







CEW EXEMPLAR PROJECTS



Pentrehafod School, Swansea.

CEW Exemplar Program 17-01-2017



Gordon Brown Director, Exemplar Programme





Exemplar Programme

Case studies at 3 key stages:

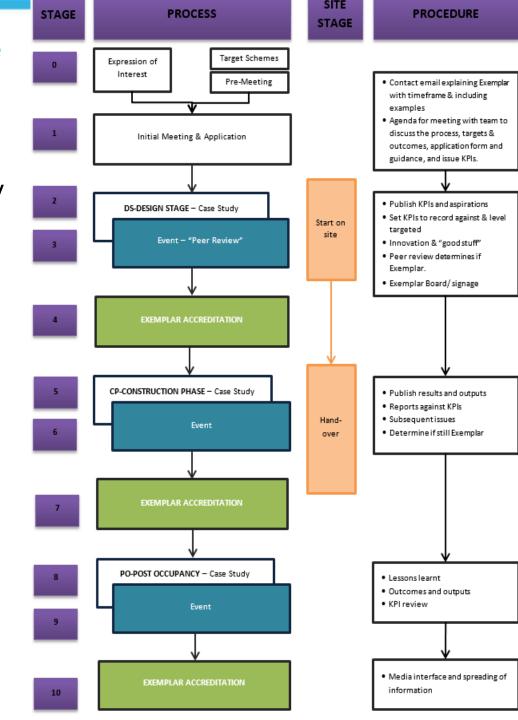
- Design Stage intent
- Construction Phase— delivery
- Post-occupation outcomes

Peer Review

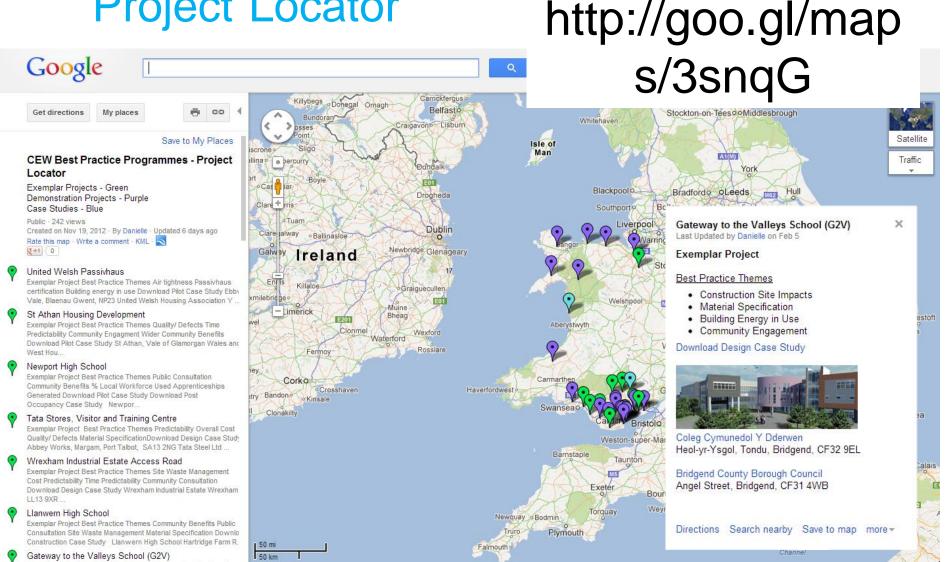
Evidence based i.e. KPI's







Project Locator





A477 Improvement: St Clears to Red Roses



Client Agent Contractor

Designer

Value

Welsh Government
Hyder Consulting UK Ltd
SRB Civil Engineering UK Ltd
Roadbridge Sisk JV
Ramboll UK Ltd
£44.5m out-turn cost

Size 9.3km single carriageway
Timeline Employer's Agent Jul

ne Employer's Agent July 2008 ECI Award Sept 2009

Completion April 2014

Procurement Early Contractor Involvement

Contract NEC Target Cost with Activity Schedules

The A477 St Clears to Red Roses Improvement was constructed by SRB (Sisk-Roadbridge Joint Venture). The integrated team, with designers Ramboli, Welsh Government and Hyder Consulting as Employer's Agent, successfully brought the project through the statutory process, detailed design and construction under ECI Contract.

The Trunk Road connects the M4 motorway with Pembroke Dock and the Important tourist areas of South West Wales and is part of the Trans European Network (TEN-T) linking Ireland to the European continent and as such is of strategic importance to the highway network.



CEW Integration and Collaborative Working Award: Winner 2014

CEW Sustainability Award - Our Legacy: Shortlisted 2015 The previously steep route that ran through wooden valleys and with limited pedestrian facilities was well below current design standards. This has been replaced by 9.3km of single carriageway with around two thirds dual+1 carriageway to provide overtaking opportunities. During some of the wettest periods on record the team delivered 15 structures, including bridges and underpasses that were built into the project.

