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CONSTRUCTING EXCELLENCE IN WALES

Championing collaborative construction in Wales

Annual Report 2012

Contents

Excellence through collaboration

Welsh construction is a crucial part of the Welsh economy. This is why, with funding and support from the Welsh Government, Constructing Excellence in Wales (CEW) champions best practice and collaborative construction methods. Our aim is to make sure the Welsh construction industry continually improves, learns from past experiences and delivers the infrastructure the nation requires. CEW's work is about engagement, consultation and sharing best practice and it has consistently shown that collaborative procurement methods deliver construction schemes safely, often within tight financial constraints and sustainably. With around 2,600 stakeholder organisations, over 100 events every year, four clubs and dozens of case studies, Demonstrations Projects and Exemplars CEW is having a positive impact on the way the industry performs.

The CEW Exemplar and Demonstration Programmes have proven the added value that can be gained through an integrated team approach. The CEW Waste Programme is leading the Welsh Governments drive towards zero construction waste and has had major success with the Green Compass Scheme and its recycled aggregates for minor schemes (RAMS) initiative. The Wales Low Zero Carbon Hub is at the centre of our work to help construction support an energy efficient society. The need to reduce carbon emissions and deliver a low carbon construction industry makes it even more important that we work collaboratively. The hub has become a core element of CEW work in 2011-12. Construction teams must plan ahead to ensure that sustainable solutions are found to deal with the challenges that face us in Wales. This will only be achieved by working collaboratively. CEW supports the Consultative Forum, liaises with the Welsh Local Government Association (WLGA) as well as the Consortium for Local Authorities Wales (CLAW) and works closely with Welsh Government. We lead, influence and champion the drive for improvement and the adoption of best practice, ensuring that Welsh construction is ready to build its way out of recession, at the same time meeting its targets on waste and low carbon, to provide a first class infrastructure which in turn will support the development of strong communities.

Chairman

Richard Wilson *— Chairman*

Now more than ever is the time for Welsh construction to adhere to best practice and work as an integrated team and make certain it procures collaboratively. As Chairman of Constructing Excellence in Wales you might expect me to say this, but with the UK economy and that of Wales remaining in recession the risk of our industry returning to traditional adversarial ways of working and particularly winning work and buying materials based on price and not value is still very real.

Wales has ground breaking targets on low carbon, waste minimisation, recycling and a commitment to improve and develop its communities. Construction has a central role to play in helping to achieve these goals. If our public and private clients along with the industry's designers, engineers, contractors and suppliers follow the examples set out in this report and work collaboratively then our whole society will benefit. Not just in terms of employment, training, education and injection of money into the local economy but because everyone across Wales will gain from using, working and living in improved built environment.

That can only happen if the industry works together. Government is listening; CEW is influencing and champions of best practice are leading by example across Welsh construction. Examples of how effective the work that CEW delivers is described throughout this Annual Report. Indeed, one cannot underestimate the impact of documents such as the *No Turning Back* Report – published in October 2010 but used as the template for the Value Wales Procurement Steering Group that exists today. The CEW team is now widely respected throughout Welsh construction and the Welsh Government. It is listened to; its advice adhered to and shared.

The influence of CEW has grown over the past few years and significantly in the past twelve months. More events, increased levels of engagement and outreach to different industry groups and closer liaison with clients and contractors prove that CEW is a leader and an agent for change in Welsh construction. The data (see the figures on page 8 and throughout the Annual Report) shows this very clearly.

The next twelve months present significant challenges.

The great progress made in 2011/12 must now continue because the economic situation and demands for improved facilities – including roads, hospitals and schools as well as more housing – requires construction to be at the centre of a Welsh recovery.

Wales must adopt best practices as exemplified in the Exemplar and Demonstration Programmes managed by CEW. It must pursue the low carbon agenda championed by the Wales Low Zero Carbon Hub. Our construction teams must work collaboratively to minimise waste and maximise recycling. The result of this approach is plain to see on pages 12 to 18 of this Annual Report.

The lessons learned can now be applied as we focus on how Wales benefits from building information modelling and agree the best way to manage and deliver the major projects Wales must build. It is an exciting and difficult time for Welsh construction and CEW stands at the heart of the movement to make sure our industry delivers on time, in budget and meets its targets.

Chief Executive

Milica Kitson *— Chief Executive*

The last year has been one of great achievement for Constructing Excellence in Wales. We have seen 2,636 people attend over 100 events up and down the country and engage in debate and share ideas on subjects like the new Building Regulations and low carbon to community benefits and using recycled materials on site. CEW is engaging with more of the industry, reaching out to private and public sector clients and is at the centre of Government discussion on policy affecting construction.

Our team, which continues to grow as CEW liaises more and more with the construction supply chain, is now responsible for managing nearly 40 Exemplar and Demonstration Projects; a dozen or so different areas of research into waste minimisation, recycling and low carbon and runs six events each month. Over 4,000 key decision makers across Wales have volunteered their time in the past twelve months to attend and contribute at strategic meetings, which we estimate to have a monetary value in excess of £2m.

