

SEE's Sustainable Future



Project Overview

- £23.4m development to provide a unified building for the School
- State-of-the-art development of offices, teaching spaces and analytical laboratories to provide world-class facilities for school's diverse needs
- Fit for purpose to maintain the Schools continued growth and success on environmental issues
- Guided throughout by Sustainability Action Plan developed by Sustainability Champion (George Martin, Head of Sustainability, Willmott Dixon)
- BREEAM – Very Good (which is impressive for a refurbishment project)



Key Mantra

The 3 R's:

- Reduce
- Reuse
- Recycle

Reduce Energy Use

Air-tightness/ Insulation of the building

- Thermal mass and natural ventilation designed to minimise cooling requirements
- Solar reducing glass – Low ‘E’
- Target 92.5%

Reduce Energy Use

Sophisticated BMS

- Major enabler for behavioural change
- Educational and research benefits

Reduce Energy Use

Low Energy Lighting systems

- Include LED systems where possible
- LUX level sensors

Reduce Energy Use

Efficiency improvements in M&E plant

Low energy rated plant

- Heat recovery to ventilation plant
- Inverter drives to AHU's and pumps
- High efficiency motors on large items of plant
- Free cooling chillers
- Heat plate exchangers

Reduce Energy Use

Commissioning of Building

- Developing a scheme to enable building commissioning at max. efficiency.
- **PROBE report** – many buildings not functioning at high performance levels due to insufficient commissioning at time of PC.

Reduce Energy Use

Energy monitoring and display

Building user display panels to actively monitor energy performance and encourage involvement in reducing energy consumption

- Occupancy and PIR sensors – linked to heating, lighting and ventilation plant
- Enhanced metering strategy
- Lighting control system – daylight sensing
- CO₂ detection in seminar spaces – improved air quality

Reduce Energy Use

Energy Efficient Equipment

- LV fume cupboards where possible in analytical labs



Increase Renewable Energy Usage

Photo-Voltaic Cells

School of Earth and Environment Sustainability Features



UNIVERSITY OF LEEDS

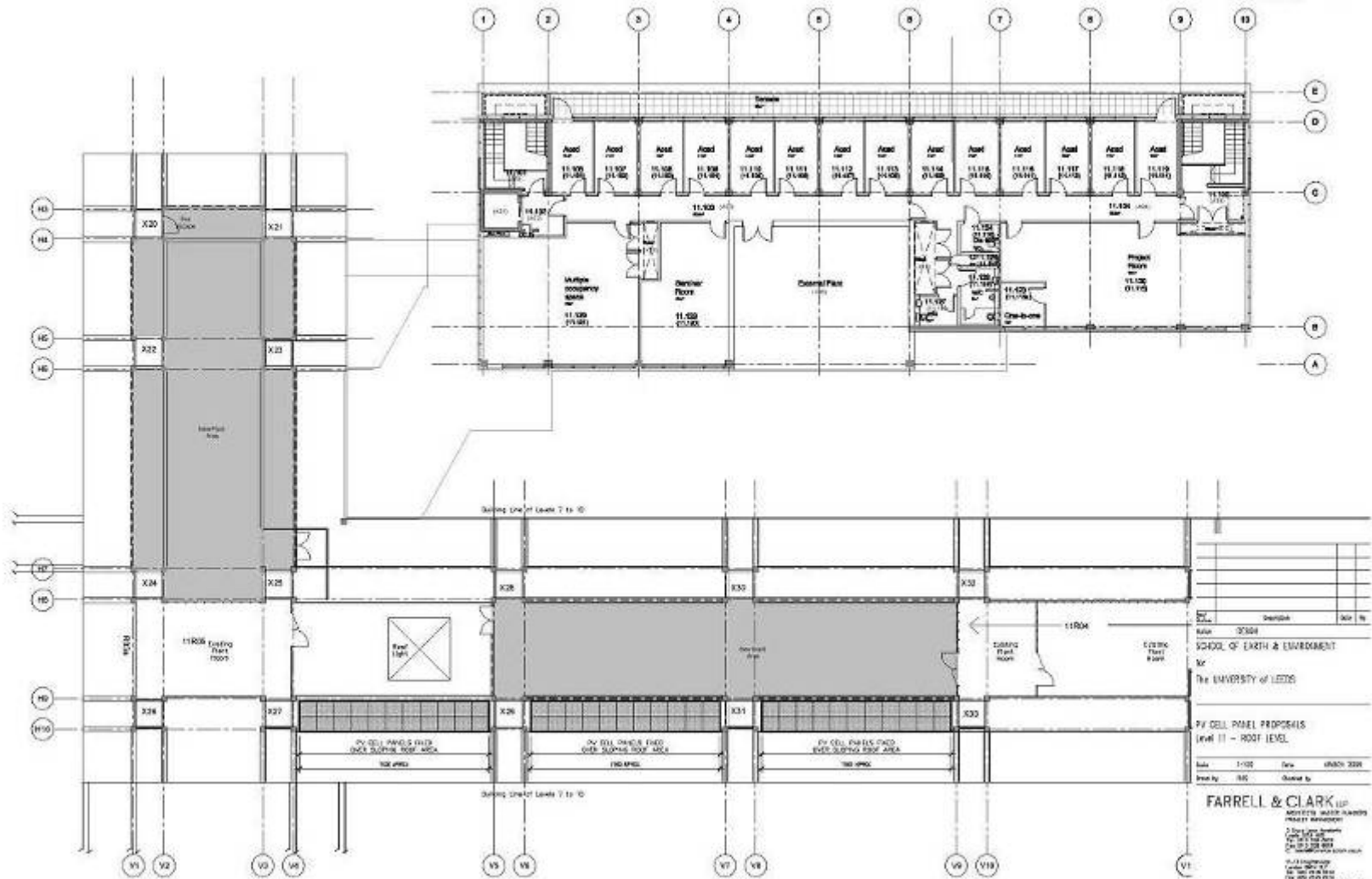


School of Earth and Environment Sustainability Features



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 NOTES: 1. Do not scale drawings to be used for construction.
 2. Do not scale for areas.



