Sustainable Building Framework

Heather Loosemore – Energy Manager

Coventry University

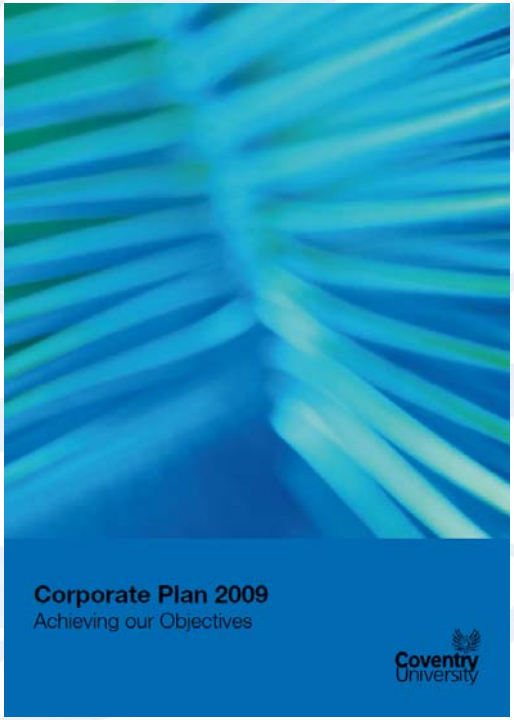
Coventry University In the Beginning

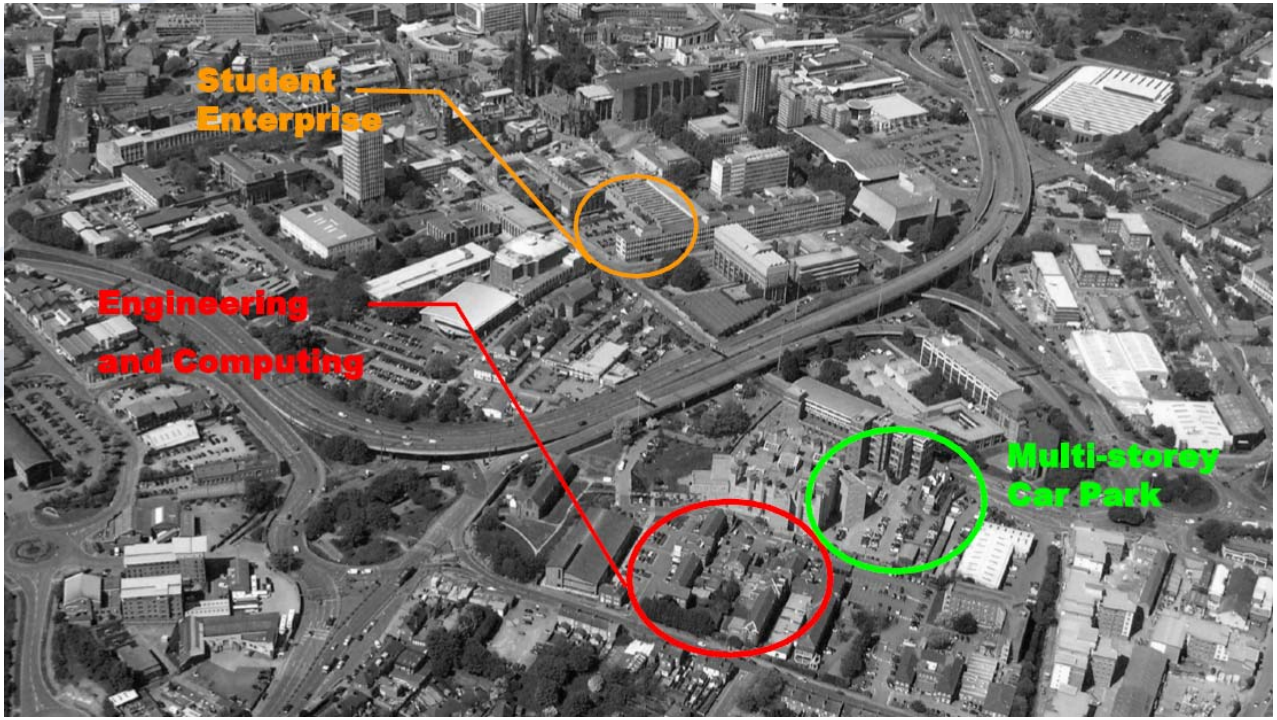
Coventry University the Plan 2008 – Phase 1

Coventry University

Proposals: 0- 5 years

Then it Began – Corporate Plan 2009





So the BREEAM Badge Continued….

