

CEEQUAL 2010

THE CEEQUAL ENVIRONMENTAL ACCREDITATION SYSTEM FOR CONSTRUCTION PROJECTS IS GOING FROM STRENGTH TO STRENGTH. CLIENTS CONTINUE TO DEMAND CEEQUAL ASSESSMENT DESPITE THE CONSTRAINTS IMPOSED BY PUBLIC SPENDING CUTS. THE SCHEME IS PROVING ITS WORTH ON PROJECTS INCLUDING CROSSRAIL, THE OLYMPICS AND ITS FIRST WIND FARM

CEEQUAL Projects Compendium 2010

A celebration of two major recent high scoring CEEQUAL assessed projects demonstrates the meticulous attention to detail showed by project teams



emda, Jacobs, Turner & Townsend | The Avenue Project, Chesterfield



FP McCann | DSD's Derry City Public Realm Project, Northern Ireland

In association with CEEQUAL



ENVIRONMENT: CEEQUAL

GREEN CROSS CODE

From a local wind farm to London's 2012 Olympic sites, an increasing number of schemes are choosing to demonstrate and improve sustainability criteria using CEEQUAL. **Bernadette Redfern** reports.

At the last count, projects with a total construction value of almost £15bn were going through, or had been assessed with CEEQUAL, the environmental and social assessment scheme for civil engineering and the public realm. The system, which is designed to improve and demonstrate the sustainability of civil engineering and public realm projects currently has 175 schemes under assessment. This shows how far it has come since 1999 when the idea of such a scheme was first discussed at the ICE and since 2004 when the assessments began.

By design the CEEQUAL system serves two key purposes. Firstly it allows projects to demonstrate the measures being taken to ensure that schemes are following environmental and social best practice.

Secondly it ensures that project teams are assessing sustainability issues at the right time, and therefore maximising the potential to address the issues most effectively. This is done by answering questions spanning 12 key sustainability areas and demonstrating with evidence, that the questions have been addressed (*see box*).

CEEQUAL chief executive Roger Venables says that this has led to some assessors planning when issues should be tackled in advance.

"Some assessors will now

plot on the project programme when the questions are likely to be addressed and also when the evidence is likely to be generated. The effect of that is to maximise the chances of gathering the evidence and therefore of making sure you get the score your actions and decisions deserve," he explains.

Addressing the question can mean making changes to the design, or it can mean doing nothing. "The team decides what is appropriate to do, and they don't always select the highest scoring action. They decide what is appropriate in relation to money, the constraints on the projects, the policies of the client....all these types of things. What the assessors, who do this very robustly, tell us is that their projects end up in a different place than they would have done had they not been through that process."

One scheme that has certainly ended up in a different place is Winwick Wind Farm, a 17.5MW development planned in Northamptonshire. A planning application is currently with Daventry District Council and public information sessions were held in May. The CEEQUAL questions which have been used for a client and design assessment, have encouraged the team to give greater consideration to the landscaping, maximising the aesthetics of the scheme and reducing the total land take of the site. By interrogating the



site layout the team decided to reduce the footprint by scaling back the number of turbines, bringing site capacity from 20MW to 17.5MW. "Changing the rated capacity was a very big business decision because it ultimately means less income, but we are a responsible developer and don't automatically just offer the maximum number of turbines, we want the right number of turbines," says E.On project developer Daniel Badcock.

The reduction from eight

to seven turbines ensured the optimum design alignment of masts and ensures that from all viewpoints there will be no overlapping of turbines. "It gave us a neat, well spaced array," says Badcock.

A key challenge and opportunity for the Winwick team was the fact that CEEQUAL had not been used for a wind farm before. So E.On decided to use an experienced assessor and chose consultant Aecom. To date CEEQUAL has held 60 assessor training courses which have created more than 650 assessors, so there was no shortage of firms for E.On to work with.

The next step was for the project team with Aecom to work through the 12 categories of assessment and select which of the 200 questions applied to this project. "We found that roughly 85% of the questions would apply," says Badcock.

