Constructing Excellence in Wales
Demonstration Event

YSGOL FFWRNES

Ysgol y Ffwrnes

Demonstration Event

5th March 2014

ADEILADU ARBENIGRWYDD YNG NGHYMRU

CONSTRUCTING EXCELLENCE IN WALES

Welcome

Milica Kitson
Chief Executive
Constructing Excellence in Wales

Agenda

David Harris	-	Welcome Introduction
Introduction	-	Carmarthenshire County Council - *Paul Roberts*
Contractor's Insight	-	WRW Construction Ltd - *Jon Williams*
Architectural Design	-	Austin Smith Lord - *Andrew Lewis*
Ground Conditions	-	CB3 Consult - *Dylan Gravell*
BREEAM	-	Melin Consultants - *Matthew John*

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Introduction

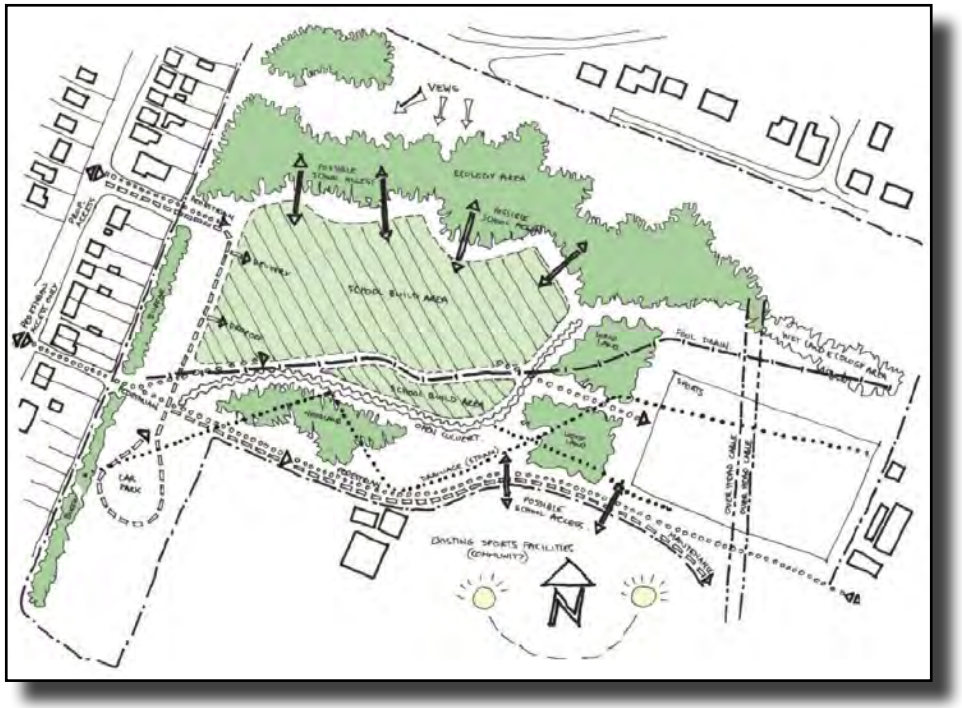
Paul Roberts
Carmarthenshire County Council

NEED FOR THE DEVELOPMENT

- Strategic review of Welsh Medium Education in the Llanelli Area.
- Ysgol Ffwrnes is one of only three Welsh Medium Primary Schools in the area.
- Inadequate facilities, poor working conditions and space restrictions.
- Currently no school nursery provision.
- 70% growth in the years between 2004 and 2009.
- Site area of 19,300m² required to satisfy Carmarthenshire County Council standards.
- Existing school site is 3,950m².
- Existing school access is poor, posing potential dangers to children walking to school.
- The school could not be expanded on its present site and a new site was necessary.
- A new two form entry primary school, was necessary to meet increasing demand for Welsh Medium Primary education.
- The new school will replace the existing accommodation and provide 420 primary school and up to 60 nursery places.
- The County Council conducted a review of sites in 2009 prior to selection of the proposed site.

THE SITE

- Nine potential sites initially identified.
- Chosen site located east of Denham Avenue and north of the tennis club and cricket ground at Stradey Park.



Constraints:

- Site features and orientation preferences determined the build area for the new school limiting the on-site location options.
- Trees, habitats, watercourse, foul drains, access requirements,height of water table and relief.
- Build area is on the lower slope of the site, moulded into the contours to reflect the topography and achieving an east-west orientation to optimise natural light and reduce the problems of glare.