Corporate Plan 2012

‘BREEAM ratings of ‘Excellent’ achieved for university-owned, new buildings.’

Reinforced by Capital investment fund requiring at least ‘very good’ or HEFCE funding was effected.

Carbon Management Plan 2010

- New built buildings are to be BREEAM Excellent … But it also said

35% CO2 reduction by 2015 (reduction of 4603 tonnes)

43% CO2 reduction by 2020 (reduction of 5967 tonnes)

breeam The Code for Sustainable Buildings

This is to certify that

The HUB,
Coventry University,
Priory Street,
Coventry CV1 5FB

has achieved a score of 73.63%, and a BREEAM rating of

EXCELLENT

Pass Excellent

This Design and Procurement assessment was carried out under the 2006 version of BREEAM Bespoke

Signed on behalf of BRE Global Ltd	7th July 2011 Date
David Robinson Licensed Assessor	Max Fordham LLP On behalf of
Coventry University Client	Hawkins Brown Architect
BAM Construction Contractor	Max Fordham LLP Services Engineer
Adams Kara Taylor Structural Engineer	

Certificate Reference: MF-BES-CNR01-18

breglobal

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www.breeam.org

Solar Hot water
Borehole
Grey Water
Green Roof

HUB – EXCELLENT

So how did it Do?

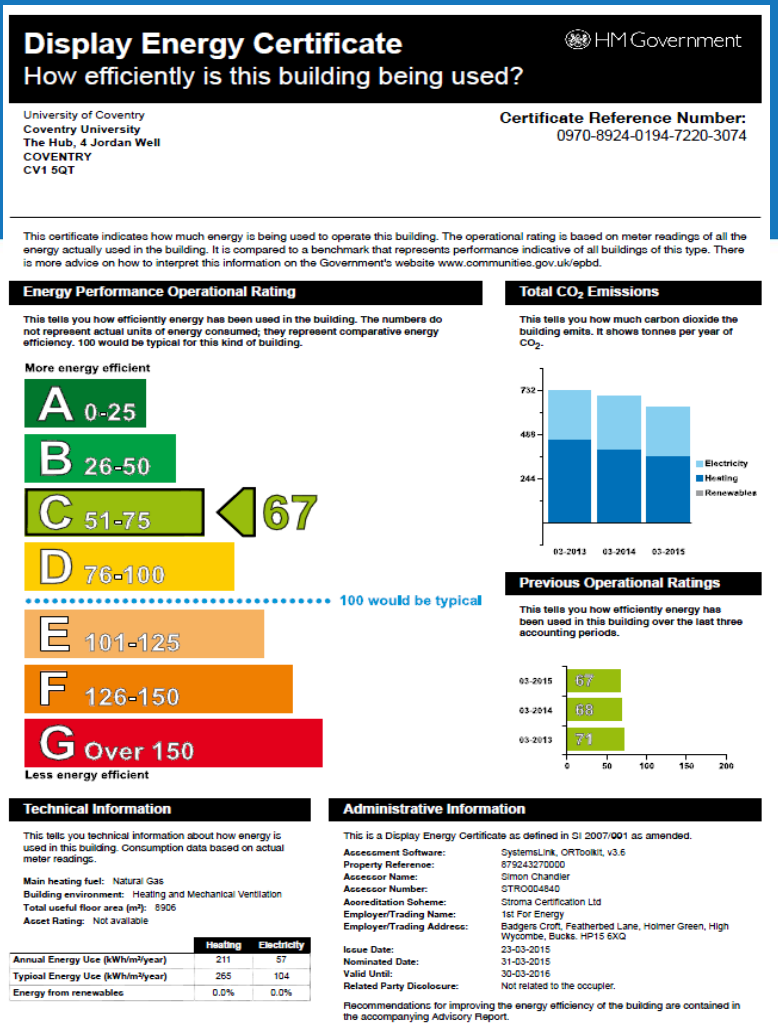
We assumed 675 Tonnes in 2010 carbon management plan

Year 1: 732 Tonnes…

It has improved

- BMS Controls review
- LED Lighting installed
- More lighting control

….. More money ££££



Display Energy Certificate
How efficiently is this building being used?

HM Government

University of Coventry
Coventry University
The Hub, 4 Jordan Well
COVENTRY
CV1 5QT

Certificate Reference Number:
0970-8924-0194-7220-3074

This certificate indicates how much energy is being used to operate this building. The operational rating is based on meter readings of all the energy actually used in the building. It is compared to a benchmark that represents performance indicative of all buildings of this type. There is more advice on how to interpret this information on the Government's website www.communities.gov.uk/epbd.