For the team many of the questions overlapped existing procedures instigated for example through the use of the ISO 14001 environmental management system, but it also pushed the team to go further. According to Badcock, using CEEQUAL provided extra motivation for the design team which knew that its efforts were being recognised. "It tested our systems and procedures and is something we can use to look at how to improve and encourage us to consider new criteria. To be told that it is very good through



"We are considering further international exploitation of the methodology and would be pleased to hear from anyone who is interested"

Roger Venables,
CEEQUAL



Influenced: Artists impression of the planned Winwick wind farm with reduced numbers of wind turbines as suggested by the CEEQUAL assessment

external assessment is very reassuring,” he says.

Other schemes report similar benefits. The largest project to use CEEQUAL to date is the £15.9bn Crossrail scheme, set to link east and west London from Shenfield and Abbey Wood across to Heathrow and Maidenhead. According to Crossrail head of environment planning and transport, Rob Paris, using CEEQUAL on the project confirmed a lot of good things that were already happening. But the systematic approach CEEQUAL encourages also allowed the team to see where potential gaps might be so they could be addressed. “For example in the planning stages we hadn’t really looked at material use. We naturally want to minimise embodied energy requirements and encourage recycled materials but we recognised that there was no clear strategy or policy in place to do this,” says Paris.

Due to the scale of Crossrail the application of CEEQUAL is being carried out individually for eight separate work packages. But these will be evaluated together as a whole project award at the end of the scheme. This means applying the system on works of a similar type such as the running tunnels, sprayed concrete linings and stand alone shafts, as well as individual sections such as the Paddington Integrated Project ramp, the Royal Oak portal, the Pudding

Mill Lane portal, the Victoria Dock portal and the Plumstead & North Woolwich Portal. “Our interim assessment has just been completed and we have achieved ‘excellent’ on all sections,” says Paris.

Not surprisingly given the scale of the scheme, ensuring consistency of approach was a key challenge.

This is where the expertise of consultant Arup came in. “We selected them as they had done the East London Line and advised the Olympic Delivery Authority. The biggest challenge we had was consistency of use. Arup was very useful here as they had a common spreadsheet that has been applied to all the different consultants.”

Arup is managing the CEEQUAL process and has carried out the client part of the assessment as well as overseeing the efforts of the various consultants who are carrying out the designer led assessments. By issuing the same spreadsheet to each of the eight projects, the team ensured consistency in how the assessment was approached.

A development that could benefit projects such as Crossrail in the future is a new online tool to capture scores and evidence that the CEEQUAL team is working on with the aim of improving functionality and bypassing some of the technical limitations of the spreadsheet system. “For example assessors want to include hyperlinks to

evidence but a spreadsheet cell can only hold one link,” says Venables.

Along with the new tool other developments are also being pursued to extend and improve on the CEEQUAL system, including the potential to take into account a wider range of sustainability criteria. “Although the tool does assess sustainability it does not cover the full scope of sustainable development. We are conscious that we are not assessing the wisdom of the client in going ahead with the project. We are conscious that we are not assessing the wisdom of the planning system in approving it. So there are financial and social considerations that are currently not assessed. What we are currently engaged in is thinking how we can move closer to taking these things into account without a full financial audit being required or telling planners that they have got it

“The biggest challenge we had was consistency of use. Arup was very useful as they had a common spreadsheet”

Rob Paris, Crossrail

wrong.”

This philosophy is behind initiatives to develop sustainability rating systems for infrastructure in the US and Australia. In both cases CEEQUAL has been asked to collaborate and advise and Venables says that the outcomes of such a collaboration will be considered for incorporation into the next version (v.5) of CEEQUAL due in 2011.

There has also been interest from overseas organisations and UK firms which want to use the system in overseas markets. “We are considering options for further international exploitation of the methodology and we would be pleased to hear from anyone who is actively interested in that possibility,” says Venables.