DESIGN DEVELOPMENT

- Throughout the development process, the design team have worked in close collaboration with all stakeholders.
- Together they have sought to ensure that the proposals reflect the needs of the community, with a particular focus on the needs of the teachers and pupils.
- Design workshops were undertaken throughout 2010 at the visioning / concept stage, providing the foundations for the design.
- The DQI approach was used in 2011 to capture and explore views on design including both functional and aesthetic aspects.
- The enthusiasm of stakeholders present at the workshops demonstrated broad support for the project and a desire to be closely involved with the ongoing design development and the finished building.

Children's imaginative and inspiring ideas

Parents, Staff and Governors

Teachers and staff discussing educational images

DESIGN CONCEPT

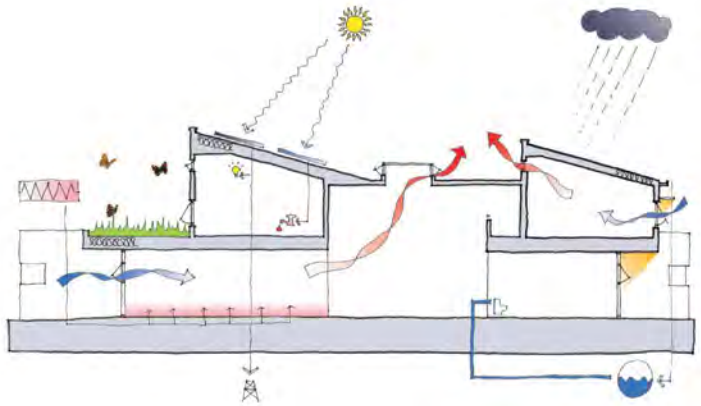
- Site layout arranged to optimise outdoor learning and activity space whilst preserving the established landscape character and form.
- Earthworks created a stepped platform in the centre of the site to accommodate the school building.
- Classrooms located to open out onto hard play areas leading to soft play areas.
- Areas separated for Infants / Nursery, Key Stage 1 and Key Stage 2.
- Hard and soft play areas surround the building at differing levels on the north, south and east sides.
- Existing woodland to the north and east considered important.
- A MUGA will be provided on the south of the stream.
- A second MUGA and artificial turf pitch will be situated in south western corner.
- Overspill car park provided.

INTRODUCTION - CARMARTHENSHIRE COUNTY COUNCIL

- Building designed around two linear classroom arrangements over two floors with central corridors connecting to a central ‘heart’ space.
- The ‘heart’ space acts as a hub for the school and forms a focus for the community and communal facilities.
- Early Years: Nursery, reception and key stage 1 located on ground floor.
- Ground floor classrooms have direct access to the outside and inner courtyards providing a variety of learner settings to facilitate the delivery of the foundation phase.
- First floor is accessed from the double height ‘heart’ space where a suitably wide staircase and lift is provided up onto a landing area that overlooks the ‘heart’ space and hall below.
- Key stage 2 classrooms located on first floor.

INTRODUCTION - CARMARTHENSHIRE COUNTY COUNCIL

- A roof terrace incorporating covered areas has been provided above the nursery / reception classrooms providing all key stage 2 classes with direct access to an outside learning environment.
- Roof terrace will have south facing views out to sea and down into the courtyards below.
- External access stairs are provided down from the roof terrace onto the playground.
- Sustainability has been a key consideration in the design development.
- Two different but connected aspects to the zero carbon aspiration and BREEAM Excellent target rating - adoption of passive principles of environmental design using the hierarchy; reduce energy demand, maximise energy efficiency and employ LZC energy sources.



PROCUREMENT

- Two stage process.
- NEC3 Option C Target Cost with Activity Schedule and Contractor's Design.
- First stage - bid contractors chosen from Carmarthenshire County Council's framework agreement.
- WRW selected as preferred contractor to develop the design further with their own design team to work alongside Carmarthenshire County Council's Technical Services Department.

- Second stage procurement duties:
  - Monitoring and commenting on the design as it proceeded to stage D.
  - Development of the design and planning submission including EIA.
  - Securing Building Regulation approval.
  - Fully comply with CDM Regulations.
  - Secure BREEAM Excellent.
  - Fully prepare and market test all work packages.
  - Agree target cost based on contractors full design.

- Approach helped foster a partnering ethos with WRW.
- Approach was beneficial in getting early contractor design input which led to a greater degree of buildability and an early site start in the form of an enabling works package.
- Carmarthenshire County Council's framework helped in relation to time, quality and risk factors.
- Developing long-term relationships and future work streams which has enhanced the success of the project.