Energy Performance Operational Rating

This tells you how efficiently energy has been used in the building. The numbers do not represent actual units of energy consumed; they represent comparative energy efficiency. 100 would be typical for this kind of building.

More energy efficient
A 0-25
B 26-50
C 51-75 67
D 76-100
100 would be typical
E 101-125
F 126-150
G Over 150
Less energy efficient

Total CO_2 Emissions

This tells you how much carbon dioxide the building emits. It shows tonnes per year of CO_2.

732
488
244
Electricity
Heating
Renewables
03-2013 03-2014 03-2015

Previous Operational Ratings

This tells you how efficiently energy has been used in this building over the last three accounting periods.

03-2015 67
03-2014 68
03-2013 71
0 50 100 150 200

Technical Information

This tells you technical information about how energy is used in this building. Consumption data based on actual meter readings.

Main heating fuel: Natural Gas
Building environment: Heating and Mechanical Ventilation
Total useful floor area (m²): 8906
Asset Rating: Not available

	Heating	Electricity
Annual Energy Use (kWh/m²/year)	211	57
Typical Energy Use (kWh/m²/year)	265	104
Energy from renewables	0.0%	0.0%

Administrative Information

This is a Display Energy Certificate as defined in SI 2007/991 as amended.

Assessment Software: SystemsLink, ORToolkit, v3.6
Property Reference: 879243270000
Assessor Name: Simon Chandler
Assessor Number: STRO004840
Accreditation Scheme: Stroma Certification Ltd
Employer/Trading Name: 1st For Energy
Employer/Trading Address: Badgers Croft, Featherbed Lane, Holmer Green, High Wycombe, Bucks. HP15 6XQ
Issue Date: 23-03-2015
Nominated Date: 31-03-2015
Valid Until: 30-03-2016
Related Party Disclosure: Not related to the occupier.

Recommendations for improving the energy efficiency of the building are contained in the accompanying Advisory Report.

ECB - Engineering and Computing Building

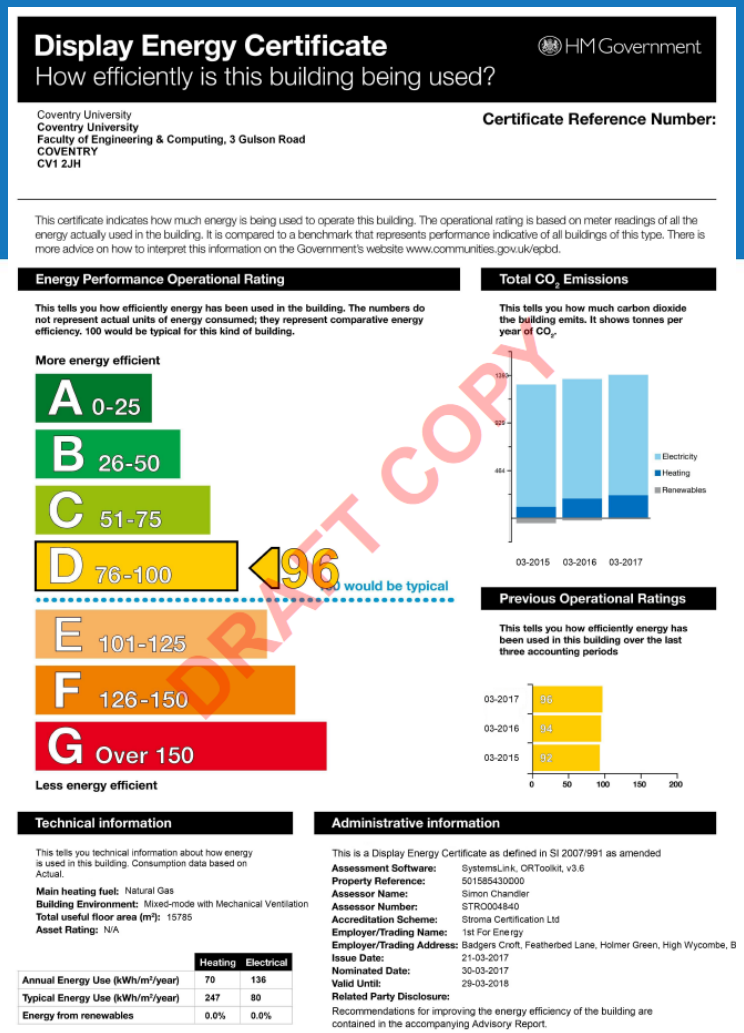
…..Another Excellent Building

So how is this one doing!