Another development, which it is hoped will be rolled out later this year, is a term maintenance contracts version of CEEQUAL. There are currently seven schemes piloting the new system and reports from the users are about to be submitted before the project steering group meets in early July. The main difference concerns the way the system is set up. “The current questions set scores separately for clients, designers and contractors. With term contracts we have said this is much more of a team affair. The dividing line of who does what matters less,” says Venables. So instead of aiming the various questions at the

ENVIRONMENT: CEEQUAL

various parties (client, designer, contractor) the term contract has just two question streams; contract management questions and delivery on the ground. Because of the nature of term frameworks the delivery on the ground section is designed to be applied separately to groups of projects of the same nature, for example road repairs. Then these will all be weighted according to the value of the contracts and an aggregate score calculated.

This philosophy of applying the assessment separately to works of the same nature and then taking a weighted average is similar to that applied to very large scale projects such as Crossrail and the Olympic Games infrastructure work.

"We have a contract from the Olympic Delivery Authority for all of the civil engineering and public realm works to be

"There is an increasing number of funding bodies requiring projects to go through the CEEQUAL process"

Roger Venables,
CEEQUAL

assessed under CEEQUAL with 16 sub-divisions and we will be scoring them individually as well as giving an overall score on a construction value weighted basis," says Venables.

Despite the downturn, the numbers of projects being assessed under CEEQUAL is continuing to grow (see chart). "We have noticed a very modest

increase in the number of projects that are stalled and waiting for funding but overlaying any downturn in civil engineering workload is an increasing number of funding bodies requiring projects to go through the CEEQUAL process," says Venables. He says there are several reasons that agencies and clients are pursuing an award. These range from reputational and public relations advantages to improving projects' sustainability criteria and motivating teams. "What they seem to be telling us is that they recognise that the scheme is pretty rigorous and wide ranging and that by going through the process, better projects result," he says.

Of course going through the CEEQUAL process carries a price tag, but some projects have offset this by the advan-

tages gained, for example by reducing a project's land take or minimising waste. The fees of going through the process can be as little as £3,500 on a project worth less than £1M, to a six figure sum for a multi-billion pound scheme.

Venables and the CEEQUAL team are seeing a growth in applications with a record high of 13 in May. Since the system began doing assessments in June 2004, 255 applications have been received. "This growth in the number of projects is a healthy indicator that we are moving in the right direction and becoming more mainstream," says Venables. With applications up and some of the country's largest and most high profile schemes also using CEEQUAL, Venables and the team are looking forward to building on the past decade with another busy 10 years.

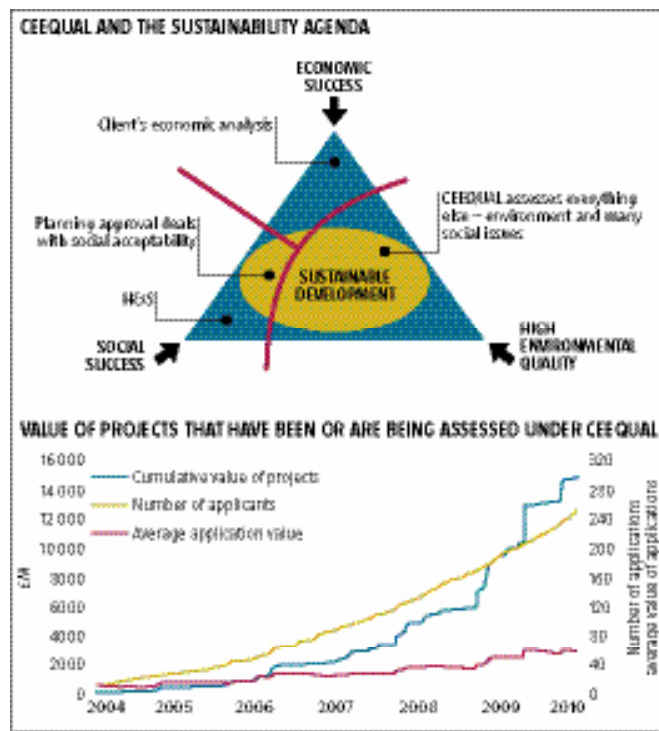
WHAT IS CEEQUAL?