Contractor’s Insight

Jon Williams

WRW Construction Ltd

THE BID PROCESS

Interpreting the brief

- What are the clients expectations?
- What are the clients aspirations?
- Who are the wider stakeholders?
- What will be our differentiator?
- What are our win-themes?

Assembling a Team

- Underlying philosophy of each business is paramount.
- Focus on value alongside cost.
- Conducting appraisals of the possible outcomes depending on Bid Strategy.

Compiling the Offer

- Work in a collaborative and integrated manner to represent the project.
- Implement the differentiators.
- Regular and concise meetings.
- Sharing of information in a collaborative manner to look at design discipline interfaces.

MAKING ASPIRATIONS HAPPEN

- Due to the proposal for a BREEAM 'Outstanding' building rather than 'Excellent' the team needed to determine viability quickly and efficiently during the second stage.
- Establishing an integrated delivery team with Carmarthenshire County Council was central to achieving the aspirations laid out in the bid.
- Team was jointly led by Carmarthenshire CC and WRW with each design team partner taking responsibility for their sections of work.
- Melin undertook a fortnightly snapshot of project progress using tracker+.
- Melin identified and highlighted the key credits early and focused the team on maximising each opportunity.
- Each design team partner was afforded the ability to exercise autonomy within the brief.
- Communication, Communication, Communication.
- Follow BSRIA Guidance by designing with the end in mind following workshops to determine the most suitable specifications for end users;
- 700m² of PV to be used for the Feed in Tariff.
- Central energy centre.
- Automatic control of lighting, occupation and lux sensors.
- Air source heat pump feeding under floor and radiators backed up by gas fired condensing boilers.
- High efficiency gas fired water heaters.
- Natural ventilation with CO^2 monitoring.
- 20,000 Litre Rain water harvesting tank.

PROGRAMME

- Programme dictated by Welsh Government Spend Profile
- Original Programme - 123 Week Build resulting in an April 2015 handover
- Revised Programme - 93 Week Build resulting in an October 2015 handover

- Programme betterment achieved by;
  - Effective management of the NEC form of contract by both parties
  - Regular communication
  - Early contractor engagement
  - Supply chain buy-in
  - Close communication
  - Regular site visits
  - Local workforce
  - WRW deployed many directly employed staff to the project

SCHOOL LIAISON

Pupils and Councillors Making Insect Hides

Pupils and Teachers Making Bat and Bird Boxes and Insect Hides

Pupils Making Insect Hides

Pupil Site Visit

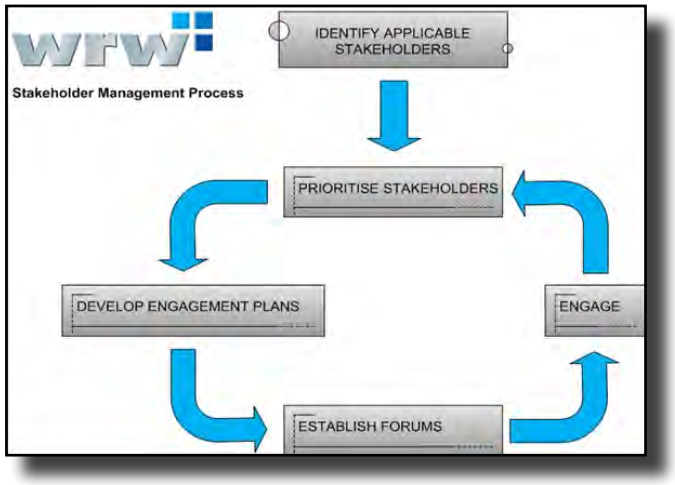
Pupils Putting up Bat Boxes

Pupils Putting up Bird Boxes

Pupils and Councillors Site Visit

Pupil visit to Shufflebottom

COMMUNITY ENGAGEMENT



- WRW formulated a stakeholder plan
- By using local knowledge and Carmarthenshire CC experience we identified key stakeholders and liaised at an early stage in conjunction with the DQI process.
- The team met as a collective to discuss with the key stakeholders the implications of the development on them as a business in order to gain support.
- Meetings were held at WRW's Head Office and also at the respective organisations headquarters.
- Meet the Buyer Event
- WRW undertook a MTB event in association with Constructionline to promote supply chain opportunities at Ysgol Ffwrnes and other projects
- Total of 53 Contractors, totalling value of £5.2m
- 43 have offices in Wales, totalling £4.5m
- 42 are SME's, totalling £3.5m

TR&T

- WRW prides itself on developing its staff and putting back to the community.
- Dedicated resources for the management of existing staff and TR&T requirements.
- 20,920 hours of paid work created for locally unemployed people.
- 11,480 hours generated for apprentices, trainees and new entrants.
- WRW liaise regularly with CCTAL (Cyfle), Workways, Job Centre, Construction Youth Trust.
- TR&T is deemed non-core within the project however the lasting legacy of the project is of paramount importance to WRW and Carmarhenshire County Council.