We allowed 1100 Tonnes predicted in 2010

Year 1:1275 Tonnes

And going Up!



Display Energy Certificate
How efficiently is this building being used?

HM Government

Coventry University
Coventry University
Faculty of Engineering & Computing, 3 Gulson Road
COVENTRY
CV1 2JH

Certificate Reference Number:

This certificate indicates how much energy is being used to operate this building. The operational rating is based on meter readings of all the energy actually used in the building. It is compared to a benchmark that represents performance indicative of all buildings of this type. There is more advice on how to interpret this information on the Government's website www.communities.gov.uk/epbd.

Energy Performance Operational Rating

This tells you how efficiently energy has been used in the building. The numbers do not represent actual units of energy consumed; they represent comparative energy efficiency. 100 would be typical for this kind of building.

More energy efficient

A 0-25
B 26-50
C 51-75
D 76-100 96
100 would be typical
E 101-125
F 126-150
G Over 150

Less energy efficient

Total CO_2 Emissions

This tells you how much carbon dioxide the building emits. It shows tonnes per year of CO_2.

Previous Operational Ratings

This tells you how efficiently energy has been used in this building over the last three accounting periods

DRAFT COPY

Technical information

This tells you technical information about how energy is used in this building. Consumption data based on Actual.

Main heating fuel: Natural Gas
Building Environment: Mixed-mode with Mechanical Ventilation
Total useful floor area (m^2): 15785
Asset Rating: N/A

	Heating	Electrical
Annual Energy Use (kWh/m^2/year)	70	136
Typical Energy Use (kWh/m^2/year)	247	80
Energy from renewables	0.0%	0.0%

Administrative information

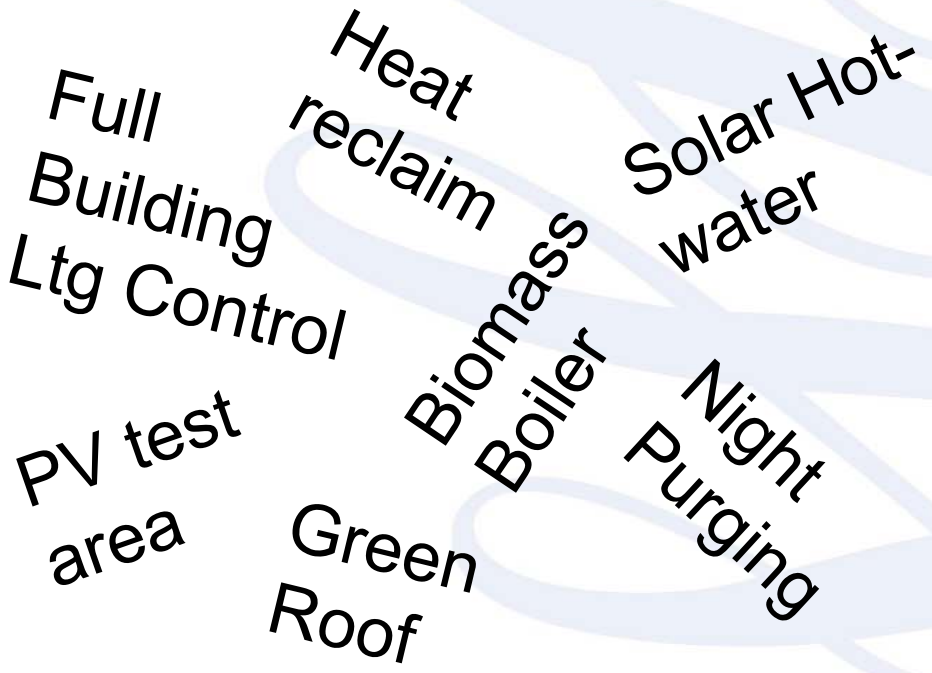
This is a Display Energy Certificate as defined in SI 2007/991 as amended

Assessment Software: SystemsLink, ORToolkit, v3.6
Property Reference: 501585430000
Assessor Name: Simon Chandler
Assessor Number: STRO004840
Accreditation Scheme: Stroma Certification Ltd
Employer/Trading Name: 1st For Energy
Employer/Trading Address: Badgers Croft, Featherbed Lane, Holmer Green, High Wycombe, B
Issue Date: 21-03-2017
Nominated Date: 30-03-2017
Valid Until: 29-03-2018
Related Party Disclosure:

Recommendations for improving the energy efficiency of the building are contained in the accompanying Advisory Report.

