

Environmental Considerations

BREEAM 'Excellent' rating and an EPC Rating 'A' were achieved

The scheme was assessed under the BREEAM, Education 2008 scheme, targeting an "Excellent" rating.

Additionally, it was assessed under the Energy in use - EPC Rating, targeting a rating of "A"

In consideration of the challenges associated with delivering truly sustainable projects the contractor appointed a BREEAM champion. This role extended beyond the basic evaluation of credits directly within the sphere of influence of the supply chain to the broader project team to ensure that all evaluated options consider the BREEAM impact.

By regular monitoring of the BREEAM process, reports to the project team and periodic BREEAM assessments, the project was continually measured against the initial assessed credit matrix.

This continuous review by the whole team from the early stages allowed alternative design solutions to be tested. This resulted in financial, programme and quality savings to the scheme whilst consistently delivering additional credits at design stage. This maintains confidence that the team can deliver the overall credits and score.

The whole process was further supported by BIM.

Site Waste Management Plans (SWMP) used to reduce waste volumes to landfill

The project team were involved in other projects with the client and this allowed cross project benefits to be considered and delivered particularly with respect to construction waste management. This was coordinated through the development of a SWMP. The final phase of an active site at Caer Nant Primary School involved significant cut and disposal of material to form a new playing area. Through the collaborative working arrangements the local supply chain were able to stockpile the material in a local quarry for its subsequent reuse 12 months later on the new project which had significant fill requirements. This cross-project arrangement resulted in a reduction of material to landfill of around 5000 cubic metres, a net saving of over £100,000 in disposal and transport costs and further material import savings on the new scheme against cost plan budget.

Overall 90% of waste was diverted from landfill equating to 8.9m³/100m² of waste.

A sample copy of the SWMP is available from this link: <http://www.cewales.org.uk/about-us/publications/>

The strategies developed through the lessons learnt on this scheme have impacted on the supply chain processes and are delivering real and transferable efficiency savings on this project which will benefit future projects.

This experience could and should have similar benefits across the region but will require coordination across Client organisations so that economies of scale can be achieved.



Social Considerations

Learning, training and employment opportunities for local communities were maximised.

The delivery team ensured that the learning from their experience of delivering the first BIM school project in North Wales was shared through a series of presentations and timely feedback to the industry on the benefits and challenges of embracing BIM during the design and delivery of a live project.

The project was used as an example project for the North Wales BIM regional Hub and the National BIM4SME group through which the experiences of the team (both positive and negative) are being shared with the wider SME population through other organized events such as the Constructing Excellence North Wales Best Practice Club

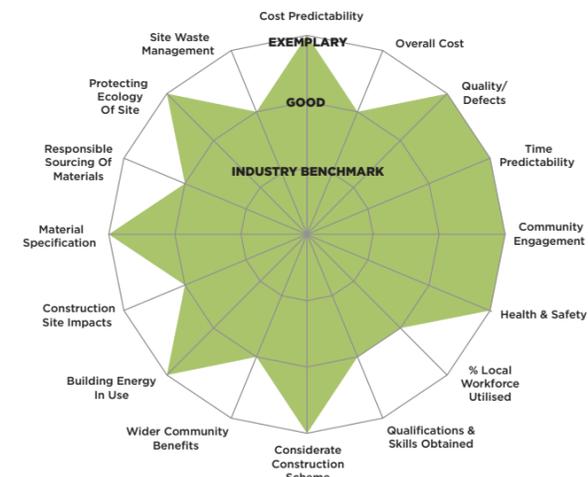
Through direct liaison with the BIM4SME group, local colleges and further education providers, the team organised placements and visits for young people to gain experience. Whilst this is usually a "Community Benefit" aspect, the learning opportunity is wider here, as the demonstrable BIM experience that will be provided through such work experience placements and training workshops will enhance the employability of young construction graduates across the region.

Experiences from this project were also used to develop an all-Wales BIM Toolkit for clients which was prepared by CEW for the Consortium of Local Authorities Wales (CLAW).