Andrew Bermingham

- 45 Year Old single father who was 7 months unemployed. Andrew has a disabled son which results in him needing an understanding employer.
- Worked with WRW through Workways before being taken on permanently.
- "Fair do's to Workways. They gave me a push to develop new skills and they put me on some really useful courses. If they said they would do something to help, they would do it."
- "WRW have been very sensitive to my needs with my son. It's brilliant to have this job."

Ashley Phillips Lewis

- Ashley worked with WRW on a number of projects through the Award Winning Carmarthenshire Shared Apprentice Scheme as a carpentry apprentice to gain experience in order to complete his qualifications.
- After completing his craft training, WRW offered him a full time Carpentry position.
- "The projects I have worked on have been very interesting and the company try to vary my experience so that I can continue to develop my craft."

SOFT LANDING

- Although not a contractual requirement WRW will follow BSRIA Soft Landings Guidelines during and post handover.
- This will result in;
- Implementing a 3 Year Aftercare Process
- Annual Post Occupancy Evaluation (POE) Assessments
- Interim Site Visits to ensure the building is functioning as designed
- Central to the success of the Soft Landing process is the firm implementation of a 'No Blame Culture'
- The POE are to ensure the building is being used efficiently and not as a means of extending a defects period
- Shared responsibility for Client and Contractor to reflect on end user feedback and look to mitigate these issues in the future by design changes