But we have all this great technology!

- We do not have a heating problem!
- It has its own dedicated Performance and controls Engineer
- We Spend £100k's maintenance building alone.
- It has an Electricity Bill which is 22% of the Total Academic Campus



Just one more!
HTDI Building – Its Very Good.

breeam

The Code for Sustainable Buildings

This is to certify that

**Health Design & Technology Institute,
Coventry University Technology Park,
Puma Way,
Coventry CV1 2TT**

has achieved a score of 56.32%, and a BREEAM rating of

VERY GOOD

Pass Excellent

This Design and Procurement assessment was carried out under the 2006 version of BREEAM Bespoke

Signed on behalf of BRE Global Ltd	25th June 2009 (Date)
Stuart Flint (Licensed Assessor)	3 Planets Ltd (On behalf of)
Coventry University Enterprises Ltd (Client/Developer)	Associated Architects (Architect)
Baggaley Construction Ltd (Contractor)	Couch Perry Wilkes (Building Services)

Certificate Reference: 3PL-BEG-SF01-5

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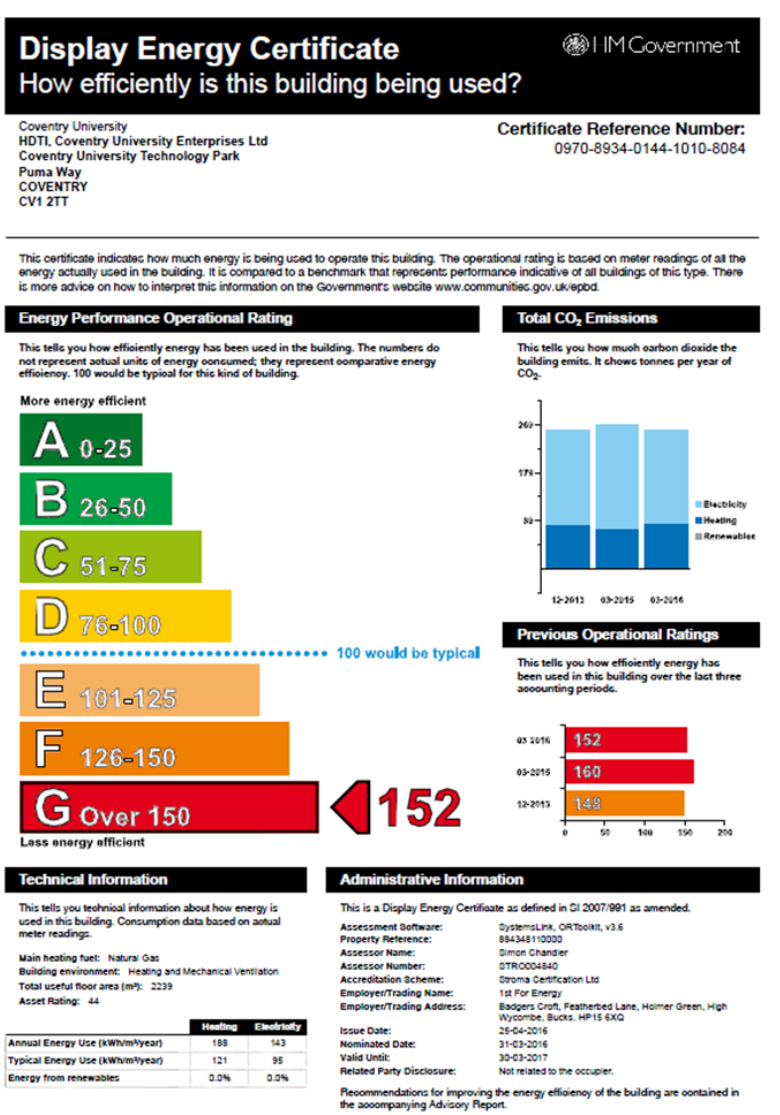
www.breeam.org

Last Example Promise Energy Performance

EPC B – BREEAM VERY GOOD

Semi – Air-conditioned Office Space, Standard Boilers
Some Lighting Control.



Display Energy Certificate
How efficiently is this building being used?