CEEQUAL is an assessment and awards scheme for improving sustainability in civil engineering and public realm projects. It assesses performance across 12 areas of environmental and social concern including project management, water resources, land use and landscaping, energy and carbon, materials use, waste management and transport.

A total of 200 questions are arranged into the 12 areas but the first part of carrying out the assessment involves filtering the questions to calculate which should not apply. This process, described by CEEQUAL as "scoping out" means removing from the standard question set those that are irrelevant to the project. "So if you are doing a flood defence bank there is no energy in use so you can scope out the energy in use questions," explains CEEQUAL chief executive Roger Venables. This means that all of the energy consumption on the project is embodied in the materials and in work on site.

"If you want to drive up energy performance on such a flood defence project then you must concentrate on the construction phase as that is where all the energy is consumed."

Following the scoping exercise a maximum number of applicable questions is determined and a consequent maximum achievable



In demand: The number of CEEQUAL assessed projects is rising

score. By demonstrating – with evidence – that the questions have been addressed, the project scores points and the percentage of points achieved against the maximum gives the CEEQUAL rating. The merit of a CEEQUAL score can be considered as follows:

- more than 25% - Pass
- more than 40% - Good
- more than 60% - Very Good

■ more than 75% - Excellent
"The idea of that is that CEEQUAL is assessing how far beyond legal compliance you have got, says Venables." Basic legal compliance is around 5%. If you accept that 100% is not achievable and 5% constitutes legal compliance then a score of 25% means you are a fifth of the way towards pinnacle best practice which might be

93% or 94%"

Although Venables confirms that some assessors have told him that a number of projects have done everything possible to maximise their CEEQUAL score, he maintains that a score of 100% is unachievable due to the fact that some actions are mutually incompatible. "A classic example is a refurbishment project where the client wants facing stone to match the local surroundings. This is good practice for aesthetics (landscaping) and scores points under the historic environment questions [another one of the 12 areas]. But if the quarry from which local stone was originally sourced is exhausted and stone has to be brought in, the project can't score maximum points for minimising transport of construction materials."

Venables says CEEQUAL is intended to be used on a whole project basis, but it is structured so that assessments can be carried out at various stages including design only, client and design, design and build and construction only. This ensures that assessments can still be done even if all project parties do not participate. It also means that some clients choose to carry out assessments before reaching the construction phase, for example in the case where planning approval has yet to be awarded. "But the idea is that the norm is a whole project award that everyone participates in, including the client."

CEEQUAL: PROJECT PROFILE

EMDA, JACOBS, TURNER & TOWNSEND & VSD

The Avenue project Chesterfield

Project description and challenges

The former Avenue Coking Works near Chesterfield is one of the most contaminated sites in Europe and is currently the country's biggest and most complex remediation project. During its four decades in operation, the plant employed 800 people and produced millions of tonnes of smokeless fuel from coal, with by-products used to make chemicals.

This has left a legacy of contamination, much of it in two toxic lagoons adjacent to the River Rother. Soils on the 98ha site (approximately 200 football pitches) are contaminated with hydrocarbons, cyanides and arsenic.

East Midlands Development Agency (emda), supported by the Homes and Communities Agency (through its National Coalfields Programme), required sustainability to be at the heart of the project. This manifested itself through:

- site-specific risk assessments to significantly reduce the

volume of material requiring remediation

- on-site treatment (thermal desorption, soil washing and bio-remediation) which will almost eliminate the landfilling of wastes
- an environmental management system (ISO 14001 and EMAS) to effectively manage environmental risks
- a programme of consultation & engagement to address the concerns of the local community
- large areas of open space, new habitats, community sports facilities, together with a large amount of new housing and some light industrial development which will be assets for the community.