As an agent for change, charged by Welsh Government to engage with the construction supply chain and advocate best practice we are leading the debate on a variety of crucial subjects. From collaborative procurement as championed in the Value Wales Procurement Steering Group, the CEW Waste Team work in the development of the Waste Sector Plan to the adoption of a strategy to implement building information modelling (BIM). CEW is at the centre of key developments in Welsh construction.

It is our influence (see page 8) and the partnership that CEW has with its stakeholders that drives decision making on how organisations integrate and collaborate.

In this document, our second Annual Report, we have picked out a few examples that demonstrate the benefits of a collaborative approach to construction. From the Airbus North Factory where strong leadership united the team to Greenhill Primary School or Cartrefi Conwy housing association where partnership and collaboration delivered sustainable and well managed projects, it is integration that is at the heart of good construction in Wales.

Many of the projects cited in the Annual Report are past CEW Award winners or an Exemplar or Demonstration project. Others are simply great examples of best practice that illustrate the benefits of pursuing a low carbon agenda or focussing on minimising waste and using recycled materials. They all champion taking a holistic approach to construction; sharing ideas and working as a team. No other organisation does this in Wales.

Carmarthenshire County Council (see page 15) typifies the leadership needed to make sure everyone in a supply chain and the local community benefits from a collaborative way of working. The results of this approach on a single project can be seen at the Church Village Bypass (page 17) where £37m was saved because of value engineering by the team, carbon emissions cut by 51% and 90% of project waste was diverted from landfill.

The mission of CEW is to maintain the momentum we have established; we must build on the results of 2011/12 and make sure our 2,600 stakeholder organisations adhere to the lessons highlighted in our Annual Report. There is a lot to do still, but we are proving year on year there is the desire and capability to achieve great things in Welsh construction.

We think that it is important that a small nation like Wales demonstrates leadership and commitment on sustainable development…

— John Griffiths AM

Leadership

£1.6 billion

of projects delivered through our best practice programmes

320 young people

involved in our Generation for Change G4C programme

If, as Peter Drucker wrote, management is about doing things right, then leadership is doing the right things. In construction, leadership is fundamental to the success of any project. There has to be clear direction and purpose, awareness of targets and consequences, consistent decision-making and strong management of people. Effective leaders do not shy away from constructive debates and challenges to established ways of working.

However, the industry itself also requires leadership and support to meet government targets on waste and help create a sustainable and low carbon Welsh economy. Leadership is fundamental to the work of CEW. We inform and educate the Welsh construction industry and work with it to develop innovative methods of design and construction. We do this via direct engagement such as clubs and events, and we take the lead on key issues such as collaborative procurement.

CEW has led the drive for value based rather than lowest price tendering and collaborative working through integrated teams, making the case in our powerful 2010 report *No Turning Back*. This work is continuing with the support of government through the Value Wales Procurement Steering Group chaired by Swansea City Council's Martin Nicholls. Through this steering group we have set up a Capital Programme Sub Group to provide a longer-term programme of proposed public sector investment to complement the Wales Infrastructure Investment Plan. This will help the industry respond more effectively to public sector investment opportunities and provide greater value for the Welsh pound. Building Information Modelling (BIM) is a key area of development, and we have set up a BIM Task Group to lead the response of the Welsh construction industry and support the Welsh government in taking it forward.

CEW promotes and highlights strong leadership in construction projects. An increasing number of high quality projects are being delivered across Wales through integrated teams applying best value procurement strategies. As our CEW Awards demonstrate, strong leadership is central to the success of these projects, a message that we drive home at our numerous events, workshops and conferences. Best practice champions such as Carmarthenshire CC, Welsh Health Estates, Airbus and Swansea CC provide great examples of visionary leadership.

CEW is committed to supporting the development of the future leaders of construction in Wales. One of our most recent and successful development groups is the Generation for Change, or G4C. It brings together young professionals from across the construction industry to share ideas, discuss innovative solutions for the projects they work on and propose improvements to the wider industry. It is an open forum where emerging leaders learn from their peers, establish mentoring relationships with experienced professionals and develop some of the crucial soft, behavioural skills they will need.

The CEW Best Practice Clubs and Exemplar and Demonstration Programmes provide a dynamic showcase for effective leadership. The Airbus North Factory, for example, set a benchmark for innovative approaches to managing waste and engaging local

Leadership

contractors that could not have been achieved without committed leadership from the client (see the panel below). Over 20 Demonstration projects and, currently, 18 Exemplar projects have either been completed or are under way. These continue to outperform industry averages across economic, social and environmental indicators, providing excellent examples of best practice that will help the industry address Welsh Government aspirations for a better environment, fairer communities and a stronger economy.