HM Government

Coventry University
HDTI, Coventry University Enterprises Ltd
Coventry University Technology Park
Puma Way
COVENTRY
CV1 2TT

Certificate Reference Number:
0970-8934-0144-1010-8084

This certificate indicates how much energy is being used to operate this building. The operational rating is based on meter readings of all the energy actually used in the building. It is compared to a benchmark that represents performance indicative of all buildings of this type. There is more advice on how to interpret this information on the Government's website www.communities.gov.uk/epbd.

Energy Performance Operational Rating

This tells you how efficiently energy has been used in the building. The numbers do not represent actual units of energy consumed; they represent comparative energy efficiency. 100 would be typical for this kind of building.

More energy efficient
A 0-25
B 26-50
C 51-75
D 76-100
100 would be typical
E 101-125
F 126-150
G Over 150
152
Less energy efficient

Total CO_2 Emissions

This tells you how much carbon dioxide the building emits. It shows tonnes per year of CO_2.

Electricity
Heating
Renewables
12-2013 03-2015 03-2016

Previous Operational Ratings

This tells you how efficiently energy has been used in this building over the last three accounting periods.

03-2016 152
03-2015 160
12-2013 148
0 50 100 150 200

Technical Information

This tells you technical information about how energy is used in this building. Consumption data based on actual meter readings.

Main heating fuel: Natural Gas
Building environment: Heating and Mechanical Ventilation
Total useful floor area (m²): 2239
Asset Rating: 44

	Heating	Electricity
Annual Energy Use (kWh/m²/year)	188	143
Typical Energy Use (kWh/m²/year)	121	95
Energy from renewables	0.0%	0.0%

Administrative Information

This is a Display Energy Certificate as defined in SI 2007/991 as amended.

Assessment Software: SystemsLink, ORToolkit, v3.6
Property Reference: 884348110000
Assessor Name: Simon Chandler
Assessor Number: STRO004840
Accreditation Scheme: Stroma Certification Ltd
Employer/Trading Name: 1st For Energy
Employer/Trading Address: Badgers Croft, Featherbed Lane, Holmer Green, High Wycombe, Bucks. HP15 6XQ
Issue Date: 25-04-2016
Nominated Date: 31-03-2016
Valid Until: 30-03-2017
Related Party Disclosure: Not related to the occupier.

Recommendations for improving the energy efficiency of the building are contained in the accompanying Advisory Report.

Is this the Development Teams Fault?

Coventry University

BREEAM does not mean Energy Reduction!

BUT in the beginning it did!

We had no other Building targets!

Perceptions!

Costs More to building

More Complicated Building

Tick Box Exercise

Forcing us to have useless technology

Cost more to run

Not Providing Value for Money

Gardner & Theobald

Allowance at an early stage of design can range between £80/m2 and £120/m2 GIA (gross construction cost) depending on the other particulars of the scheme.

Rob Thompson – Group Director of Estates

“Not providing enough focus on energy and carbon – not focusing funding on the on what we valued”

So What Next for the Development Team?

We did not Stop!

- ❑ Scarborough
- ❑ SHB (due to Open 2017)

….NDTC, London Campus Ph3, Whitefriers refurbishment, CW boiler House, Elm Bank, Security House, Coventry College Ph2 & 3, Jaguar Refurb, WM trading floor…you get the idea…

Target of EPC A

The Demise of BREEAM

Need to build quick - Commercial Relationships
Commercial developments
Speculative ventures

CAPITAL COST

New Corporate and
Carbon Management Plan

BREEAM was not all BAD!

BREEAM is not all about energy!

Example We liked the water savings Rainwater was showing real savings

Example We liked bike provisions (but felt it over did it!)

Example Recycle rates

OK - We liked the label! Example

Sustainable Building Framework

Would it be easy just to use another Label?

We looked into SKA, Leaf, Passivhaus

We did not want to move form one overhead burden to another.

Can be used for Refurbishments and New Builds

Rob Talliss Group Director of Estate Development
"Need to move towards real measurable targets"

Sustainable Buildings Framework
Our Approach

- Looked across the sector to see what others we're doing. Found BREEAM was still headlining with energy targets such as EPC A.
- A student project worked on collating from scratch (a fresh perspective) on what sort of criteria makes a building sustainable.
- Had discussions with the Design team about how to embed a new framework.
- Also discussed the balance for the framework to be setting clear requirements, not too detailed but detailed enough and allow scope for innovation and project specific flexibility (!)

Sustainable Buildings Framework Summary

Energy needed to be core component of this to address the issues we have had with new builds and BREEAM

BUT

We didn't want to loose the other sustainability criteria however with a recognition that we would scope what actually matters to us.