Councillor site visit

Architectural Design

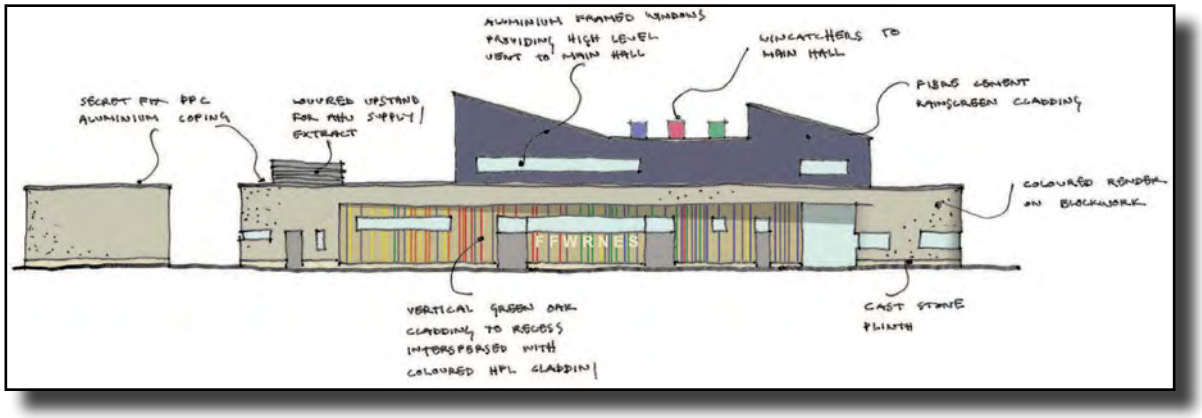
Andrew Lewis

Austin Smith Lord

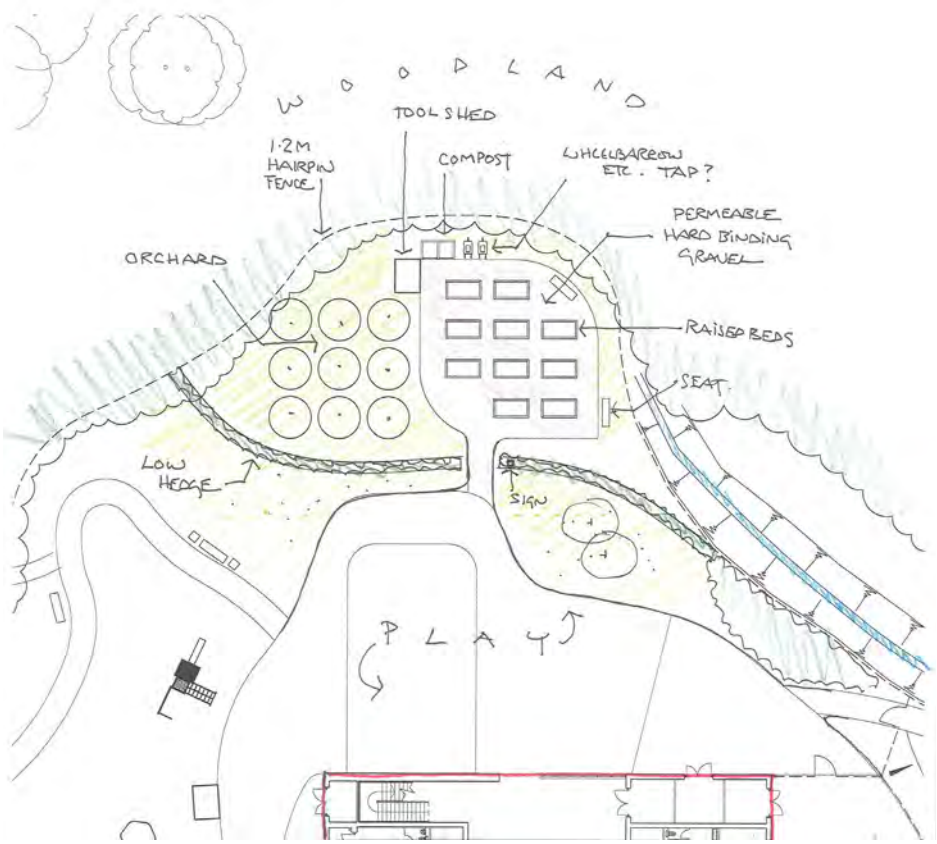
‘EXCELLENT’ TO ‘OUTSTANDING’

- Early Contractor Involvement
- Team Collaboration
- Design Team Ownership
- Clear Client Decisions
- Proactive BREEAM AP Involvement
- Achievable
- Affordable
- Beneficial