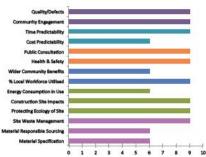
To facilitate the carriageway construction 640m of pipeline protection was instigated over the newly laid strategic high pressure oil and gas pipelines; Two existing structures, including a Grade ill isted building were upgraded; Significant soil and rock stabilisation undertaken including 1,125 rock bolts and 7,500m² rock netting installed.





cewales.org.uk

CONSTRUCTION PHASE



SATISFACTION

- Considerate Constructor Silver Awards for 2014 and 2015 after a Bronze for 2012
- CEEQUAL Whole Project Award A477 SCRR Excellent 90.4% within 2 months of completion
- PRINCE2 Project Management technique was used to develop Lessons Learned Reports from within the ProjectTeam and to promote continual improvement.

ECONOMIC

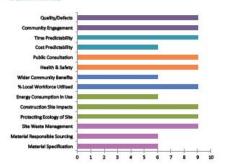
- Project opened 6 wks early by Edwina Hart, Minister for Economy Science & Transport on the 16th April 2014
- Early Contractor Involvement ECI resulted in £2m Value Engineering savings
- NEC target contract with activity schedules pain/ gain sharing mechanism and open book accounting incentivised all parties to manage costs effectively
- "COINS" open-book accounting highlighted: £2m inflationary costing within the original target cost that were not required and £2.3m saved through procurement, beating production targets and reuse of materials.

SOCIAL

- The project verified by the accident frequency rate (AFR - per 100,000 hours worked) of 0.17; significantly below the industry average of 0.4
- "Safety Conversation & Agreements" behavioural safety programme rolled out on site. During the project 612,317 hours were worked without lost time incident (LTI)
- 64% from South West Wales Integrated Transport
 Consortium (SWWITCH) area. 13% from the rest of Wales
- 64% of £47m project spend with local supply chain 85% sourced in Wales.

e emplar exemplar.org.uk

DESIGN STAGE



EGACY

- Site of national importance was discovered during the early works - 100 Bronze Age burlal graves resulted in liason with CADW and the mobilisation of 38 Archaeologists and a 5 month impact on the project
- Over 137 community initiatives carried out
- Llanelli based SME developer of water treatment units, Hydro-Industries used for electro-coagulation.

ENVIRONMENTAL

- Environmental Clerk of Works (ECoW) appointed full-time during construction
- 1620m of hedgerow translocation was carried out (environmental statement target was 1200m)
- Building energy in use. Energy use was constantly reviewed with a nightly energy audit carried out enabling a reduction of 1.8 tonnes of CO.e
- Project carbon footprint tracked and monitored with substantial savings made on vehicle emissions.

RESOURCES

- The use of pre-cast elements for beams, culvert units and headwalls led to a 10-15% reduction in wastage of materials
- Balanced cut/fill earthworks was achieved (originally 194,000m³ deficit), ensuring buildability and removing the requirement for import/export of non-renewable materials (12,000 HGV movements eliminated)
- 900,000m³ of earthworks movement undertaken in the two wettest winters on record (2012-13)
- WRAP Site Waste Management Plan Tracker used resulting in no earthworks material sent to landfill; 94% of excavated material (855,603m²) beneficially reused on site; remainder beneficially reused nearby. 74% of mixed waste reused and recycled, 99% of total waste reused and recycled.



Pentrehafod School Refurbishment

- Peer Review of the above Project
- Exemplar and Innovative in what ways?
- Yellow feedbackform collected at the end

DESIGN STAGE CASE STUDY







roject Size: GF 5828m² of which 1140m² is new build;

FF 3605m² of which 918m² is new build. PACE (inc. new

Comprehensive School, located in the Hafod area of Swansea is a major project for the City and County of Swansea.

The redevelopment of the existing school consists of a combination of demolition, refurbishment, new build and external works across the site. The majority of the existing school buildings are currently in very poor condition with the demountable units on site reaching the end of their useful life.

The new proposals will accommodate 1000 pupils aged 11-16, maintaining the current capacity of the school. The scheme addresses maintenance backlog issues, improves the performance of the building fabric and modifies internal layouts to meet current educational space standards. Importantly, it connects two previously separate buildings by introducing a double height central social space for atrium dining and meetings. This new atrium space will also offer the school a remodelled entrance that will become a focal point to welcome staff, pupils and visitors.

Whilst standards have consistently improved over recent years, the fabric of the school buildings is still in need of investment and improvement at a time of ever challenging budget constraints. Morgan Sindall was selected to collaborate with the City and County of Swansea to develop and construct the scheme following a two stage tender process.



