

THE CONSTRUCTION (DESIGN & MANAGEMENT) REGULATIONS 2007: **THE CDM CO-ORDINATOR APPOINTMENT**

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INTRODUCTION

The Construction (Design & Management) Regulations [**CDM Regs**], which affect all new hydroelectric generation schemes in Great Britain, were substantially revised in April 2007. This paper discusses the new role of CDM Co-ordinator [**CDM-C**], how it can benefit projects, and how the requirement for early appointment of the CDM-C can be implemented for small-scale hydroelectric generation projects.

Any person for whom, or organisation for which, a commercial construction project is undertaken is defined as a “Client” by the CDM Regs, and they subsequently have certain legal duties and obligations. Similarly, legal duties are also imposed on “Designers” (e.g. turbine manufacturers, consulting civil engineers, project managers etc) one of which is a requirement to inform the Client of their duties under the CDM Regs. It is therefore important for both Clients and their professional consultants to be fully informed of their legal responsibilities, and this paper is intended to provide guidance on this matter.

There are many challenges involved in bringing even the smallest hydroelectric generation scheme to the construction stage: the potential of a site needs to be realised by the landowner or developer, and then confirmed by a specialist designer; a feasibility study has to be undertaken to ascertain the economics of the scheme; the funding needs to be established, often from outside parties; the requirement for planning approval often involves a number of distinct organisations such as local authorities, the EA/SEPA, English Nature etc. Although unacceptable it is understandable how, with all these other hoops through which to jump, health & safety considerations can often be overlooked during the design and planning process.

BACKGROUND

Under the 1994 version of CDM it was the requirement of the Client to appoint a Planning Supervisor [**PS**] “as soon as practicable after the Client [had] such information about the project and construction work involved in it as will enable him to comply with the requirements of [the] regulations”⁽¹⁾. Although the contemporary Approved Code of Practice [**ACOP**] clarified that the PS be appointed “at or before the start of design work”⁽²⁾ it was often the case that the PS was not appointed until after planning approval had been granted; the widespread belief would appear to have been that it was undesirable to spend money on another Consultant when the progress of the scheme was uncertain. The commonly held misconception was of the Planning Supervisor as just a paper-creating bureaucrat; why not give him only 48 hours before tenders were issued to create a Health & Safety Plan?

This attitude was detrimental to health & safety [**H&S**]. Undertaken correctly, the role of PS made a real difference to safety of workers on a construction site, those undertaking maintenance of the finished structure, and those demolishing the structure at the end of its life. Early PS involvement focussed the attention of Designers to

ensure that H&S was considered before the design progressed too far, thus ensuring added value of effective H&S management, principally through:

- reduced delays, because buildability issues were fully recognised when programmes are developed.
- price security through avoidance of extras due to designer changes when buildability issues raised themselves post tender.
- lower whole-life costs, because maintenance issues were considered before the form of the structure was cast in stone by the planning approval process.

From the above list, it can be seen that overall quality of the scheme suffered when Clients considered H&S management as a peripheral issue. Yet despite this Clients were often led by the bottom-line figure; there were many unscrupulous PS practices that would charge a “competitive” fee to do the absolute minimum paperwork and then tell the Client that the requirements of CDM Regs had been satisfied. The old adage “you get what you pay for” was very apt. Recent guidance from the Construction Clients’ Group⁽³⁾ advises that “projects that have a good health & safety record are more likely to deliver a quality product, be on time, and within budget”. This representative body for a wide-range of UK construction clients also quotes Health & Safety Executive [HSE] research, which points to accidents and ill health costing up to 8.5% of tender price. There really is a cost to H&S.

The HSE, who police H&S in Great Britain, were obviously concerned about the lack of gravity afforded by Clients to the role of the PS (and H&S generally). Approximately 5 years ago, the HSE refocused their attention from policing Contractors on sites to moving back along the design chain and targeting Designers whose designs did not adequately consider the safe buildability, maintainability and future demolition of the project. At that time the HSE said the next port of call was Clients. The reason they were looking to target Clients is because Clients have the biggest influence over how a project is run insofar as they:

- control the resources available to be spent on H&S, both in terms of time and money,
- decide who to appoint to undertake key H&S roles and when to appoint them,
- set the H&S ethos for the project team through their own attitude to H&S, co-operation and team working.
- provide information regarding the scheme that could affect how other project team members deal with H&S issues.

The new CDM Regs, which came in to force on 6 April 2007, are the tool the HSE are using to ensure Clients undertake their role in the manner that the original 1994 Regulations required.