DESIGN TEAM OWNERSHIP

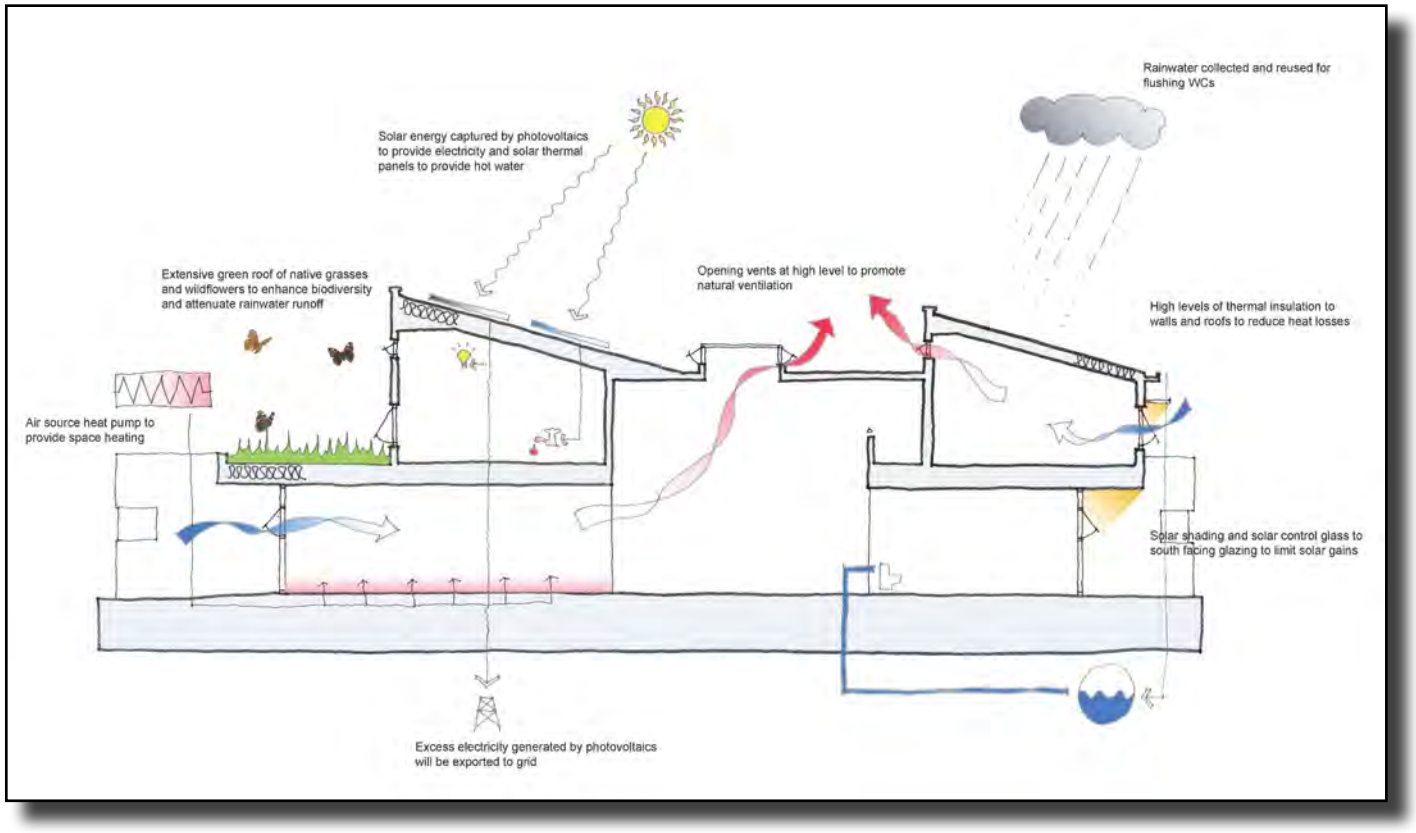


LANDSCAPE DEVELOPMENT

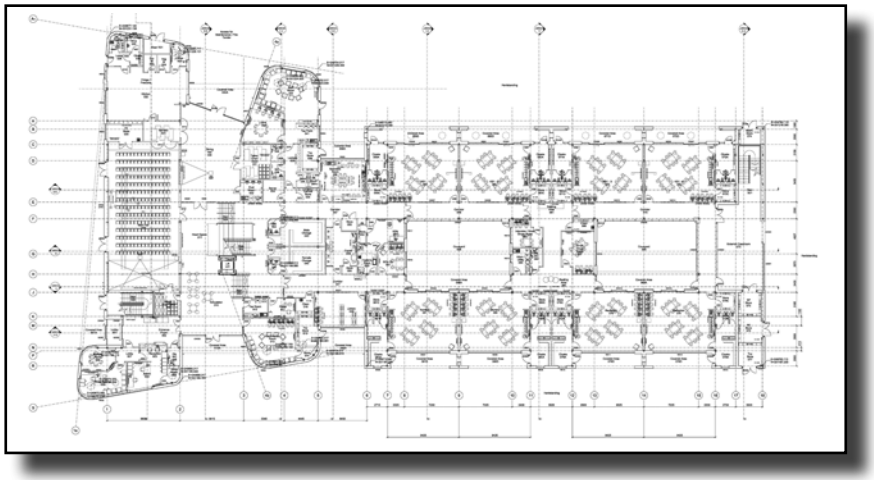


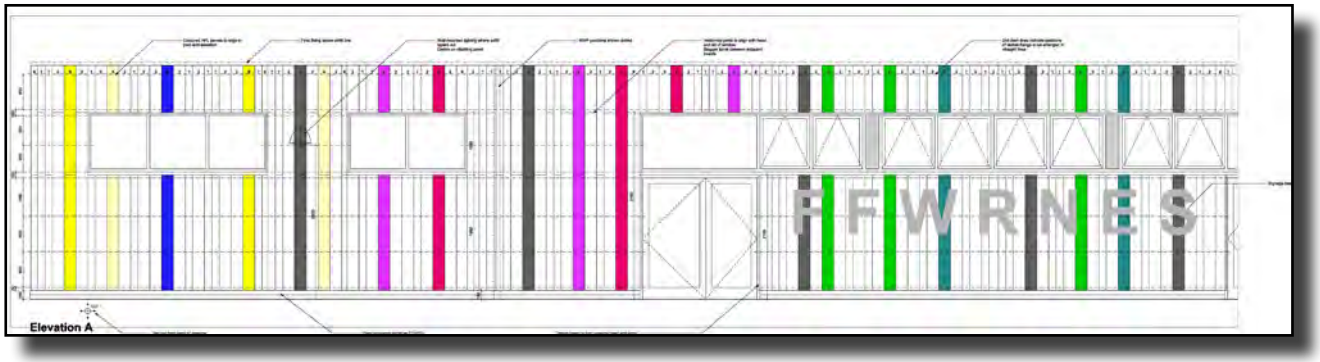
Ysgol Ffwrnes Eco Council Pupils assembling Insect Hides, Bird and Bat Boxes for use in the woodland area of the new School.