STRIDE TREGLOWN



KEY CONTACTS

PROJECT DETAILS

changing facilities) = 422m² all new build Contract: NEC Option A - ECI

Client: City & County of Swansea

Gordon Brown - CE Wales

SarahWeir@swansea.gov.uk Ross Williams DYFODO DIWASTRAF









CEW Awards 2017

Closing date: Monday 27th February, 5pm

www.cewales.org.uk/cew-awards/enter-our-awards/



Pentrehafod School Refurbishment, Curriculum Remodelling Project



City & County of Swansea

- Sarah Weir Education Project Manager
- Nigel Hawkins Corporate Building and Property Services



Business Case Process

- Joint Strategic Outline Case/ Outline Business
 Case submitted February 2015
- Welsh Government Ministerial sign off April 2015 – progress to Full Business Case (financial)
- Full Business Case submission September
 2016
- WG Capital Panel –October 2016
- WG approval to proceed October 2016



Key Milestones

- January 2016 Appointment of Morgan Sindall to carry out stage one design works
- September 2016 -agreement of costs with contractor
- October 2016 Full Business Case recommended for approval by WG Capital Panel



Key Milestones

- October 2016 Full Business Case recommended for approval by WG Capital Panel
- October 2016 Council Cabinet approval
- November 2016 Planning Approval received
- November 2016 Commencement of main works
- Autumn 2018 Completion of works

Project Aims

- The project aims to provide the pupils and staff of Pentrehafod School with a safe, sound and fit for purpose school environment.
- The phasing of works will include the refurbishment of existing buildings, curriculum remodelling and the extension of buildings to replace the substandard demountables.
- The works will also include a new purpose built two classroom block for Pentrehafod Alternative Curriculum Education (PACE) pupils.
- The programme of works will also include the relocation and reinstatement of the staff and visitors car park at the front of the school site, upgrading the all weather pitch and some additional fencing in line with Secure by Design recommendations.

Collaborative Working

Working in partnership the Local Authority, School and Contractor have achieved the following:

- Design of a 21st Century School meeting the schools curriculum requirements
- Health & Safety planning to safely maintain the running of the school campus during the phased programme of works
- Community access to services maintained during the phased programme of works



Collaborative Working

Ongoing work will include:

- Rolling programme of Staff and Pupil presentations in line with the phased programme of works
- Pupils Engagement through the schools Pupil Parliament
- Regular updates to Governors and Senior Management on progress
- Community updates through the project website, newsletters and activities

Project Brief

- To provide an exemplar secondary school for 1,000 pupils
- Space standards in line with BB98
- Existing pool facilities to retained
- Demountables to be demolished
- No temporary accommodation to be used



Project Brief

- BREEAM Very Good to be achieved
- Demolition and relocation of changing room block
- PACE unit to be included within new build block
- School security line to be realigned to the front of the school



Procurement Approach

- The project was procured through the NEC Option A two stage tender process using contractors on the SEWSCAP 2 framework.
- Tenders issued in November 2015
- Tenders returned in December 2015
- Tenders were assessed on 50:50% cost/quality





Pentrehafod Secondary School

Existing site

- 3 m change in level
- School set back from entrance
- No separation between pedestrians & vehicles

Lacking:

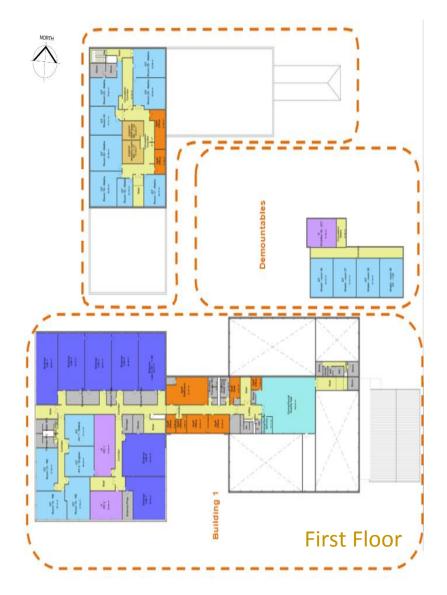
- All weather play areas
- Informal social spaces





Existing buildings





Proposed Site Plan

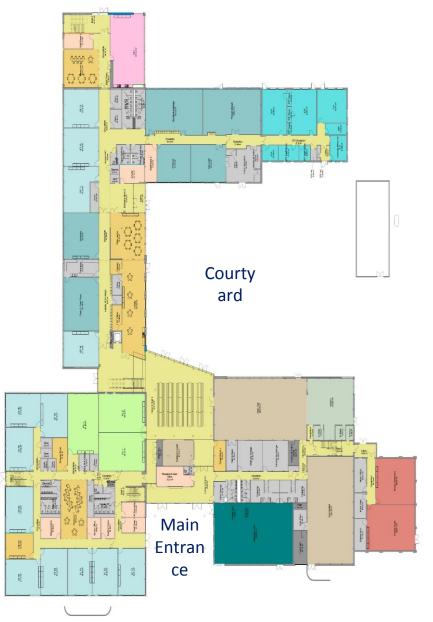
7 Interventions

- 1: New Extension to the North
- 2: Link between Buildings 1&2
- 3: New Courtyard
- 4: New Music spaces
- 5: Pedestrian access
- 6: New Entrance & canopy
- 7: New changing facilities & PACE