CLIENT RESPONSIBILITIES

It is generally accepted that new Regulations place more responsibilities on the Client. There is increased emphasis on competence and co-operation; more stringent requirements on the provision of information; a requirement for the Client to be partially and jointly responsible for certain aspects of managing site safety (such as welfare & security); additional responsibilities for Clients engaging overseas consultants and suppliers. In order to assist the Client in taking on these extra responsibilities, the PS has become the CDM-C. The majority of the CDM-C role is now mandatory, the revised Regulations having omitted the majority of the wishy-

washy get-out clauses such as “when requested”, “as far as reasonably practicable”, and “shall arrange”. Such phrases were pivotal to the fee quotes and performance of unscrupulous Planning Supervisors, who would really do very little for their money. The new CDM-C has no option but to perform the functions that are described in the Regulations.

TIMING OF THE CDM-C APPOINTMENT

One of the major changes for Clients relates to the timing of the appointment of the CDM-C. If Clients fail to appoint a CDM-C early enough, the CDM Regs make it clear that the Client becomes legally responsible for the functions of the CDM-C role and any H&S problems associated with the way those functions were (or more appropriately were not) undertaken. Designers should also note that they are now breaking the law if they progress their designs too far without the CDM-C having been appointed. It is therefore important to establish the correct timing for the appointment of the CDM-C, and this is explored below.

As described earlier the 1994 Regulations and their ACOP included an ambiguity in relation to the timing of the PS appointment, and many PS’s were often appointed too late in the design process to make a real difference to site safety and the value of the project. The 2007 version of the Regulations attempts to resolve this: only “initial design work”⁽⁴⁾ can be undertaken prior to the appointment of the CDM-C. The new ACOP states that the CDM-C “should be appointed before significant detailed design work begins”⁽⁵⁾. This statement, whilst seeking to reinforce the need for an early appointment of the CDM-C, could lead to some confusion for Clients, causing them to erroneously delay the CDM-C appointment beyond the time expected by the Regulations: the majority of Clients would expect “significant detailed design” to be the development of construction drawings subsequent to Planning permission being granted; the ACOP, however, also states that significant detailed design includes “initial concept design”. We therefore have the confusing situation in which “initial design work” is allowed prior to the appointment of the CDM-C, but “initial concept design” is not. It is therefore necessary to explore these apparently conflicting terms.

The ACOP defines “initial design work” as “enough work to allow the Client to appraise their business and project needs and objectives to enable [them] to decide whether or not to proceed with a construction project”⁽⁵⁾. Industry guidance from the Association of Project Safety [APS]⁽⁶⁾ expands on this, and advises that such an appraisal could constitute “a strategic brief that addresses such issues as function, mix of uses, scale, location, quality, cost, time, safety, health, environment and sustainability of a proposed project.” They also advise that such a strategic brief could include a feasibility study.

Such guidance is useful for common construction projects. If a developer is considering buying a particular piece of inner city land, he could engage an Architect (or other suitable construction industry professional) to advise on the type of usage that site could offer, the scale of the building that could be accommodated on the land, and from this the revenue that that site could bring. It is most probable that an Architect could advise on this without drawing up any schematic proposals, and hence a CDM-C would not need to be appointed. As soon as aspects of the building such as constructional form, appearance etc were to be established, a CDM-C would be

required to ensure that H&S was being considered, as a concept of the scheme had been established.

It should be accepted however, that such guidance cannot necessarily be applied universally to all construction projects. There are specialist areas of the construction industry where significant schematic proposals need to be developed, often as part of a “feasibility study”, in order to fully assess whether a project is sufficiently financially viable to proceed to construction. Hydroelectric generation schemes are an example of such projects. The following paragraphs look at the phases of development of a hydroelectric scheme to establish at which stage a CDM-C should be appointed.

PARTICULAR CONSIDERATION OF A HYDROELECTRIC SCHEME

A model for a sequential decision making process on a small-scale hydro scheme is described by Mr C Brett in his paper on Roach Bridge Mill (a contemporary submission to the British Hydropower Association conference). A brief description is given below:

- Phase 1. Initial site appraisal: a desk study of the proposed site, with an estimation of flow and head characteristics; a subsequent report anticipating development costs and revenue.
- Phase 2. Pre-Feasibility: a site visit and meeting with the developer; possible topographical survey.
- Phase 3. Feasibility: a fuller site assessment and report with sufficient detail to allow Clients to assess the financial viability of the scheme.
- Phase 4. Planning: Development of initial general arrangement drawings and applications to relevant authorities.
- Phase 5. Development: Finalisation of turbine and construction details.