Sustainable Buildings Framework Principles

1. Leadership and communication
2. Materials
3. Energy
4. Amenity/wellbeing -includes transport and biodiversity

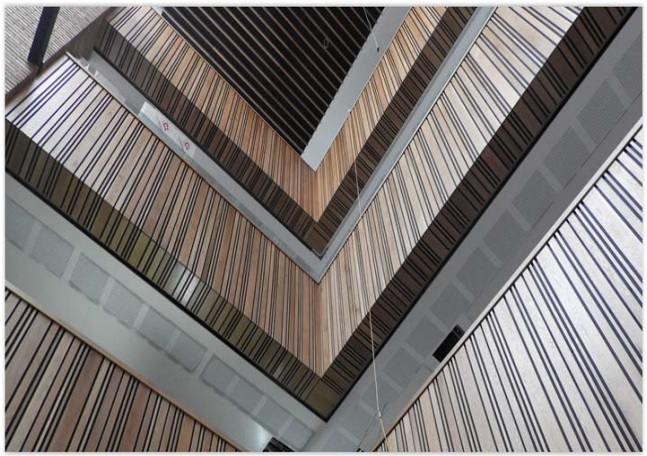
Sustainable Buildings Framework

Leadership and communication

- Building costings to reflect a life cycle approach considering operational use over building life cycle.
- Selection of contractors should reflect the values of this framework and ensure dedicated management of the implementation of sustainability measures and environmental risks.
- Engagement of interested parties, community interaction, building users and specialists as appropriate.
- Flexibility and future proofing use including designing for climate change.
- Create new innovation and share best practice.
- Adopt a soft-landings approach particularly in regards to energy management

Sustainable Buildings Framework

Materials



- Select and procure materials with an emphasis on sustainable sourcing, enhanced product life cycle and quality, recycled content.
- Waste and resources to be managed to support the principles of a circular economy with reuse and reinstatement of materials prevailing over recycling and disposal.
- Embodied carbon through materials selection.

Sustainable Buildings Framework

Energy

Reduce energy demand and overall benefit to CO2 emissions targets through meeting defined standards, evaluation of opportunities for improvement to wider energy distribution infrastructure and networks, carbon reduction design features, building fabric and the incorporation of renewable and low carbon technologies.

Standards to be met	Control and Monitor	Connectivity and Infrastructure	Design and Fabric	Water Conservation
25% Building Reg	BMS	Link to CMP	Mass	Grey or Rainwater
Lifecycle	Monitoring Plan	Energy Strategy	Glazing	Conservation
EPC A	Lighting Sensor		Equipment	Urban Drainage
TM54	Metering		Vent & Aircon	Contamination

Sustainable Building Framework

Amenity/wellbeing -includes transport and biodiversity

The building should provide a comfortable environment, maximising natural lighting and access to green spaces.

Sustainable and healthy transport options should be incorporated.

Biodiversity and habitats should be enhanced.

Format

2.1 LEADERSHIP AND COMMUNICATION

		Planning	☐
Life Cycle Costing	1	Full life cycle costing should be including within the planning and design stages. Full life cycle should include the cost to own, operate, maintain and finally dispose of the building. Or in the case of the refurbishment the impact on the building, and the lifecycle of the components in the design.	☐
Design Flexibility	2	The building should be designed to allow flexibility in terms of space use and occupancy, increasing efficiency (overlap with Space Planning).	☐
Climate Change	3	Buildings must be designed to allow adaptation to climate change. Should allow temperature changes over the lifespan of the building	☐
Sustainability Champion	4	A sustainability champion is nominated to be fully incorporated into the design process and oversee sustainability throughout building delivery	☐
		Consultant/ Contractor/ Architect Selection	
Considerate Contractors	1	The contractor has to be part of the considerate contractor scheme	☐
Local Workforce	2	The contractor should demonstrate that they are resourcing labour local to the site	☐
Sustainability measures	3	Contractors have demonstrable sustainability measures supporting the University's own goals.	☐
Legal requirements	4	Contractors meets required legal and other standards on environment/ sustainability.	☐
Training and resources	5	All parties on in the project should demonstrate their competency including training, resources dedicated to sustainability and pollution prevention during construction phase	☐
Design Innovation	6	Consultants should be able to demonstrate their past commitment to providing sustainable solutions and their commitment to progressing innovative ideas.	☐