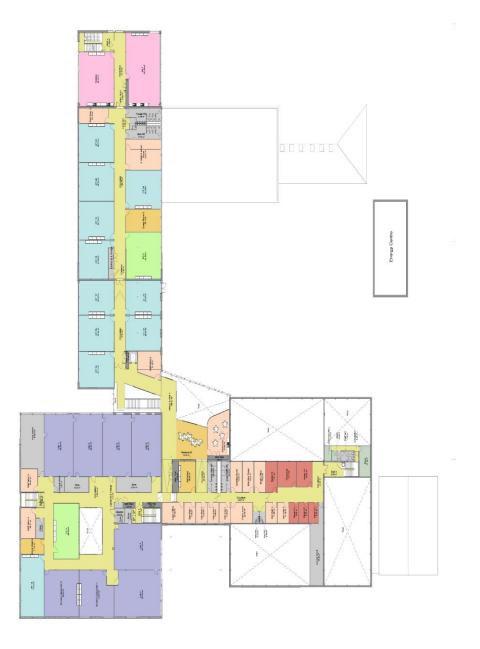


Proposed Ground Floor Plan





Proposed First Floor Plan





Proposed Elevations



A-A South Elevation - Block 1



B-B North Elevation - Block 1



Pentrehafod Scope Overview



External Envelope Works

- New Windows Doors & Curtain Walling
- New Roofing to all areas (overlay with membrane)
- New External Rainscreen Cladding System

Internal Works

- Demolish part of the structures to replace with new 2 storey structure.
- variations of 'light refurbishment' and 'Heavy refurbishment'
 - · Light Redecoration and flooring
 - Heavy Demolish and remodel internal walls, create voids (atrium) through floor slabs and roof spaces then rebuild and complete to finished standards
- New build elements of project
 - Linking two existing 'blocks'
 - New Art Block extension

External Works

- · New Sports Facilities
- · Demolish all demountable units
- General Landscape Works
- Civil works including redirecting drainage and car park works

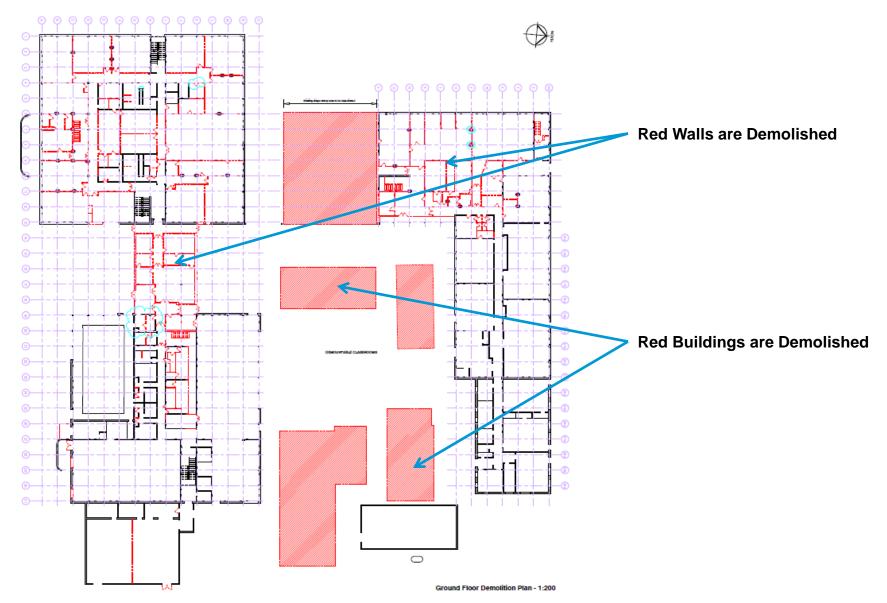
PACF Unit

Pentrehafod Alternative Curriculum Education Unit





Demolition Works





What's Different about Pentrehafod?

Should we **build new** or **reuse** existing facilities...



Perceived Challenges...



High KPI Targets and Aspirations ...





Collaborative Working

Identifying key stake holders and working in partnership with them

Enabling Zero Waste

- 100% waste diverted from Landfill
- Working to a Circular Economy

Community Benefits

- Working with BB&M (Beyond Bricks & Mortar)
- Permanent Jobs Created
- Educational Works Placements
- Wider Social Benefits

Social Practices

- Health and Wellbeing
- Diversity Aspects
- Employment Practices
- Fair Pay

Environmental Impacts

- EPC Rating
- Utility Service Usage Pre and Post construction
- Ecological Improvements

Project Challenges



1

Live Environment

- 1000 pupils
- 150 Staff (approx.)
- Public Use
- Pool
- Sports facilities
- Brownies etc

2

Condition of Existing Structures

- Ability to meet Modern New Build Standards
- Whole Life Costing and Future Planned Maintenance
- Contamination & hazardous substances
- Compromise on reusing existing layouts





Key Stakeholders

School & End User

- Pupils
- Teachers
- Governors etc

Client

Community

Phasing

Structured to suit the needs of the school and accommodate their educational needs

Communication

- Weekly meetings
- Direct lines of contact to deal with issues
- Regular Project
 Reviews with whole
 site team
- Regular Engagement with Key Stakeholder

Strong Team Ethos derived from tender process and collective ownership of project (MS First Appointed January 2016 – Project Start Date 21st November 2016)

MS Perfect Delivery Statement – Be the best by delivering exception customer service. We do this by going the extra mile for our Clients and the Communities within which we work.