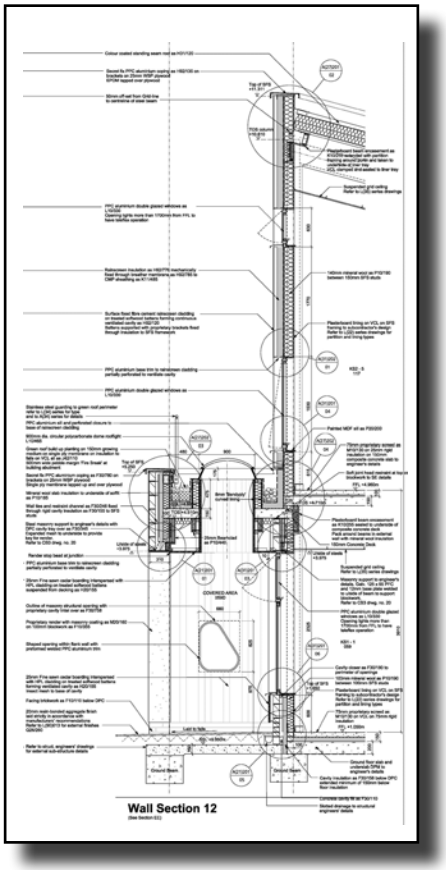
ENVIRONMENTAL SUSTAINABILITY



TECHNICAL DEVELOPMENT





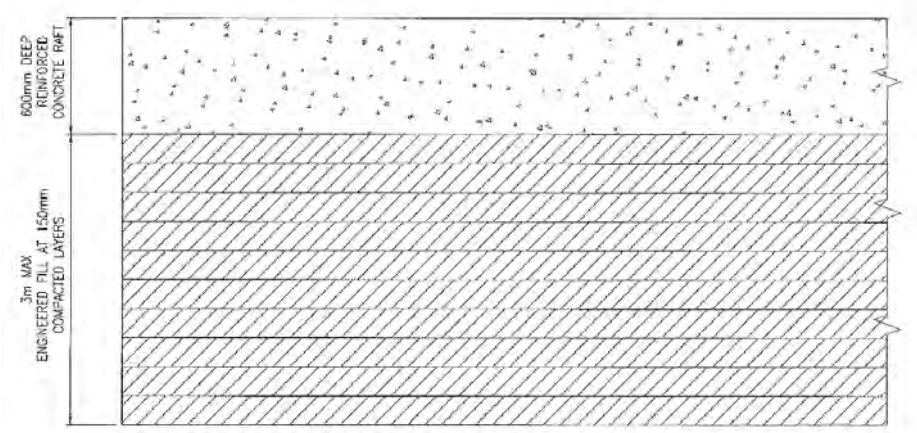


Ground Conditions

Dylan Gravell
CB3 Consult

INITIAL ASSESSMENT STAGE C

- Two Aquifers identified across the site. One being within the sandstone layer and the other being in the gravel layer within the superficial deposits.
- The upper cohesive layer across the site was believed to be acting as a partial confining layer containing the secondary artesian water level.
- Original Stage C design was to limit excavation into the upper cohesive layer to a maximum of 0.5m to ensure that sufficient clay was kept in place to confine the artesian water.
- This would have necessitated the importation of a considerable amount of fill material to create the building plateau. This would require up to 3m of fill at the worst location.
- Foundation solutions considered at this stage was a heavy raft foundation constructed off the engineered fill to avoid de-watering of excavations.
- Piling was considered but deemed to be risk due to the ground water issues.



ADDITIONAL GROUND INVESTIGATION

- D&B contractor appointed.
- Review undertaken into the geotechnical investigation.
- This identified some potential supervision issues with the original investigation works.
- Further GI work undertaken to carefully investigate the secondary artesian water layer within the superficial deposits.

- Investigation works involved a combination of trial pitting, cable percussive boreholes and rotary percussive boreholes.
- Ground water levels within the superficial deposits were carefully monitored during the investigation works. These were recorded as being at between 1.7m to 3.2m below existing ground level.
- No artesian ground water conditions were noted during the investigation works within the superficial deposits.

REVISED FOUNDATION SOLUTION

- The investigation work allowed a revised foundation solution to be developed.
- Site levels could be reduced by 1m without the excavations reaching the ground water levels.
- This made the landscape areas around the site perimeter more useable and removed the need for fill material to be imported.
- Foundation options of either mass concrete trench fill or short precast concrete piles was viable bearing onto the sandstone.
- The option of piling was chosen to avoid working within the perched ground water table.

Original Foundation Solution

- Required 2000 m³ of fill material to be imported.
- Heavy reinforced concrete raft foundation.
- Landscaped areas terraced with steep slopes.

