mandated within the CDM Regulations.

So, in review- with no mandated standard of competence placed on a Principal Contractor, no mandated level of health and safety management competence for site managers, no standard of measurement against which to determine that a Construction Phase Health and Safety Plan is adequate or suitable the high number of health and safety contraventions regularly identified during annual Construction site health and safety blitzes should not come as a surprise.

A quick mention on health and safety schemes such as, Construction Line, CHAS, and Safe Contractor-these schemes do set out to establish adequate levels of health and safety competence, but these are generally applied to the particular work sector as opposed to a specific requirement of the Construction Sector- so for example for a contractor to work for any one of a number of large food retail companies- the contractor would have to achieve a competence standard defined by Altius. For a contractor to work for Rolls-Royce they would have to have met Safe Contractor Accreditation.

Having assisted numerous contractors to achieve accreditation to any of these organisations I speak with experience and candour that they are all largely irrelevant as any evidence submitted can easily be designed or fabricated in order to meet with the applicable standard.

#### 9.4.3 Reg. 14-Principal Contractors duty to consult and engage workers.

In my experience one of the most significant health and safety management tools that has benefited and improved construction site health and safety performance in reducing death, and major non-fatal injuries is the effective engagement with employees.

Nearly every project I have been involved with over the past 5 years has always held an early morning, pre-work, health and safety briefing with the sub-contractor employees, generally lasting no more than 20 minutes provides the most valuable opportunity to emphasis personal health and safety as the number 1 priority.

The success of the 2012 Olympics as stated in section 8.0, further demonstrates how effective employee engagement can be. Clearly the size and

complexity of the project will determine how such engagement is defined.

The requirement stated in CDM arises from existing legislation safety representatives and safety committees' regulations and health and safety (Consultation) with employees' regulations applicable to all employers regardless of their work sector.

### 9.3 Contractors - Regulation 15

The term Contractor (CDM Regs) defines a situation whereby only one organisation is involved in the construction work and as such the contractor is under the exact same duties as the Principal Contractor- an example may be the demolition of a building or structure- only involving one demolition contractor from start to finish, or a painter and decorator painting a property without the use of any sub-contractors.

In the main Contractors are more likely to be involved with smaller projects predominantly within the domestic/ household sector.



## 10.0 CDM Maintenance

Maintenance work falls within the scope of CDM Regulations, and always has done, unfortunately this is not well understood primarily as the HSE failed to emphasis this adequately.

The Health and Safety Executives position regarding maintenance work and CDM Regulations apply when and if the maintenance work being undertaken:

- a- Uses construction trade skills
- b- Uses construction methods and techniques
- c- Uses construction materials

From my own personal experience working across many industrial sectors, and particularly those that have an in-house maintenance department, or even those larger companies who rely on a contracted facilities management organisation, the level of ignorance to the relationship between CDM and maintenance is still too large.

Most contracting organisations who provide a maintenance service will most likely have never heard of or had to apply CDM.

Most organisations who employ or engage contractors to carry out a maintenance service will have also most likely never heard of CDM or if they had, would in all probability fail to identify that maintenance is a component of CDM- I doubt that the HSE has ever brought a prosecution against an Employer, or contractor for failing to apply CDM Regulations to maintenance work.



## 11.0 Conclusions

To return to the question – has the Construction (Design and Management) Regulations made a significant difference to health and safety on construction sites- and based on this paper my own opinion is – No- not a significant benefit but has had moderate effects and hence benefits are marginal and as such the cost of implementing the regulations is disproportionate to the benefit.

We may pose a hypothesis, If CDM Regulations did not exist at all would the fatality rate and major reportable injury rate be worse than it currently is- my answer is probably not, and in any event would be minimal and I further qualify my position by the following factors: -

### 11.1 Statistical

In the 1960s, as stated the number of fatalities in the construction sector was 277. Remember this period pre-dated the Health and Safety at Work Act 1974

In 1993 – 1 year before CDM came into

effect there was a total of 91 deaths recorded.