YSGOL PENTREHAFOD – PENTREHAFOD SCHOOL

'Cyd- Ddysgu' 'Learning Together'



PENTREHAFOD REFURBISHMENT

MR S. RIORDAN **DEPUTY HEADTEACHER**

Principal Pressures

Pre- Commencement Phase

- Determining the scope of accommodation.
- Curriculum planning for a 21st
 Century School.
- Articulating Community Expectations.
- Building trust and positive relationships between principle partners.

Building Phase

- Business continuity in a live environment.
- Maintenance of Standards.
- Communication between all stakeholders.
- Safeguarding.

Project Completion

Community Benefits

- Building Social Capital.
- Developing pride and sense of ownership within the community.
- Clear focus on community identity and engagement.

Legacy

- A fit for purpose, 21st century school that supports high quality outcomes.
- An inclusive school that enhances opportunity for all.
- A community resource that has the potential to improve the lives of it's community.
- A facility that is energy efficient with the potential generate income.



Collaborative Working - Programme

Phase 1

Nov 16 – July 17 Extension – Circa 300m2 footprint (600m2 over two stories): New Build element of the project. Structural Steel frame with composite concrete floor decks. SFS and rain screen cladding externally. Pre cast concrete stair and plasterboard internal partitions. Completion in line with school holiday periods

Nov 16 – Feb 17 Design
Technology: Refurbish existing
areas. New windows, ceiling
flooring and decoration
Nov 16 – Mar 17 Music &
Drama: Refurbish and change of
use. New internal partitions,
ceiling and flooring
Nov 16 – Mar 17 Music Practice

Rooms: Refurbish and change of use. New internal partitions, ceiling and flooring

All Targeted for Early Completion to suit curriculum

Phase 2

July17 – Mar 18 Leaning
Resource and Circulation:
Demolition of existing structure.
Rebuild demolished areas and incorporate links between blocks.
Referbish exiting structure.
Heavy Works in Holiday Period

Phase 3

July17 – Oct 18 Entrance
Works: Refurbish existing areas.
New windows, ceiling flooring
and decoration

July17 – Mar 18 Washroom: Refurbish existing areas. New windows, ceiling flooring and decoration

July17 – Mar 18 Main Hall: Refurbish existing areas. New windows, ceiling flooring and decoration

Heavy Works in Holiday Period

Phase 4

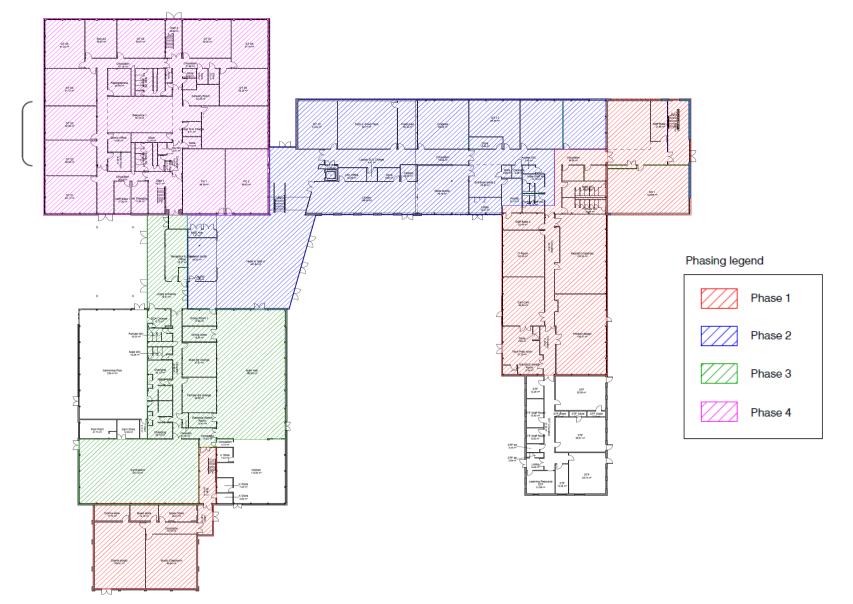
Apr18 – Oct 18 Extension: Remodelling of existing structure. Refurbish existing areas. New windows, ceiling flooring and decoration

Concurrently with all phases the following has been incorporated

- PACE Unit: Accelerated to provide Churn Space
- New External Rainscreen Cladding
- New External Windows and Doors
- Re Roofing Works
- External Civil and Landscape Works: programmed to suit school
- Sports Facilities