Actual Foundation Solution

- No requirement for fill to be imported.
- Saving in terms of cost and time - estimated 6 week improvement to the programme.
- Significantly less disruption to the adjoining neighbourhood.
- Foundation construction quicker.
- More useable external spaces due to the reduced finished floor level of the new school.

BREEAM

Matthew John

Melin Consultants

OVERVIEW

- Melin assisted WRW with tender submission.
- BREEAM 2008 Education Assessment.
- Planning requirement - ‘Very Good’.
- Client requirement - ‘Excellent’.
- Initial pre-assessment produced by Atkins.
- Initial pre-assessment targeted a ‘Very Good’ score of 67.90%, with options to achieve ‘Excellent’.

Materials	12.5	33.33	4.17
Waste	7.5	57.14	4.29
Land Use & Ecology	10	41.67	4.17
Pollution	10	54.55	5.45
Innovation Credits	10	40.00	4.00
Grand Total			**67.9%**
Innovation Credits			Achieved

DESIGN TEAM APPROACH

- Frequent meetings where a BREEAM is retained as an agenda item.
- Continuity of project team.
- Site team involved early in design.
- Regular communication.

Stage of Assessment	BREEAM Score	BREEAM Rating
Interim - Design Stage	87.64%	OUTSTANDING*

* Please note: there are requirements additional to achieving a score of 85% or more for an Outstanding Rating (

Minimum BREEAM Standards					
Rating Level	Pass	Good	Very Good	Excellent	Outstanding
Minimum Standards Achieved	YES	YES	YES	YES	YES

Building Performance by Section					
	Environmental weighting	Credits available	Credits achieved	% Achieved	Weighted Score
Management	12.00%	20.00	19.00	95.00%	11.40%
Health & Wellbeing	15.00%	16.00	15.00	93.75%	14.06%
Energy	19.00%	21.00	21.00	100.00%	19.00%
Transport	8.00%	9.00	4.00	44.44%	3.56%
Water	6.00%	8.00	7.00	87.50%	5.25%
Materials	12.50%	15.00	12.00	80.00%	10.00%
Waste	7.50%	7.00	5.00	71.43%	5.36%
Land Use & Ecology	10.00%	12.00	7.00	58.33%	5.83%
Pollution	10.00%	11.00	9.00	81.82%	8.18%
Innovation	10.00%	10.00	5.00	50.00%	5.00%
				Total BREEAM Score	87.64%

SPECIFIC CREDITS

Man 6 /7 - Consultation / Shared Facilities

Man 6	Consultation	One credit where evidence provided demonstrates that consultation has been, or is being, undertaken and feedback given to the local community and building users. Two credits where, in addition to the above, evidence provided demonstrates that the consultation process is being, or has been, undertaken using an independent method such as DQI, DQM or School Works, facilitated by a third party.		2		2
Man 7	Shared Facilities	One credit where evidence provided demonstrates that shared facilities have been provided as a consequence of consultation feedback. Two credits where, in addition to the above, evidence provided demonstrates that these facilities can be accessed without compromising the safety and security of the building and its occupants.		2		2

- DQI consultation with project stakeholders.
- Shared facilities incorporated into design.

SPECIFIC CREDITS

Ene 1 - Reduction in CO^2 Emissions

Energy				
Ene1	Reduction of CO^2 Emissions	Up to fifteen credits where evidence provided demonstrates an improvement in the energy efficiency of the building's fabric and services and therefore achieved lower building operational related CO^2 emissions.	15	15

- 15 credits achieved, plus 1 exemplary credit for an EPC with a CO^2 index of -5

SPECIFIC CREDITS

Mat 1 - Materials Specification

Materials				
Mat 1	Materials Specification (major building elements)	Up to six credits are available, determined by the Green Guide to Specification ratings for the major building finishing elements.	6	6

- 6 credits achieved for the majority of major elements being ‘Green Guide to Specification’ A+ rated.

BREEAM ‘OUTSTANDING’

Achieving the standard:

- Early involvement of BREEAM Consultant.
- Contractor driven.
- Experienced project team.
- Client buy-in.
- Regularly monitored.

National BREEAM Awards 2014:

- Nominated for two awards:
  - *Education Award 2014*
  - *‘Your BREEAM Award’*
- First ‘Outstanding’ Primary School in Wales.
- Only Welsh project nominated at this year’s awards.

CODE FOR A SUSTAINABLE BUILT ENVIRONMENT
BREEAM
BRE GLOBAL
AWARDS 2014
SHORTLISTED

End of Presentation

Site Tour

A bus is waiting outside to take you over to Ysgol Ffwrnes for the site tour.

PPE is required.