DESIGN & CONSTRUCTION CASE STUDY



Ysgol Ty Ffynnon, Shotton



Flintshire County Council's School Modernisation Strategy, published in 2009, places special emphasis on community focused schools provision. These buildings expand the range of activities that take place in a school as they seek to provide a range of services and activities, often beyond the school day, to help meet the needs of pupils, their families and the wider community.

This principle underpins the provision of Ty Ffynnon and the vision for the 360 pupil school is that, working with local partners, the school can help to develop the community it serves.

Through a combination of collaborative procurement processes and a proactive, client focused approach from the delivery team this project is addressing one of the main issues facing the construction industry at the present time, namely the application of Building Information Modelling (BIM) and, in this case, how locally based SMEs are responding to the challenges of implementation - and showing what can be done by relatively small organisations.

Clearly BIM is also of significant interest to the wider construction industry and this particular project demonstrates how the BIM approach supports better project delivery, efficient management of project changes, cost reduction and better performance of the asset.

This case study also supports the work of CEW and the Consortium of Local Authorities Wales (CLAW) in developing a BIM toolkit for public sector clients in Wales and the work of the Welsh Government via the Construction Procurement Steering Group.

PROJECT DETAILS

Client	Flintshire County Council
Architect	Flintshire County Council
Contractor	Read Construction Holdings Ltd
BIM support	Lovelock Mitchell Architects
Timeline	78 weeks commencing January 2013
Project cost	£6.6m
Project size	2,083 m ²
Contract	PPC 2008
Procurement Strategy	2-stage design and build with Early Contractor Involvement (ECI)

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What is an Exemplar project?

An Exemplar is defined as **'something worthy of being copied'**. The Exemplar programme has been developed to help identify the reasons why certain projects are successful in a standardised, quantifiable way, and to share with the industry what enabled these successes.

An Exemplar considers all aspects of sustainability, including economic, social and environmental. Projects must demonstrate that they have been innovative in one or more of these aspects in a way that exceeds normal industry practices, while achieving at least minimum standards in all other areas of the project.

This is to demonstrate that the scheme is well rounded and has not sacrificed one aspect to be successful in another, while also incorporating best practice measures that can advance the state of the industry. An Exemplar project therefore reflects the ideal industry goal of achieving a scheme's primary function aims in a sustainable way, at acceptable costs.

Case studies are prepared at 3 Key Stages Post - Design / Post - Construction Post - Occupation

This ensures that lessons learnt can be demonstrated throughout the development of the project.

What will make the project successful

- Early Contractor Involvement (ECI) to establish an integrated project team from the outset
- Extending the quality based procurement criteria for appointing the Tier 1 supply chain to other key supply chain partners to foster the collaborative ethos
- A transparent approach to risk management and incentivizing of the supply chain to foster a culture of innovation
- Significant use of Building Information Modelling (BIM) to improve stakeholder engagement and the design and construction processes
- Significant use of performance management systems

Notable Achievements

- Building an integrated team from a relatively early stage in the project via a procurement strategy focused on quality and price (despite market pressures driving clients towards lowest priced selection)
- Achieving greater value through Building Information Modelling (BIM) and demonstrating its application by a relatively small client, contractor and designer
- The use of local supply chains to maximise the value of investment in the local economy
- The first tier quality price selection criteria extended by the contractor to key parties in the supply chain to reinforce the collaborative nature of the project
- The adoption of simple performance management systems and the use of KPI's to evidence performance improvement and value for money and drive continuous improvement
- Processes developed to support the targeting of a BREEAM 'Excellent' rating and an EPC Rating 'A'
- Site Waste Management Plans (SWMP) used to reduce waste volumes to landfill
- Learning, training and employment opportunities for local communities maximised

Economic Considerations

Building an integrated team from a relatively early stage in the project via a procurement strategy focused on quality and price (despite market pressures driving clients towards lowest priced selection)

As a client, Flintshire County Council has committed to the best practice principles of collaborative working, early contractor engagement and long term value as opposed to lowest bid price. They repeatedly demonstrate their leadership and commitment by procuring works through a 60-70% quality element. At a time when market pressures were driving many clients towards lowest price based selection they continued to demonstrate strong leadership and a desire to select committed and innovative partners to deliver projects to cost and time certainty and with high levels of added value. This approach helps to drive lower costs in the long term as waste is driven out of the project. This approach to partner selection established a truly integrated team. It enabled a collaborative approach to deliver added value through efficiency savings in the remaining design development stage. It also allowed better value and risk management and a greater focus on integrating operational requirements. This approach to procurement and integrated teams is replicable on other projects at Flintshire and through other public clients in Wales.