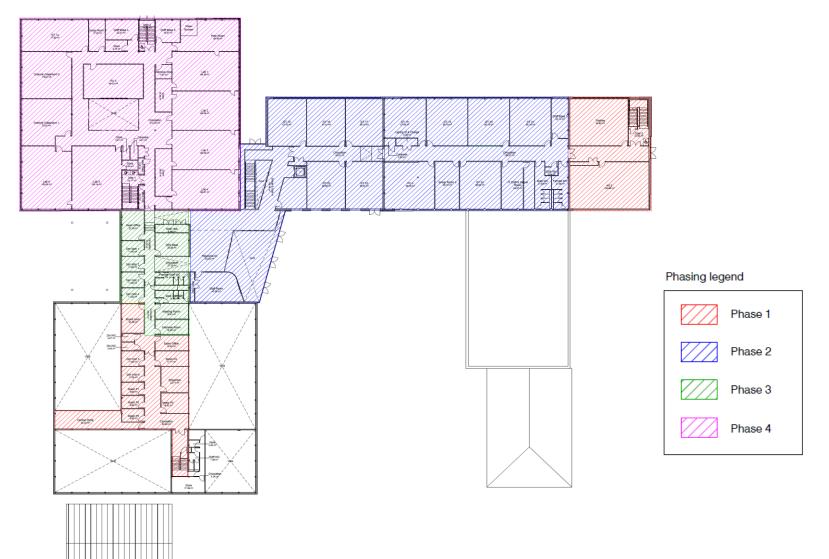


Collaborative Working - Phasing Ground Floor





Collaborative Working - Phasing First Floor



Enabling Zero Waste



Reconomy – how to manage:

Demolition Waste Construction Waste

Vinyl Specification - Altro Express Lay gives betterment to a refurbishment project, and the absence of adhesive meets the principal of being able to remove the material and recycle at end of use

Philips Lighting – have commenced negotiations to lease lighting over purchasing

Sports Hall Flooring – is to be reused fir cladding elsewhere within the project





Paint 360 – use recycled paint from the CCoS and reengineer it to be used on the local School



Pentrehafod Comprehensive School

Keith Watts

EZW Project Delivery Officer





What is Enabling Zero Waste?

- Constructing Excellence in Wales (CEW) initiative working with construction projects to achieve zero waste
- Provides practical, positive and proactive assistance to construction, demolition and civil engineering projects in Wales
- Aim to establish if, and how, the construction industry can achieve the zero waste targets established in the Welsh Government's waste strategy, Towards Zero Waste
- Following a waste hierarchy approach



Successes in the past Canteen / Office Waste



 In the past EZW has seen 18% of all site waste (by volume) reported as canteen/office waste;

disposed of in mixed waste skips

- end destination; landfill
- Linking with local council's collections;
 - fewer collections of mixed waste; less traffic
 - reduces weight of mixed waste skips; lower cost
 - end destination; anaerobic digestion and recycling







Consideration of the Waste Hierarchy

- Prevention of waste is key to reducing waste
- Consideration of waste at the design stage is important to waste prevention
 - "80% of buildings waste is determined by decisions made at the design stage" – Environmental Change Institute
- Reduces waste management costs
 - EZW has shown 2.8% of project value can be saved
- Most sites have existing resources on them. There may be existing infrastructure which could be utilised;
 - buildings
 - roads
 - sewerage & utilities







EZW at Pentrehafod School

- Opportunity to work with a demolition, construction and refurb programme
- EZW team first met with the Morgan Sindall team in September 2016
- Involvement;
 - Regular site visits; a fresh pair of eyes
 - Waste data analysis; spotting trends and finding the reasons
 - Research into disposal options
 - Aerial photography; gives a great perspective





EZW at Pentrehafod School

- Develop solutions to prevent and minimise the generation of on-site waste, leading to a reduction in;
 - time spent on waste management
 - disposal costs
- Provide learning and information on alternative waste management techniques which can be used on future projects;
 - ensuring continual benefits







EZW at Pentrehafod School

- Support changes to behaviour and process that encourage prevention and minimisation of waste
 - tool box talks
- Share the solutions and opportunities arising from effective waste management strategies;
 - case study
 - events like this
 - regular updates; via newsletter, tweets etc.







Circular Economy Principles at Pentrehafod School

- Moving zero waste beyond linear approach
- Circular approach Waste as a resource
- Working to explore:
 - Future use & reuse (building & products)
 - Durability & repair
 - Building adaptability/flexibility
 - Cradle to cradle materials
 - Product leasing
 - Recycled content products/secondary materials/by-products





Contact Details

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A Brief Introduction to Reconomy...







Resource Management Business of the Year



Subcontractor of the Year



Shropshire Business of the Year













Partnership Approach...