In accordance with the award-winning design, the main contractor, VSD Avenue (a joint venture comprising Volker Stevin, DEC and Sita Remediation) is employing a range of techniques to clean and reuse contaminated materials.

Start/finish

1999 – 2014

Cost of project

£173M

Project team

Client emda

Lead Designer and CDM Co-ordinator

JACOBS

Project, Cost and Strategic Health & Safety Managers

Turner & Townsend

Principal Contractor VSD Avenue joint venture

Why the project attained the award

- emda's commitment to best environmental practice
- resolution of significant environmental and health and safety challenges, including best-practice risk assessment and environmental management
- innovative approaches to clean up
- continuous engagement with the local community on the clean up solution and final design
- development of a new community and wildlife habitat resource.

Other awards

- Brownfield Briefing RIA Best Conceptual Design Award 2006
- British Trust for Ornithology (BTO) Business Bird Challenge (Conservation Category) 2006

- ICE East Midlands Merit Award for Design and Innovation, 2007
- The Waterways Renaissance Award – Commended 2009.

65ha

public open space created

£173M

total project cost

600k

cubic metres of material requiring remediation



CEEQUAL: PROJECT PROFILE

FP McCANN/BDP



DSD'S DERRY CITY CENTRE PUBLIC REALM

Project Description

Derry is the only remaining completely walled city in Ireland and one of the finest examples of walled cities in Europe. The scheme involves significant public realm improvement works adjacent to Derry's historic walled city centre, in particular Waterloo Place and Shipquay Place.

The finished scheme will create a high quality, vibrant and modern urban environment throughout the city centre. This will set the context for social interaction, support economic activity, provide space for cultural activity and entertainment and create a positive international image for the city centre.

It will create a pedestrian friendly environment throughout the city centre by reducing the existing conflict between pedestrians and vehicles, and by introducing a new pattern of vehicular movements in the area.

It will also improve servicing and working arrangements for existing businesses in the area, and reinforce the character of the connecting streets and public spaces.

Derry is currently one of four candidate cities shortlisted to become UK City of Culture 2013, with the successful candidate due to be announced in July 2010. The Culture Office, responsible for Derry's bid is located in Waterloo Place right in the heart of the scheme.

Project Cost

Circa £8M

Project team**Design:****Civil Engineer & Project Director**

Ciaran Hanna, BDP

Landscape Architect & Design Director

Carl Bayliss, BDP

Contractor/Delivery:**Contract Manager**

Russell Eddis, FP McCann

Design Manager

Enda Shields, FP McCann

CEEQUAL assessor

David Fisher, FP McCann

Client:

Department for Social Development (DSD)
North West Development Office

Client Adviser:

Central Procurement Directorate (CPD),
Department of Finance and Personnel NI

Stakeholders

DSD, CPD, BDP, FP McCann, CEEQUAL, Department of Environment Planning Service, Department for Regional Development Roads Service, the general public, Northern Ireland Environmental Agency (NIEA), local interest groups, Derry City Council, local traders and businesses, ILEX Urban Regeneration Company, City Centre Initiative (CCI), Police Service of Northern Ireland, JCP Consulting, Scott Wilson, Translink and others.

Key project dates

Commissioned January 2007

On site March 2009

Practical completion Expected July 2010

Awards

■ Interim Client & Outline Design

Award – 84%, Excellent

■ “Whole Project” CEEQUAL award entry has been submitted by FP McCann. (Currently going through verification with a score of approximately 90%, and awaiting ratification)

■ Exceeding Compliance score in “Considerate Constructors” award.