Construction is an economic sector reliant on the quality of the people populating its teams – from small contractors and specialist SMEs to engineers, designers, consultants and clients. An important aspect of leadership is drawing these individuals together into a single committed team with a positive organisational culture. One great example is the winner of the 2011 CEW Award for leadership, City & County of Swansea (see the panel on page 7). Another is the contractor Watkin Jones in North Wales, whose approach to building an engaged and intelligent workforce has been showcased as part of our Demonstration Programme.

Finally, through our events, newsletters and regular columns in the media, CEW provides a lead by advancing new ideas, arguments and methods. We know that it is only through strong and effective leadership, embracing best practice, that the construction industry can deliver a sustainable and innovative built environment in Wales.

Case study – Airbus North Factory

The project to build the new Airbus North Factory building at Broughton, North Wales, was an outstanding demonstration of leadership that was recognised at the 2011 CEW Awards when Airbus was named Client of the Year.

Work began in 2005 on the vast, technically challenging scheme to design, engineer and build a 52,000m^2 composite wing assembly facility. The required accuracy and precision of the build could not have been achieved without the client's clear vision and strategy, and success in moulding the many different trades involved into a single effective team. At the project's peak some 300 people were involved, employed via 15 supply chain partners.

Airbus opted for an integrated design and build approach that embraced Rethinking Construction principles, notably a commitment to collaborative working. The company departed from its traditional approach to project management by appointing a representative from within its own business. This proved hugely beneficial in facilitating a close working relationship with the prime contractor, Morgan Sindall. Airbus was also heavily involved in the early selection and engagement of the supply chain partners. In particular, the early appointment of the manufacturing systems contractor allowed Morgan Sindall's design team to understand crucial complex machining and materials handling issues at an early stage. Airbus also took a lead in communicating with the workforce, ensuring that everyone involved fully supported the project's goals.

Airbus set tough safety, quality, cost, delivery and people (SQCDP) objectives, including zero reportable incidents, 'right first time' quality and costs within 10% of monthly cash flow. It was particularly essential that the facility be completed within the planned timescale, enabling Airbus to bring the A350 wing to market as quickly as possible. The fact that the facility was completed on time in January 2010 with all the key SQCDP targets having been met is testament to Airbus's leadership and commitment to best practice.

Case study — City & Council of Swansea Corporate Building Services

The workforce development strategy implemented by the City & County of Swansea's Corporate Building & Property Services (CBS) department stands as an exemplar of good practice in the public sector. Its success in opening up training and development opportunities for staff and engaging young people was underlined in 2011 when the Council won the Constructing Excellence Leadership & People Development Awards at both an all-Wales and UK level.

In 2007 the CBS department, led by Head of Service Martin Nicholls, realised that action was needed to ensure a sustainable supply of skilled staff to deliver its services. The process of change began by drawing together various training and development initiatives into a structured workforce development strategy. While parts of the programme were aimed at enabling existing employees to upskill or retrain, the centrepiece was a strategy to engage young people through apprenticeships and an innovative work-related education programme for under-16s.

Martin and his team worked closely with schools and the careers service to help schoolchildren gain an understanding of the department's role and the career opportunities on offer. The work-related education programme, for example, allowed students to attend the organisation for one day a week over 30 weeks to engage in 'real-life' work-related tasks.

The leadership, enthusiasm and commitment of the CBS team in progressing this programme of change was impressive, and was rewarded in 2009 with Investors in People accreditation. Much of the work involved, including running a Saturday morning trade school, was done in addition to team members' day jobs. Team values instilled through Martin's leadership, such as celebrating success, sharing ideas and learning, avoiding the temptation to 'play safe', and being open-minded, contributed to the strategy's effectiveness. The work-related education programme has enabled hundreds of young people to gain experience in construction-related trades, many of whom went on to join CBS as apprentices.

Influence

We have

harnessed over 100,000 hours

from the industry

131 organisations

involved in our Best Practice Clubs across Wales

Influence is about being persuasive, but it is also about being credible, which means basing your arguments on solid evidence. This is central to the work we do with the construction industry and the Welsh Government, and we do it through capturing best practices across the industry and conducting research into key issues, then sharing the knowledge through our network of events, Task Groups, Best Practice Clubs and forums.

CEW is an agent for change, seeking to improve the construction process and ensure that the principles of Rethinking Construction outlined by the Egan and Latham reports become mainstream industry practice. The key to achieving this is through influencing the Welsh built environment supply chain to adopt better ways of doing things. We are in contact with 6,000 individual stakeholders and engage directly with around 2,500 people across government and industry.

We engage with government, often asking difficult questions on behalf of the industry, and helping to shape policy and develop strategies that strengthen and support the construction industry and the wider Welsh economy. CEW acts as a conduit for the industry – channelling views and opinions and feeding them back to government decision-makers. The Value Wales Procurement Steering Group, for example, was set up as a result of our *No Turning Back* report, which drew on the views of 45 individuals and organisations who freely gave us their time. We are setting up similar Task

Best Practice Clubs

CEW Best Practice Clubs provide a forum for individuals and organisations to learn about and share best practices through real examples within the construction industry. They are locally based and made up of committed individuals who are willing to share their time, knowledge and experiences to support and promote best practices in the construction industry in their area. We have clubs in South, South East, and North Wales as well as the G4C Wales Club, which is specifically for younger people in the industry.