Preferred Supplier to Morgan Sindall since 2013

- Working relationship spanning over 10 years
- On-site segregation of key waste streams
- Diversion from Landfill Objectives (Currently 100%)
- Piece of mind on compliance
- On-site Support to Project Team
- Working to BREEAM Targets / KPI's
- Local supply Chain
- Together we can drive out waste...











Measuring Success...

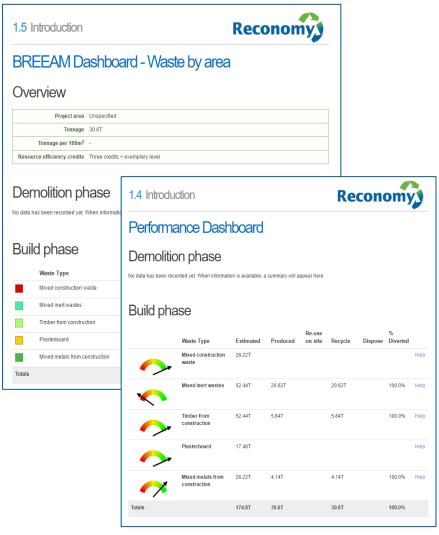


- SWMP Best Practice Document
- Ability to track and monitor progress



Site Waste Management Plan

Plan reference	14910		
Environmental Compliance No	352220		
Client	Pentrehafod Comprehensive School		
Principal Contractor	Morgan Sindall		
Site Address	Pentremawr Road Hafod Swansea SA1 2NN		
Estimated cost of project	£14,600,000		
Plan created	13th September 2016		











Continuous Improvement...



- Tablet based site audits by our Site Liaison team
- Working with site to identify optimisations to current services
- Financial and operational benefits





Morgan Sindall Const & Infras LTD - Pentrehafod Comprehensive School

Reconomy Representative: Daniel Oliver

Date: 13/12/2016

Glamorgan, SA1 2NN

Site		

Contract Site Name Address Contact Telephone Start Date Est Comp Date Edite
352220 Pentrehafod Morgan Sindall Const & Ross Williams 07580 814503 2016-09-13 2018-09-13 No
Comprehensive Infras Ltd, Morgan Sindall,

Types of Build:

Plot Cap: No

Types of Dwelling: Construction

Portal Access Required: No

Notes

Very early stages of project so no point in obtaining a score at this point. Meeting was to get a better understanding of the waste streams and site requirements and to take a look at the SWMP. Ross is happy with everything up to now.

Initial Site Assessment

Is Site Signing in Book Accessible: Yes

Site Waste Management Plan Setup: Yes Has it been updated: Yes

2016-03-13

Waste Matrix Displayed and Current: NA

Is Site Registered for Hazardous Waste: NA

Haz Reg Number:

Expiry Date:

Waste Carriers License Displayed and Current: NA

Tool Box Talk Required: No

Appraisal of Transfer notes/tickets - are all copies maintained in accordance with the Waste (England and Wales) Regulations 2011: Yes

Driver Compliance

Does the driver report to reception/designated person: Yes

NCR Details

Does the driver comply with the sites regulations: Yes

Does the driver wear the correct PPE: Yes

Are the waste record appropriately signed and correct: Yes

Are the skip(s)/bin(s) in acceptable condition: Yes

Is the waste handled appropriately in accordance with guidelines: Yes













The Higher the Better...

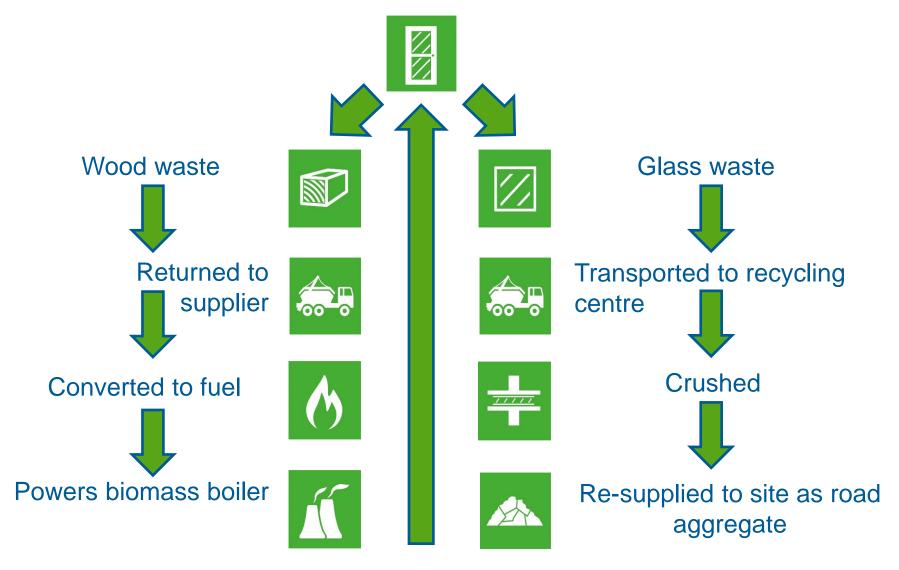
- Designing out Waste
- Maximise Waste Hierarchy through on site segregation and best practice
- Re-use on site
- Circular Thinking Closed Loop
- Work with the Supply Chain
- EfW Energy from Waste
- Landfill is the last resort...