Challenges

■ Creation of an environment to revitalise and stimulate regeneration of the depressed former commercial heart of the city

■ Creation of a traffic route to meet the desires of traders without adversely affecting their custom during construction

■ Obtaining a local area to use as a site compound. This enabled off site works and storage of materials, mitigating aspects such as dust, noise, vibration and general visual pollution

Why the project achieved a CEEQUAL Excellent award

■ The DSD's commitment to the CEEQUAL Assessment (and aim to achieve an Excellent rating) has allowed the project team to incorporate many environmental issues into the scheme design

■ This benchmark was then carried through the construction phase by FP McCann and the resultant incentive, coupled with commitments on site, ensured excellent environmental performance throughout



Project environmental management

BDP's project director was assigned the role of interim CEEQUAL assessor, and FP McCann then appointed a dedicated CEEQUAL assessor to complete the Whole Project Award submission.

An "Environmental Impact & Opportunities" report was produced, and referred to during the design process and an Environmental Site Action Plan was prepared for the construction phase.

Land use

The scheme improved the capability of the land resource, adding vibrancy and interest to the area, which will result in increased commercial value for the city, particularly through tourism.

The entire project is aimed at providing a catalyst to regeneration and investment in Derry city centre.

Landscape

The enhancement of Derry's historic walls and the Guildhall Building (the Walled City Conservation Area) was central to the landscape design.

Loss of valuable, distinctive or historic landscape features has been avoided throughout the scheme. Existing oak trees were retained and new semi-mature trees planted.

Ecology & biodiversity

As bats are a local Biodiversity Action Plan (BAP) species, bat boxes were erected at specific locations throughout the scheme. Planting was also specified to attract wildlife into the city centre

According to baseline data, the area had

little scope to encourage wildlife into the area. However, the commitments on site have provided an area of around 50% of the scheme that can now be considered wildlife habitat.

Archaeology & cultural heritage

Extensive discussions with stakeholders regarding the integration of the design with individual listed buildings and the overall historic townscape.

Archaeological monitoring of the excavations took place during on-site works and an archaeological programme of works was prepared for deep excavations close to the City Walls.

Water issues

Water mains, along with gas mains, electricity and telecoms have all been upgraded and replaced and storm water separation has been included where possible.

During the construction phase, the amount of water used was metered and monitored on site.

The water feature utilises a water recycling and filtration system fed by a 50m³ underground storage tank.

Energy

A duct for the proposed Combined Heat and Power system in the city centre was also installed as part of the scheme. Energy usage during the operational phase has been considered in the selection of lamp types and water feature.

Material use

High quality paving in granite and Caithness stone reflect patterns from Derry's

important 19th century textiles industry.

Paving materials were specified to blend in with historic walls and for recycling opportunities and was designed in accordance with BS 7533 with a design life of 40 years.

Waste management

The Site Waste Management Plan outlined all items that were to be reused or recycled. Consequently only 16% of demolition waste went to landfill with the remaining 84% segregated on site and recycled locally.

Transport

The design has included provision for public transport and community transport links, which is particularly notable since the site has not been serviced by bus routes for the past 40 years.

Approximately 90% of the construction workforce resides locally and buses are provided to reduce the carbon footprint of workforce transportation by more than 30%.

Community relations

In addition to feedback from public and Planning Service consultations, other discussion and feedback forums included the posting of the scheme's 3D animation on YouTube and the provision of a public "drop-in" centre on site.

The scheme has been developed to ensure it provides a usable urban space that will benefit local businesses and local and visiting users.

The CCI hosted the FP McCann public information website, where interested parties were updated on progress and specific traffic management matters during construction.

**Have you undertaken a CEEQUAL
assessment for your civil engineering
project?**

**Don't miss out! Make sure your project is
featured in next year's annual CEEQUAL
project compendium. Call us now!**

The NCE annual CEEQUAL project compendium comes out every year in summer. All organisations that have carried out a CEEQUAL assessment are invited to participate and have their project included in the compendium. To find out more please contact Olivia Horne on 020 7728 4529 or email olivia.horne@emap.com

**No experience of using CEEQUAL?
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Visit www.ceequal.com to download a free pdf of the CEEQUAL Manual. Or call CEEQUAL on 020 3137 2379 to learn how your project can benefit from using CEEQUAL.