Achieving greater value through Building Information Modelling (BIM) and demonstrating its application by a relatively small client, contractor and designer

BIM Level 2 was not a client requirement at the outset of this project. However, having carefully selected their partners, the contractor identified BIM as a natural progression to their existing partnering relationship with the client and as a business development opportunity for themselves. As a result they offered to introduce the BIM process to the scheme whilst maximizing the opportunity for up skilling of all key partners and supply chain members ahead of the 2016 BIM target.

All project team members, whilst committed to delivering BIM through their projects, undertook a BIM maturity assessment and this showed them to be at different stages of maturity and implementation. By working together, they shared strengths and experiences and developed an action plan with deliverables to show how the project would benefit from a BIM approach.

This structured approach to team maturity assessment is a transferable experience which can be taken to other projects and clients.

Aligned with PAS 1192, the team established a Common Data Environment, hosting all design, programme, cost, spec, BREEAM, BIM and H&S information, which was available to all supply chain members who are able to access this system and use it within the extent of their competence. This demonstrates that BIM is applicable to and can be utilised by all supply chain members.

The use of BIM led to savings on project costs and programme at the design stage. An example of this was the provision of 60 additional spaces within the original budget. This need was identified at very short notice just before construction work was due to commence. The availability of BIM allowed options to be considered in detail in a very short space of time and for the impacts on programme, cost, quality, the wider environment and community to be re-assessed quickly without extensive re-working of drawings and specification

Another major benefit of the BIM approach was the ability of the team to better engage with stakeholders and review all design proposals through 3-d visuals without incurring significant re-drawing costs and time. An example of this was the engagement, early familiarization and briefing of school staff and asset maintenance teams using BIM. This is already showing benefits and the combination of consumption reports from smart meters and the agreed Soft Landings post occupancy evaluation reports will define and quantify the efficiency gains achieved on this project during the post-occupancy stage.

The use of local supply chains will help to maximise the value of investment in the local economy

By engaging with the Welsh Governments Supplier Development Service a series of workshops were held to raise awareness of opportunities within the local supply chain (many of whom are micro SME's).

Although no specific client targets were proposed at the initial tender stage the team was committed to maximising spend within the local economy and established their own targets of:

- 2 new entrants
- 5 apprenticeships
- 187 work experience opportunities

These were achieved over the course of the construction project.

Furthermore, 57% of spend was retained locally and 55% of the labour-force. These are impressive figures bearing in mind the border location of the project.

The first tier quality price selection criteria was extended by the contractor to key parties in the supply chain to reinforce the collaborative nature of the project

"Key" supply chain members were appointed early in the project development process on a quality/cost basis mirroring the tier 1 appointment. Through this collaborative, early appointment strategy, their input to the design development phase and expertise maximizes the value to the project. Also by following a similar format to the appointment of the main contractor the principles and core values of collaboration were driven through the supply chain and fostered within the delivery team.

The adoption of simple performance management systems and the use of KPI's were used to evidence performance improvement and value for money and drive continuous improvement

The team utilised performance management systems to drive continuous improvement by monitoring trends in performance and benchmarking outputs against industry standards, with a clear visual management system highlighting any shortcomings. The reporting process comprises a high level "executive summary" giving a health snapshot of the project at a point in time. Additional tiers of data drill down behind the summary to provide supporting data. **Copies are available from this link: <http://www.cewales.org.uk/about-us/publications/>**

Continuous Improvement was managed through an ISO 9001 Corrective and Preventative action tracker portal. This online portal tracked improvement actions and lessons learnt. **A sample copy is available from this link: <http://www.cewales.org.uk/about-us/publications/>**