Pentrehafod Secondary School Project







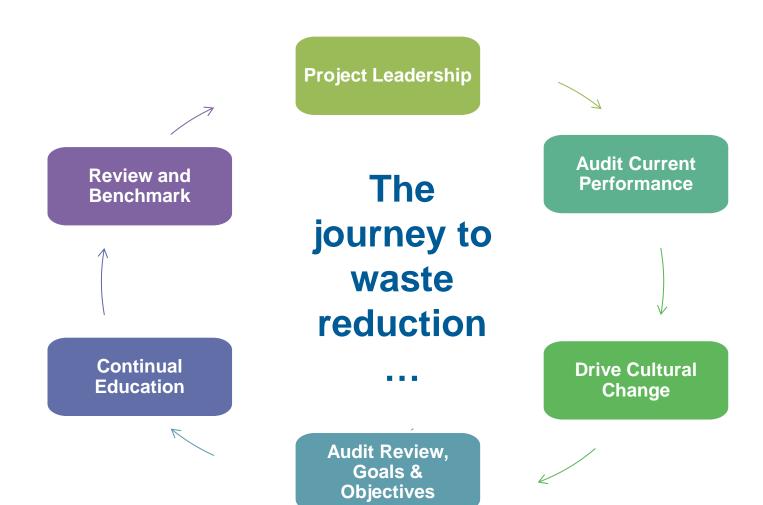






Creating the environment for change...



















Working with BB&M

Beyond Bricks & Mortar

- Early engagement has resulted in the creation of 4 site team jobs.
- Monthly meetings ensure the team are kept up to date with site activities.
- Programming opportunities in line with the project programme gives a good indication of when opportunities are available.
- Up-skilling local labour with training and investment in people

Community Benefits

Permanent Jobs Created

2 x Carpentry Apprentices - Both under 18 Liam left Pentrehafod School after completing his GCSE's and began his apprenticeship with us.

Luke spent a year at college after leaving school and has now begun his apprenticeship with us.

1 x Gate Person

Mo was placed into mandatory redundancy from the British

Transport Police and now works as our Gate Person.

1 x Administration Assistant
Caroline was looking for a role that would enable her to
continue volunteering and joins us in February.



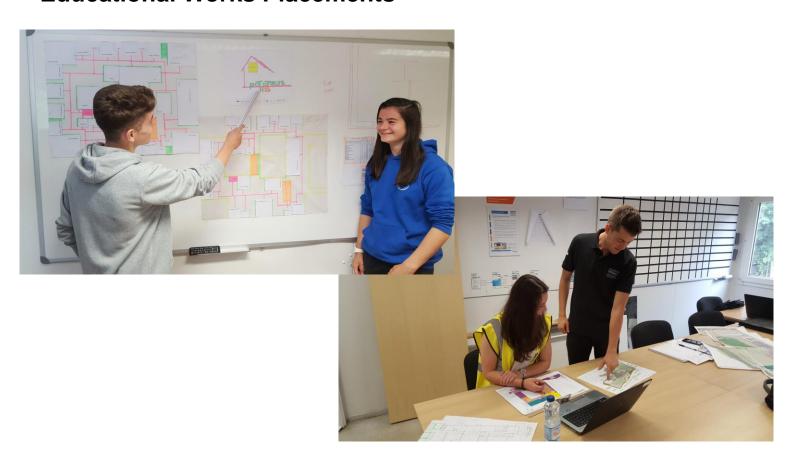




Community Benefits



Educational Works Placements







Wider Social Benefits

- More than 150 hrs will be donated by the team towards projects, advice and guidance for our neighbours and wider community.
- Providing opportunities to upskill local people to help them become work ready.
- Communicating effectively with all interested/affected parties.







Health and Wellbeing

100% Safe

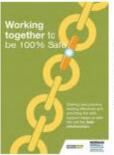
Morgan Sindall operates a Behavioural Safety regime - 100% Safe which has five Safe Pillars.



Safe Places We create environments which provide security and protection from harm



Safe by Choice We choose to be safe, avoiding unnecessary risks



Safe Relationships We gain trust through active engagement, collaboration and feedback





Safe by Design We stay safe by undertaking proper planning, and making the right decisions



Safe Lives We care for people, promoting health and well-being for everyone who works with us

Environmental Impacts



Utility
Service
Usage Pre
& Post
construction

Ecological Improvements

EPC Rating





Environmental – Circular Economy

Global drive to divert away from a linear Economy and adopt a Circular Economy.

Stop being 'Less Bad' and Achieve 100% good

Design
betterment
to End User
& greater
opportunity
to remodel
(reuse)

reusing an existing structure over disposal teater ortunity

Lease Elements over Purchase



Excellent

example of





Thank You

Q&A

Site Tour