Figure 1 is an example of a contents page of a Phase 3 report for a small-scale hydroelectric generation project. Each section is essential to the required function of the report: to provide an accurate cost estimate of the scheme, sufficient to inform the Client of the financial feasibility of the proposed project. It can be seen, however, that Sections 3.0, 4.0, 5.0 & 7.0 address subjects that require advanced consideration of the details of the scheme, and the report has therefore strayed into “initial concept design” in a way that feasibility reports for conventional building structure schemes would not. **The input of a CDM-C is therefore required during Phase 3**, not only to comply with the law, but also to ensure that decisions are not made at this early stage that have a detrimental effect on H&S and which are difficult to reverse.

For example: for this particular report, the Planning Authority was consulted to discuss the location and form of the Powerhouse. This was necessary because, as with most hydroelectric generation schemes situated in a rural catchment, there were a number of different options for each of these parameters. The Planners had definite views regarding the location in particular, and, as we all know from experience, such views can often in effect be dictate. Figure 2 shows the proposed position of the powerhouse. The Planner wanted the powerhouse adjacent to the public highway for aesthetic and environmental reasons. This has benefits for H&S: access for construction and maintenance traffic is made easier because the rough terrain further from the road does not have to be traversed. However, the powerhouse obviously also

needs to be adjacent to the river, and these two location requirements means that the powerhouse would be situated adjacent to the road bridge. There are significant H&S risks associated with excavating the foundations for the powerhouse close to the bridge abutments (and also significant increased cost). This is just one example of how a CDM-C could challenge a Designer's initial concept design before the project progresses too far, trying to ensure H&S is considered as part of the decision-making process, with added benefits to the scheme.

(As an aside: it is worth noting that, although decisions directly relating to government legislation are exempt from CDM, when a Planner imposes a preference on a scheme the Planning Authority becomes a Designer in terms of CDM. If their decision has a detrimental effect on H&S the CDM-C can (and is obliged to) ask them to justify this in terms of design risk management. The CDM-C is therefore also a useful ally of the Client when negotiating with Planning Authorities and their advisors).

WHO TO APPOINT

It is therefore clear that for hydroelectric generation schemes a CDM-C should be appointed at an early stage. This may appear onerous to a Client in financial terms, but there are numerous options by which these initial costs can be minimised to the extent that they become negligible when compared to the knock-on cost savings that could be produced by the early involvement of the CDM-C.

The CDM-C needs to be someone who is competent to do the work, and the Client is legally bound to assess the competency of those they appoint. Appendix 4 of the ACOP provides guidance on how to undertake this assessment. The person or organisation appointed as CDM-C should have suitable experience in both his H&S role and the type of work undertaken. One measure of experience is accreditation with an independent body (e.g. membership of the APS). However, this does not necessarily mean that Clients need to appoint a specialist H&S Consultant to undertake the role of CDM-C, especially in the early stages of the project. An established member of the project team can undertake the role of CDM-C, provided that they have the necessary competence and can demonstrate a suitable degree of independence necessary to make a meaningful assessment of the design process. In this respect, any additional fees attributable to the role of the CDM-C during the early phases of the work can easily be managed and kept to a minimum until the full viability of the scheme is known.

The issue of competence should however be stressed. Appointing an established member of the project team will inevitably offer economy of cost prior to the scheme becoming "live", but the difficulties involved in any necessary transition to a professional CDM-C later in the project may produce associated further costs.

CONCLUSION

In summary: the requirement to appoint a CDM-C at an early stage in the design process is a legal duty of the Client. The nature of hydroelectric generation schemes means that the appointment should be made prior to the feasibility study being completed. This early appointment should not be seen as being an additional burden

on the Client, but as a means to reap the financial and programme benefits of effective health & safety management.

References

1. *The Construction (Design & Management) Regulations 1994; Regulation 6(3).*
2. *Managing Health & Safety In Construction (2001 Edition); Paragraph 75.*
3. *Construction Clients' Group Information Sheet 2 " Health and Safety For Small, One-off and Infrequent Clients – Questions and Answers, Directory of Information".*
4. *The Construction (Design & Management) Regulations 2007; Regulation 14(1) & 18(1).*
5. *Managing Health & Safety In Construction (2007 Edition); Paragraph 66.*
6. *The Association for Project Safety Newsletter Issue 54*