The aim of the clubs is to be the place where everyone in the construction supply chain can learn, share and network together to improve their personal, organisational and business performance and their ability to work together collaboratively. They achieve this through hosting a wide variety of topical and inspiring events with expert speakers, site visits, and client led debates, best practice projects and social activities. Each club is governed by a committee or steering group who act on behalf of the wider club membership.

Anyone who is in the construction industry can get involved – from the client or owner of a building, to the design team, main and specialist contractors, house builders and materials manufacturers and suppliers. We also welcome students and those involved in education. The only pre-requisite is that you should be committed to improving your performance and the performance of the construction industry.

Influence

2,695 stakeholders

input to CEW activities

Groups to develop strategies for the adoption of Building Information Modelling (BIM), and for the programming and delivery of major public sector projects in Wales.

Whether we are running a consultation process on the new building regulations or researching the value of community benefits in the construction procurement process, we are always inclusive, reaching out to stakeholders across the Welsh built environment. CEW, on behalf of Welsh Government's Waste Strategy Branch, led the development of the Construction Sector Plan and brought together representatives of every sub-sector in construction in a pre-planned series of workshops. The work of the CEW Waste Team underpinned the development of the Sector Plan up to public consultation stage.

The influence of CEW across industry and government is strong and continually growing. The CEW Consultative Forum, comprising 100 opinion-formers from 92 leading organisations, meets quarterly to address key issues facing the industry. Over 2,600 Welsh construction organisations attend our events every year. Around 107 events have taken place over the past eighteen months, discussing issues such as how to transform Wales into a low carbon society or providing demonstrations of project excellence. Direct contact with the industry allows us to sense its mood and gauge the effect of our influence. Our core work is engaging the Welsh construction supply chain up and down the country, mostly through the CEW Best Practice Clubs that have been in existence since 2002 (see panel on page 8).

We regularly assess our communications activities, which range from editorials in the Welsh press and monthly newsletters to communication via the web and social media. Following our column on the subject of BIM in the Western Mail, we received an unprecedented response from the industry to get involved in the CEW BIM Task Group. Our research and anecdotal evidence convinced us in 2010 to deliver one of the most important documents in Welsh construction – the *No Turning Back* report on the need to maintain a quality-focused approach to procurement.

Looking forward to 2013, our Task Groups, Club events and best practice Exemplar and Demonstration Programmes will continue alongside our work with the Wales Low/Zero Carbon Hub and the Construction Waste Management Programme. The Consultative Forum will help shape future policy in these areas and ensure we continue to embrace the ideas and opinions of the whole supply chain. One new development being driven by the CEW Clubs is the How2Guide; a simple-to-use web portal that does what it says on the tin – guides and influences those delivering construction projects on how to deliver value by using best practices, integrated team working and collaborative procurement.

CEW's influence will also be seen as we work with government to develop and then implement a strategy to ensure that the whole of Welsh construction benefits from BIM – and not simply those organisations involved in major schemes. CEW is the only organisation in Wales that can do this across all construction sectors.

Innovation

New methods, ideas, products and processes are what will take Welsh construction forward and help deliver the infrastructure that the country's economy demands. If the construction industry is to improve, if it is to grow, if it is to add value to the economy of Wales, it needs to continually develop innovative solutions to the challenges facing Wales – economic, social and environmental.

We need to understand what our communities desire, what is technologically possible and what is viable in the marketplace. Only through accepting the need to look at things differently, changing the way we do things and embracing risk will we innovate and improve.

At CEW our whole approach is based on changing traditional approaches to construction and civil engineering, changing the culture of the industry and changing attitudes. It is something that Welsh Government business minister, Edwina Hart AM, stressed earlier this year when she said: 'Innovation is recognised as one of the key drivers for economic growth and job creation and important to all sectors of the economy. It is also central to tackling issues faced by society, such as climate change and health and wellbeing.'

This process of change is underpinned by our drive towards innovation. Welsh construction can only deliver on government targets for carbon, waste and community benefits, and provide value for money, by doing things differently and then sharing innovative practices and learning with others.

Innovation in Welsh construction can mean anything from the award-winning creation of a Passivhaus (see the panel on page 11) to the development of a process for recycling and re-using aggregate by Derwen (see the panel on page 12). Sometimes it is about technology, but it can also be about process improvements and measurement, as with Willmott Dixon's work with Monmouthshire County Council. In a successful ten-year partnership refurbishing and building the county's schools, the combined team established performance indicators to measure the effects the projects have on the progress and achievement of children in the schools themselves. This is a completely different approach to benchmarking project performance. It helps ensure that the final building performs in the way the end user requires, delivering on outcomes rather than against design inputs.