Rev	Description	Date	By
01	Issue	07/2014	

SCHOOL OF EARTH & ENVIRONMENT
 at
 The UNIVERSITY of LEEDS

PV CELL PANEL PROPOSALS
 Level 11 - ROOF LEVEL

Date:	11/02	Drawn:	08/03/2014
Drawn by:	RS	Checked by:	

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Drawing No: 142/101/04/001



Reduce Energy Use

- Design of partitioning systems
- To maximise natural light penetration

Re-use of Existing Materials and Fittings

Existing Building

Refurbishment of University building

- Significant enhancement of building energy and performance – reduce energy consumption and CO₂ emissions
- Upgrade façade – enhanced glazing spec and increased insulation (minimise solar gain and reduce cooling load)

Re-use of Existing Materials and Fittings

Maximise re-use of all existing materials

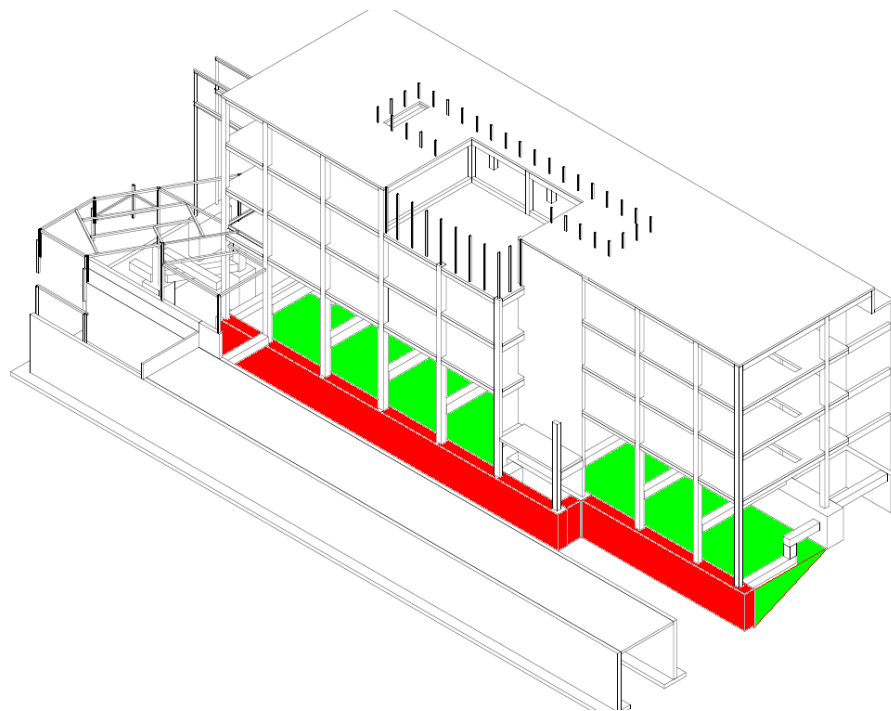
- **Target 75%**

Re-use of Existing Materials and Fittings

Reduce Waste and re-use material on construction site

- University and Building Sustainability Action plan – implement a Waste Management Plan
- Reduce quantities going to landfill – BAM 75%
e.g. redesign of foundations

Re-use of Existing Materials and Fittings



Re-use of Existing Materials and Fittings

Reduce depletion of non renewable materials

Connection to CHP

Reduced Schools carbon emissions, and increases efficiency through maximised use of CHP plant – further reductions in future energy costs for heating and Electricity

Water Saving Measures

- Rainwater harvesting
- Low flow taps and low capacity flush WC systems – including aerated taps and showers. Waterless urinals.
- Rainwater attenuation to reduce peak surface water discharges - 1 in 100 year storm

Recycling

Maximum use of Cat A and recycled materials

- 30% target and work with Recycle Action Yorkshire
- Furniture and fit out to maximise recycled materials.
- e.g. furniture tender to include recycled and recyclable product, including seating covers.

Recycling

Use of Green Guide in specifying internal materials

- Internally – specified floor coverings (marmoleum), suspended ceiling, paint finishes from Green Guide
- The use of FSC timber throughout

University Policy / Building Operation

Green Travel Plan

- e.g. Dedicated cycling facilities

University Policy / Building Operation

Waste Management

- New and enhanced recycling scheme

University Policy / Building Operation

Behavioural Management of all building users

- Develop training programme to enhance learning of all occupants in how the building operates to ensure sustainable behavioural change – night time manual cooling.
- Educate construction team to the benefits associated with sustainability

University Policy / Building Operation

Ethical procurement

- Promote fact that the UoL are a Fair Trade University

Other

Building Design

- Achieve Breeam Very Good on a refurbished building
- Undertake post occupancy evaluations to maintain Breeam standards



Other

Ecological Enhancements

- **Green Roof**
- **To the link new building**

Other

Construction Process

- Dust suppression - Envirowrap
- Contractor meeting Considerate Constructors and Construction Excellence KPI's
- Local sourcing of plant and materials
- Maximise employment and training opportunities
- Local sourcing of materials during construction, help to reduce transport costs and associated carbon

Other

Building Design

- Achieve Breeam Very Good on a refurbished building
- Undertake post occupancy evaluations to maintain Breeam standards
- Use of wireless IT network where practicable



Questions?

Notes

- CHP = Combined Heating Plant
- BMS = Building Management System
- M&E = Mechanical & Electrical
- LV = Low Velocity