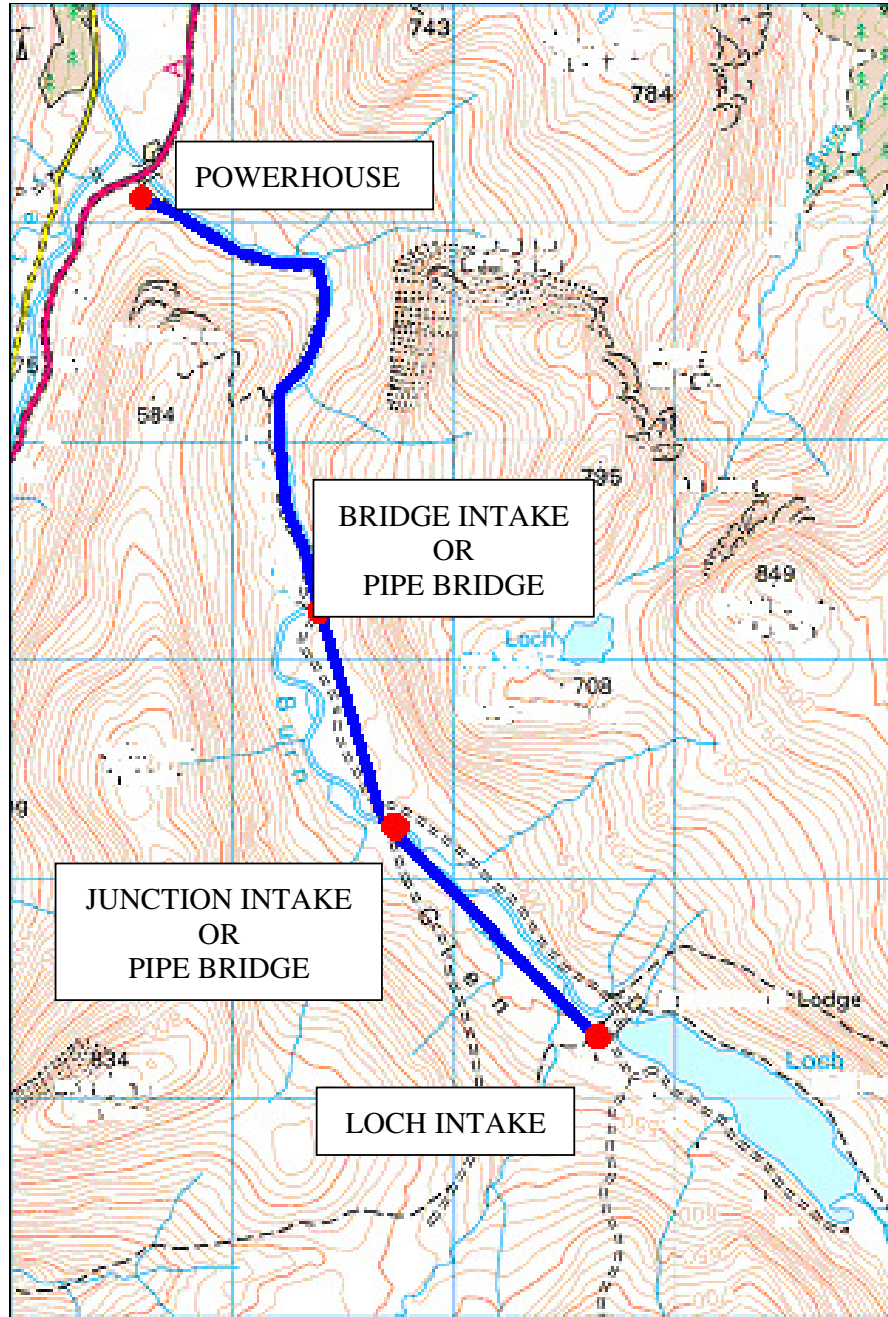
**FIGURE 1 – EXAMPLE CONTENTS PAGE FOR PHASE 3
REPORT**

CONTENTS

SECTION	TITLE
1.0	BRIEF
2.0	CATCHMENT AND HYDROLOGY
3.0	INTAKE
4.0	PENSTOCK
5.0	POWERHOUSE
6.0	HEAD & POWER
7.0	CONSTRUCTION ACCESS
8.0	HYDROLOGY
9.0	ESTIMATION OF CONTRACT COSTS
10.0	THE WAY FORWARD
11.0	RISKS
12.0	CONCLUSIONS & RECOMMENDATIONS
APPENDIX	A - PAYBACK ESTIMATES
	B – CATCHMENT DETAILS
	C – MAPS
	D – FLOW DURATION CURVES
	E – PREDICTED POWER OUTPUT
	F – SKETCHES
	SK1 Intake
	SK2 Powerhouse

FIGURE 2 – EXAMPLE LAYOUT FOR PHASE 3 REPORT

INTER HYDRO TECHNOLOGY HYDRO DIVISION OF R G PARKINS & PTNS. LTD ■ Meadowside, Shap Rd Kendal LA9 6NY □ 97 King Street Lancaster LA1 1RH	MAPS		Job no H 12345	Page 1
	Job Example Scheme	Org no		Date
Title Scheme layout		June 2007		



GENERAL LAYOUT OF PROPOSED HYDRO ELECTRIC GENERATION PROJECT