This is an example of a holistic approach to construction, which is precisely what the Welsh industry needs. It is the message the Welsh Government took from our *No Turning Back* report. Short-term thinking, a blind drive to cut initial costs and aversion to risk does not allow for the creativity and innovation that is needed across Wales. Our best practice programmes confirm, time and again, that longer-term thinking, collaborative procurement and integration will encourage and foster innovation.

Building Information Modelling (BIM) provides a platform for innovative practices, which is why CEW through its stakeholders is demanding guidance and a strategy for the implementation of BIM across Wales. Welsh Health Estates has created a steering group to investigate how BIM can be applied in the design, build and refurbishment of health facilities, while Carmarthenshire County Council has begun exploring the development of its own interpretation of BIM with its

"Innovation is recognised as one of the key drivers for economic growth and job creation…"

– Edwina Hart AM

Case study – Passivhaus

The Larch House project was a joint partnership between United Welsh Housing Association, BRE (Wales), Blaenau Gwent County Borough Council and the Welsh Government, and won the CEW Award for Innovation in 2011.

Built in 2010 at Ebbw Vale, Larch House is a prototype social home that tests the effectiveness of the Passivhaus concept in meeting Welsh Government targets for sustainable construction. Passivhaus is a demanding construction standard for extremely low energy buildings that do not compromise on comfort. The design seeks to eliminate the need for space heating and cooling by keeping heat loss to a minimum. This requires much higher standards of insulation and airtightness than are usual in the UK, challenging normal housebuilding conventions.

The south-facing building has highly insulated closed-panel timber framing, with triple-glazed windows, draught-free construction, a heat recovery ventilation system and photovoltaic panels all contributing to energy efficiency. Environmentally friendly materials used include untreated softwood, wood fibre insulation, Welsh-grown thermally-modified larch cladding, ecological paints and low energy LED lighting.

The completed building exceeded all expectations and achieved a zero carbon rating, making it the UK's first zero carbon, low-cost Passivhaus. It generates as much energy from the sun in the summer as it uses for the whole year; income from the feed-in tariff over expenditure is estimated at £1,300 a year. The house also achieved the best air test result for a freestanding building, surpassing building regulations by a factor of almost 50.

The house is being carefully monitored to analyse its actual energy consumption alongside occupancy behaviours, which will continue for the first two years of occupancy. The lessons learned from its design and construction are being used by United Welsh to develop larger-scale social housing schemes based on a 'Welsh Passivhaus' which should impact on the entire UK construction industry.

Innovation

framework organisations. This enthusiasm for innovation has led CEW to establish a BIM Task Group that will address how Wales can benefit from this technology; the Task Group will liaise with Paul Morrell, the UK government construction advisor and Mark Bew, Chairman of the Government's BIM Working Group to ensure that we learn from others.

Welsh construction cannot afford to stand still. CEW, through the Low/Zero Carbon Hub and the Construction Waste Management Programme, is advocating the use of new technology ranging from photovoltaic panels in schools such as Greenhill Primary (see page 18 and opposite) to the recycling of aggregate for use in minor schemes. Innovative programmes such as Green Compass will move the waste minimisation agenda forward significantly in 2012/13, and along with initiatives such as Site Waste Management Plans and Surplus Trade Centres, will make a huge contribution to achieving Zero Waste.

Building Information Modelling (BIM) will help the industry achieve a

20% cost reduction

target through innovation and efficiency

Case study – Derwen aggregate recycling

Derwen Aggregates is a successful waste handling organisation which is playing a pioneering role in tackling construction waste. It was named SME of the Year at the 2010 CEW Awards and was part of the Swansea Quadrant Interchange project team that won the Waste Minimisation Award. The company is a keen supporter of the Welsh Government's waste programme, managed by CEW, and was one of the first to achieve Green Compass accreditation in recognition of its commitment to best practice in waste management.

Waste is one of the most important issues facing the Welsh construction industry, which needs to find new ways to recycle materials and cut down on waste. In 2007 Derwen took the bold decision to make innovative use of existing wash plant techniques to produce recycled aggregate for re-use in construction projects. At its unique, £2.8 million state-of-the-art plant in Neath Abbey, technology for washing pit sands is utilised to transform crushed construction waste and excavated inert material into clean, high-quality aggregate, achieving a recycling rate in excess of 99%. It is the only facility in Wales whose technology can produce granular sub-base type 1, aggregates ranging from 6mm to 40mm, and the highly popular low permeability clay. Customers can bring waste materials for recycling and take away sustainable aggregates in a single return journey.

On the Swansea Quadrant Interchange project, Derwen provided an excellent demonstration of closed-loop recycling, in which site waste was segregated, taken to the plant for washing and recycling, then returned to the site as high-value aggregate. It is the kind of innovative thinking needed to transform the construction industry's approach to waste, minimising the amount of waste going to landfill and reducing the industry's carbon footprint.