In 2020 there was a total of 40 deaths

### 11.2 Legislative

In the period 1992 to 2005 Workplace Health and Safety law which when applied provided more direct benefit than the CDM regulations to control hazards on construction sites and have all helped to reduce death and major injury when applied:

- The Management of Health and Safety at Work Regulations 1992/99
- Workplace Health, Safety and Welfare Regulations 1992 (and a feature and requirement of designers under CDM to give due consideration to.)
- Manual Handling Regulations 1992

- Provision and Use of Work Equipment Regulations 1992.
- Personal Protective Equipment Regulations 1992
- Display Screen Equipment Regulations 1992.
- Work at Height Regulations 2005
- Control of Substances Hazardous to Health Regulations 1994
- Lifting Operations and Lifting Equipment Regulations 1997
- Control of Asbestos Regulations 2002
- Noise at Work Regulation 2005.
- Vibration at Work Regulations 2005

### 11.3 Human factors and attitudes

Since the introduction of the CDM Regulations in 1994- now 26 year ago, general attitudes towards a more health and safety approach into the new millennium was to be inevitable in any case.

We now live in a digital world with access to instant information directly to our phones and the transfer of information is much quicker than it was in 1994 when everything was posted.

Advances in technology such as auto CAD, or 3D modelling software assists

designers to gain a better perspective of their designs, and design software systems such as Revit (building information modelling) helps to overlay services routes directly onto the architectural building drawing, so helping to reduce risk during on-site construction and maintenance.

In 1993 – 1 year before CDM came into effect there was a total of 91 deaths recorded.

In 2020 there was a total of 40 deaths

## 11.4 Access Equipment

Within the 26 years since CDM first came into effect there has been many advances in the choice and use of proprietary access equipment such tower scaffolds, mobile elevated work platforms and fall mitigation equipment such as safety nets and air bags, all which have come to prominence as a direct result of the working at height regulations in 2005, 15 years ago.

Aluminium tower scaffold systems are used daily by all trades due to their flexibility, ease and speed of erection and cost effectiveness so are effective in reducing falls from height.

The use of GPS and the internet can help carry out surveys without leaving the office.

Drones are a more recent development and are being used more and more to eliminate the need for anyone to work at height and are commonly used to take video or photos of structures or

roofs that would have required physical access years ago.

So, the world has changed dramatically since 1994 a new generation of designers, contractors have come into the industry with better educational opportunities and awareness of health and safety.

By comparison, if you were for example, 25 years old in 1994 when CDM first came into effect you would have been born in 1969, and you would have grown up in the mid-1970s, consider the Health and Safety at Work Act did not come into law until 1974, you would have grown up in a world where attitudes to health and safety were poor and secondary to the primary purpose of your industry.

Today, construction skills trade apprentices begin their careers in college on a trade related NVQ certified qualification, for example plumbing and heating, and they will find that the first section of the syllabus is on health and safety.





## 11.5 Designers

A final word on designers as defined in the CDM Regulations.

CDM places a legal duty on designers to give consideration in the development of their design to the health and safety of those workers involved with the constructability of the design, the operability of the final installed design and that any maintenance or cleaning can be carried out without any undue risk to those involved- that this is so clearly stated under the provisions of the CDM Regulations since 1994 implies that this is a new or revolutionary concept for designers which evidently it is not.

Designers of all disciplines are trained and qualified to design in order to meet with stringent engineering standards and codes long before the introduction of the CDM Regulations, and since CDM came into effect in 1994 the total number of designers who have been prosecuted under the regulations is 2.

Designers are required to demonstrate their competency and all consultants must hold membership to a professional body such as: -

Institute of Civil Engineers- formed in 1828.

Institute of Mechanical Engineers- established 1847

Institute of Electrical Engineers-Royal Charter 1921

Royal Institute of Building Architects (RIBA) Royal Charter in 1834

A designer's ability to provide a safe design for contractors to construct is obvious to any design consultant without the need for CDM to emphasis-but in reality, the opportunity to do so is limited by the constraints of the site, and any number of factors outside the designer's control.