Saving five tonnes of carbon and £20,000 of energy every year

– Greenhill School


chat
what
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her
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as

Collaboration & Integration

£37 million

savings through a team approach at the Church Village Bypass

20% cost reduction with added value

– the benefits of long-term collaboration at Newport Schools

Time and time again we see the benefits that flow from organisations working together with a common purpose. We see the added value that comes from individuals working as a team, rather than more traditional 'silo-based' approaches that fail to get the best out of people.

These are fundamental principles that underpin the approach of Constructing Excellence in Wales. Over and over, we see the positive outcomes of collaboration and team integration through our Exemplar and Demonstration Programmes, where we showcase best practices from the construction industry. These projects consistently outperform industry averages in terms of high customer satisfaction, cost and time certainty, improved safety, increased community benefits and positive environmental outcomes. Projects delivered in a collaborative fashion through integrated teams consistently deliver real value for money, rather than just short-term lowest price.

The targets set by government on waste, delivering community benefits and low carbon will not be achieved by pursuing adversarial methods and lowest price. Costs can be reduced, but this must be done by value engineering through an integrated team. That is exactly what the project team did on the Church Village Bypass (see page 17), saving around £37 million in the process.

Carmarthenshire's Property Services made the decision to embark on a contractor framework agreement in 2002. Over the last 10 years the commitment of its senior team, combined with the enthusiasm and expertise of its delivery teams, has turned the framework into an award-winning example of collaboration and integration that has gained real momentum in the past few years (see panel on page 15). We have many more examples of schemes where collaboration and integration have delivered community benefits, minimised waste, made it easier to embrace new systems and technology, or simply provided facilities that deliver value to the end users.

Cardiff City Council and the delivery team led by Cowlin did exactly this at the £14 million Ty Gwyn Special School in Cardiff, which needed to accommodate children with severe physical and mental disabilities. The team consulted extensively with children, their families and staff, as well as other schools nearby and representatives from South Wales Police and the community. The approach was effective because the team worked together. On the Newport High School project, the contractor, Leadbitter, worked with its supply chain from the outset to recycle and re-use materials, and ensure that as many local people were employed as possible.

In Newport and Carmarthenshire, the clients, contractors and supply chain were able to apply lessons learned from other projects because they shared their ideas and experiences as a team. Similarly, the long-term integrated partnership between Kier Wales and Torfaen Council, which has delivered major construction programmes, has led to innovative practices and continual improvement.

This is the kind of approach advocated in our *No Turning Back* report of 2010. If the correct procurement strategy is in place, integrated teams can be developed from the earliest stages – which is when the greatest value can be achieved. That is why the ongoing work of the Value Wales Procurement Steering Group, led by Martin Nicholls and supported by CEW, will be so important over the next twelve months.

Collaboration & Integration

Building Information Modelling (BIM) redefines collaboration and integration. The whole concept of information modelling relies upon a holistic approach to the design, construction and management of the facilities used in the built environment. When used by an integrated delivery team, it will help create and maintain facilities that are safer and more efficient, and have lower carbon emissions and reduced energy bills. This is why CEW is leading a BIM Task Group focused on delivering a strategy for implementing this technology. The Group has the backing of the industry and the full support of Paul Morrell, the UK government's construction advisor. CEW will liaise directly with Mark Bew, the chairman of the government's BIM working group, as well as working in partnership with BRE.

Over the coming year the Value Wales Procurement Steering Group and the BIM Task Group, combined with the ongoing CEW Exemplar and Demonstration Programmes, will deliver more evidence that team working is the only way Wales will be able to meet its challenging sustainability targets, while still delivering value for money.

Typically 90% construction waste diverted

from landfill on collaborative projects

Zero accidents through integrated teams

Case study — Carmarthenshire County Council partnering framework

Carmarthenshire County Council's contractor framework agreement won the Integration & Collaboration category at the 2011 CEW Awards. It brings together almost 20 local contractors, several supply chain organisations and key stakeholders to facilitate public sector construction projects.

Managed by the council, it was introduced to encourage a more holistic approach to procurement and delivery, but has also become a source of knowledge and expertise for third party organisations such as police, fire and health services. More than that, the council believes the framework has changed client culture in Carmarthenshire. Organisations involved in a framework partnership have a greater sense of 'team ownership', are willing to accept guidance and advice from other parties, and are more likely to appreciate the impact of a project on the wider community.

The framework is based upon the Welsh Water AMP 3 partnering model and began to build up real momentum from 2007 onwards. It has already facilitated £160 million worth of construction investment in Carmarthenshire, including renovation of housing stock and the building or refurbishment of schools, leisure centres and theatres. The council has built up strong long-term relationships with local contractors, and the collaborative way of working has enabled the sharing of knowledge, learning and practices across projects. Suppliers have been immersed in the Constructing Excellence principles and SMEs have gained access to business planning, IT and H&S training.

Working with training and education providers such as Carmarthenshire Construction Training Association Limited and Coleg Sir Gar, the framework has also facilitated the delivery of community programmes. For example, a partnership called Building Your Own Future in Sir Gar has given 120 people living in the most deprived parts of the county the opportunity to learn basic construction skills.

One Wales: One Planet

51% reduction in carbon emissions

at Church Village Bypass

Sustainability

What is sustainability? It's more than just the environment.

It's about living and working in ways that don't jeopardise our future economic, social and natural resources. When we build things we need to give as much consideration to the way we manage our human and natural resources as we do our financial ones. We need to broaden our awareness so that we understand the true cost of the decisions we make. We need to achieve a balance. We need to deliver real value for money, not just lowest cost.

This is why the changes in government and industry practices that we promote through CEW focus on economic, social and environmental criteria and strive to create a balance between them. This is how we define value for money.

Environmental impact is the area we tend to focus on first – whether it is protecting crested newts during the construction of the A499 in Gwynedd, installing innovative photovoltaic panels on Greenhill Primary School in Caerphilly, or the partnership between the Cartrefi Conwy housing association, its contractor G Purchase and Crest that created the opportunity for a major programme of recycling around the refurbishment of 30 homes. The concept is one of respect for the surrounding area affected by the road, home, hospital or school.

No less important is the social impact a project has on local people, which is all about ensuring a scheme makes a positive contribution to a community. Construction can and does affect lives in and around where it occurs. It can create employment, give hope and play a big part in regenerating an area.

But we can't and shouldn't ignore the economic argument. We just need to view it in a holistic way without focusing on lowest initial cost. By working together, the project team on the Church Village Bypass were able to save around £37 million by applying value engineering processes at the design stage, and achieve cost savings across the scheme while retaining value in the project.

Case study — Church Village Bypass

The Church Village Bypass, designed to ease congestion on the A473 in South Wales, is a landmark £90 million civil engineering project that has been held up as an exemplar of good practice and won the waste category at the 2011 CEW Awards.

Delivering a sustainable project was a key priority for the client. It finished three months early, came in £1 million under budget, and has reduced traffic through local villages by 70%. The involvement of an innovative engineering team, coupled with a collaborative working approach that engaged the client from an early stage, was highly beneficial in tackling challenges such as waste minimisation, preserving biodiversity, protecting wildlife habitats and reducing disruption to local people. The main contractor, Costain, assembled an integrated team able and willing to innovate and adapt. For example, value engineering at the design stage yielded savings of £37 million through such measures as highway realignments and use of pre-cast bridge structures. Improvements to the original scheme had the effect of reducing carbon emissions by 51%.

Ambitious targets were set for use of recycled materials – all imported stone and primary steel products contained at least 60% recycled content, for example, while the bypass was constructed of over 70% recycled aggregate, was sourced from local suppliers.

The construction threw up engineering and environmental issues that were frequently turned to the project's advantage. The 300,000m^3 of displaced soil was reduced to just 50,000m^3 of surplus, with much of the soil used constructively as noise bunds or general landscaping fill. At one point the bypass cut through an old landfill site containing 300,000 tyres and 80,000m^3 of pulverised fuel ash; this mass of potential waste was transformed into a usable material that was deployed on the project, avoiding landfill costs and reducing the need to import virgin materials. Overall, over 90% of the project's waste was diverted from landfill – a considerable achievement for such a vast undertaking.

Sustainability

100% added value to local economies through construction

Collaborative approaches across the supply chain ensure that construction teams can achieve a balance and do deliver truly sustainable projects.

This collaborative approach is being demonstrated by projects across Wales and is generating real value for money. Such projects have gone much further than simply meeting sustainability targets for waste, low carbon and benefits to the community. They are proving that efficient processes and systems deliver longer-term benefits, help create a cost-effective low carbon society – and save cash. Generating employment for local people puts money back into the community, adding value right where it counts. Building sustainably means not wasting money on short-term solutions but planning ahead to minimise waste, diverting it away from landfill and re-using as much material as possible. This is where the true value lies.

The award-winning Passivhaus scheme (see page 11) is a good example of this. Applauded for its airtightness and all-round sustainability, it will continue to be assessed for a further two years or more to test its whole life costs compared to a traditionally built new building. This matters because a key deterrent to constructing low energy buildings is the relatively high initial build cost. If this can be offset by reduced energy bills and a reduced carbon footprint throughout the life of the building, the arguments in favour of investing in low energy design become more compelling – hence we can see if it provides real value for money.

This 'whole life' view is what CEW champions; only by considering the outcomes further down the line can we see the value. It is central to work we are currently doing with Value Wales in our report on community benefits from construction. It is why our Low/Zero Carbon Hub is researching into green mortgages and setting up a database of sustainable materials. It is also why our Green Compass Scheme, which gives clients and contractors the certainty that their waste is being managed correctly, now has over 80 participating waste handlers.