## 12.0 Recommendations

The construction sector as with all other industries is self regulating, and health and safety compliance is more likely to be compromised due to the transient nature of construction work and the reliance on transient workforces.

That the HSE so easily and regularly identifies health and safety failings during their annual construction site blitz's shows that the sector, and everyone who works in it is not doing enough to keep personnel safe despite the gradual and measurable reduction in death rates - major injury statistics remain fairly constant.

Following the development of this essay- and I can honestly declare, here and now that I did not begin this process with a pre-defined position or bias on the benefits or not of the CDM Regs, but it has become clear to me that the regulations are not as effective as they should be or indeed could be, so, what improvements and recommendations can I propose as an experienced 62 year old man- who has worked or been involved in all parts of the construction sector, experienced construction projects in all sectors and worked with hundreds of Consultants, Designers, Clients, and Principal Contractors and contractors alike.

### 12.1 The Construction ( Design and Management) Regulations 2015

The Regulations should be subject to review – it is now 5 years since the 2015 version came into force, and the Health and Safety Commission should carry out their own review of the benefits they have had when measured against the cost of implementation.

In addition, I would propose as follows:

12.1.1 - Each project to set an agreed health and safety objective(s) which is proportionate to the particulars of the project and the establishing of a project health and safety executive team (HSET) to be convened for the duration, where this goal is constantly reviewed through the life cycle phases of the project- typical CDM project health and safety goal is often stated as “zero harm”.

The members of the project health and safety executive team all sign their names to confirm their commitment to achieving this goal and to provide the resource and arrangements within which to achieve it.

The executive would include CDM duty holders, Client representative, Designers, Principal Designer and Principal Contractor.

12.1.2 - Change the title of the regulations to include a reference to and emphasis on maintenance.

12.1.3 - Include a section within the regulations that relates specifically to maintenance so that it is clear to all duty holders how maintenance within the CDM regulations is to be applied.

12.1.4 - Develop a national register of Principal Contractors, similar to gas safety certification, or licensed asbestos contractors, where all contractor organisations

offering their services as a Principal Contractor have to be licensed to an established standard set by the HSE to demonstrate their: -

- Understanding of the CDM Regulations
- Their commitment to managing all projects giving due consideration to health and safety.
- All Managers and Supervisors attain a nationally recognised health and safety certificate qualification.

12.1.5 Domestic projects - reevaluate the scope of CDM for domestic projects, clearly some projects can be very large and complex, the selective application of where CDM can be most influential is when it is applied to either a specific type of project involving specific high-risk activities, or where the project value exceeds a set threshold amount of for example £50k.

12.1.6 Site Managers must hold a recognised health and safety qualification such as IOSH Managing Safely, IOSH Safety, Health and Environment for construction managers, or Site Manager's Safety Training Scheme (SMSTS) and most importantly these qualifications and licenses must be refreshed annually.

12.1.7 Mandate daily pre-start health and safety briefings on all construction sites as a requirement of the Principal Contractor/contractor.

12.1.8 Mandate the Client to hold a project review at the end of the project with all key duty holders for a lesson learnt opportunity. Guidance could be provided within the regulations on how best to achieve this.

12.1.9 Mandate the Principal Contractor to also undertake a project review lessons learnt review. Guidance could be provided within the regulations on how best to achieve this.

12.1.10 Mandate a design and constructability review as a part of the Principal Designer duties prior to the final design being issues for tender, or for the contractors to build. Guidance could be provided within the regulations on how best to achieve this.

12.1.11 Project Managers- currently CDM does not recognise a Project Manager as a duty holder, and this is a mistake as the project manager, where one exists, is charged with the full responsibility of delivering the project to specified standards, budgets and program, and controls and directs how this is achieved- health and safety and CDM compliance cannot be divested to others .

**Therefore the role and function of Project Manager should be a recognised CDM duty holder, and not least as currently the role of the Principal Designer to “ manage” the pre-construction stage of the project can cause conflict with the project manager function unless boundaries are established at the onset of the project.**



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