Case study — Greenhill Primary School, Caerphilly County Borough Council

When Caerphilly County Borough Council commissioned a replacement building for Greenhill Primary School, its climate change agenda required the new £4.5 million facility to be highly energy efficient and sustainable. A strong focus on energy efficiency during design and construction resulted in a state-of-the-art building whose carbon footprint has been reduced by over 30 tonnes per year compared to the school it replaces. Its use of wind and solar technology has also set a new standard for energy self-sufficiency.

The new school is the first in the UK to achieve an A+ EPC rating and it gained a BREEAM excellent score. Features such as highly insulated walls, floors and roof, a combined heat and power unit, high-efficiency gas condensing boilers, efficient lighting with PIR and daylight-sensing controls, and rainwater harvesting have all contributed to an annual saving of £3,000 in direct energy costs. The big story is on the roof, where four wind turbines and the largest array of solar photovoltaic panels on any UK school will generate more electricity than the building will use. While the school will need to import electricity equivalent to 9.5 tonnes of carbon, this will be more than offset by the electricity generated, which is equivalent to 14 tonnes of carbon annually.

The PV array, not part of the original design, became viable after the UK government changed the law in 2010 to enable local authorities to benefit from feed-in tariffs for renewable energy. Caerphilly Council expects to earn £750 a year by exporting surplus electricity to the grid, while the feed-in tariff for the wind and PV energy will be recovered, producing a further £16,500 of annual revenue. Lessons learnt from the project are likely to influence the design of future local authority buildings, in particular the value of direct investment in renewables.

70 to 80% local labour employed

on best practice projects

Case study — Cartrefi Conwy

Cartrefi Conwy began WHQS refurbishment work on 30 non-traditional properties on the Maes y Dre estate, Conwy. The majority of the tenants were living in fuel poverty. The properties had structural problems, were difficult and expensive to heat, poorly insulated, single glazed with inefficient heating systems and suffered severe damp and condensation.

Through working closely with the supply chain and the Maes y Dre community, Cartrefi Conwy were able to deliver an on time on budget scheme which brought benefits to the community beyond the physical refurbishment and achieved tenant satisfaction levels of 92 per cent.

Local labour accounted for 90 per cent of the work force. Through the Pathways to Apprenticeship scheme, work experience opportunities, six 5 week work placements and one full time apprenticeship were provided. Energy efficient boilers with solar hot water and cavity and loft insulation have dramatically reduced fuel bills, and SAP ratings have increased to 72.

Working in partnership with local social enterprise Crest Cooperative, the waste generated by the programme has been used to the advantage of the community. Crest helps disadvantaged people increase their skills and find employment. Crest collects and sorts materials such as sanitaryware, kitchen units, timber and ceramic tiles, then resells them as usable products to local businesses and members of the public through its retail outlet or recycles them. This generates income for Crest's training activities and helps raise public awareness about the benefits of salvaging and recycling over disposal. Crest has been able to reuse and recycle more than 90% of all the waste created by Cartrefi Conwy's WHQS improvement programme. Over the life of the programme, the process of transporting and sorting through the waste will have provided work experience and training for over 200 people.

Governance & Finance

Constructing Excellence in Wales is grant funded by the Welsh Government. To that end its role, actions and outputs are monitored and reviewed by the Environment & Sustainability Directorate led by John Griffiths AM.

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CEW is a limited company with a Board of Directors and chaired by Richard Wilson OBE, Deputy Director enabling Government Portfolio Division. It is managed and maintained by its chief executive, Milica Kitson and an operational team of directors: Paul Jennings, responsible for the Waste Programme and Ed Evans, director for Exemplar Programme. CEW manages and delivers the work of the Wales Low Zero Carbon Hub. The whole CEW team amounts to six managerial and administrative employees plus three full time operational directors and the chief executive.

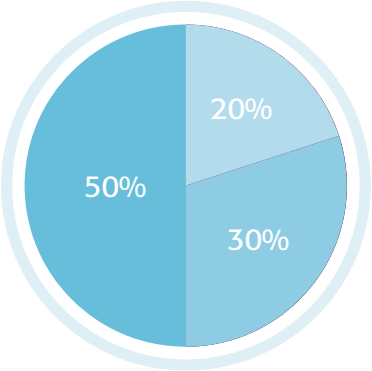
CEW engages with and has the support of a range of different stakeholders from the whole of the built environment in Wales. These include clients in the public and private sector as well as industry representative bodies and individual companies from the industry supply chain. We cannot list them all here but a selection are mentioned throughout this report to give a flavour of the reach and impact of CEW's work.

The grant and the allocation of the grant breakdown is as follows:

50% Waste Programme

30% Core – Demonstrations, Exemplar, Best Practice & Clubs

20% Low Zero Carbon Hub



“The principle barrier to reduced cost and increased growth is lack of integration”

– Paul Morrell
UK Government Construction Advisor

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