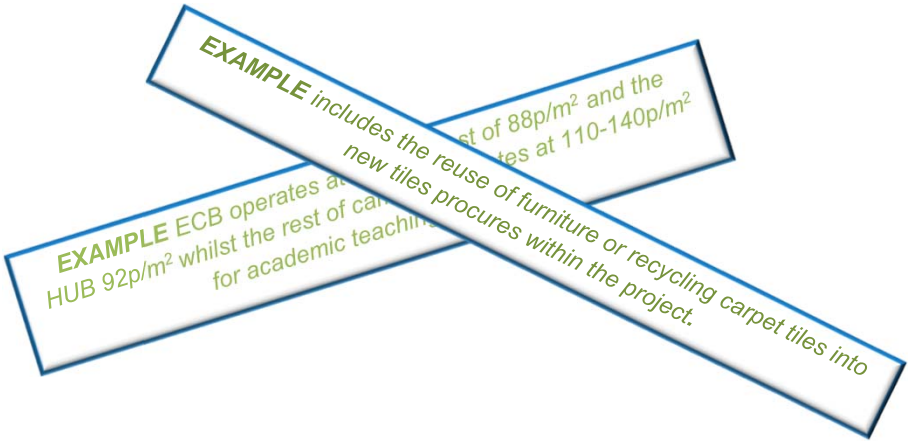
Easy to Read

Recognise Overlaps

Gives Examples

Does not re-event the wheel –

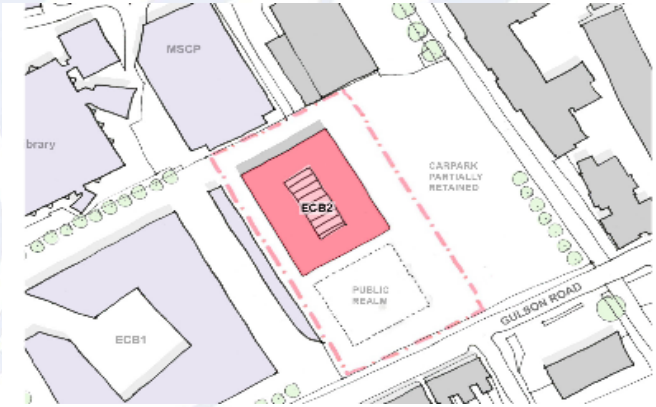
Where good definitions exist use them

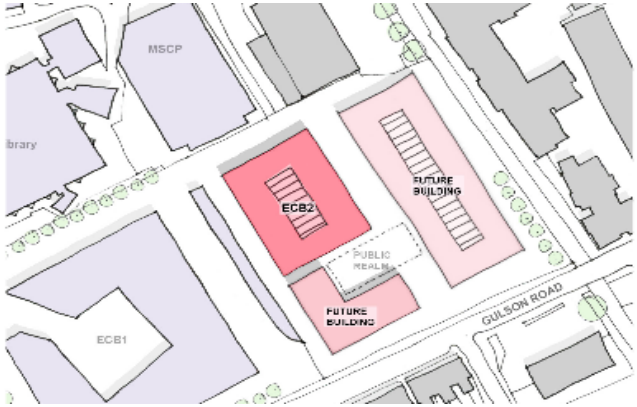


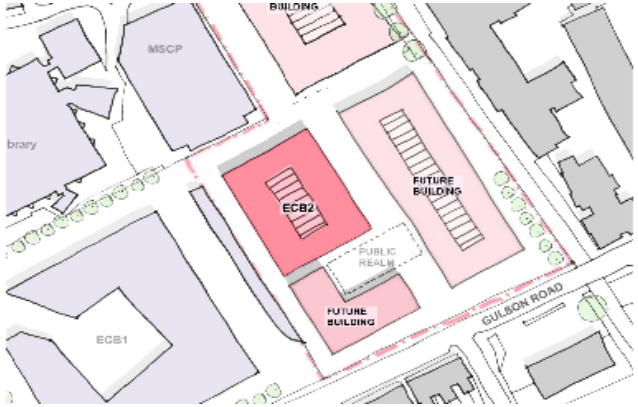
Adoption

DESIGN GUIDE

ECB 2







What Next What Next – For the Development Team

CAMPUS MASTERPLAN 2014 -2025

BroadwayMalyan BM
Architecture Urbanism Design

Development Philosophy

- Improve space use – Agile working
- Refurbish and rehabilitate existing buildings
- Embrace new teaching and working methods
- Buildings and campus more open and approachable
- Integrate campus into the city
- More open and public space
- Future flexibility
- 24 hour campus
- Improve Student Experience

24 HOUR CAMPUS

What Next



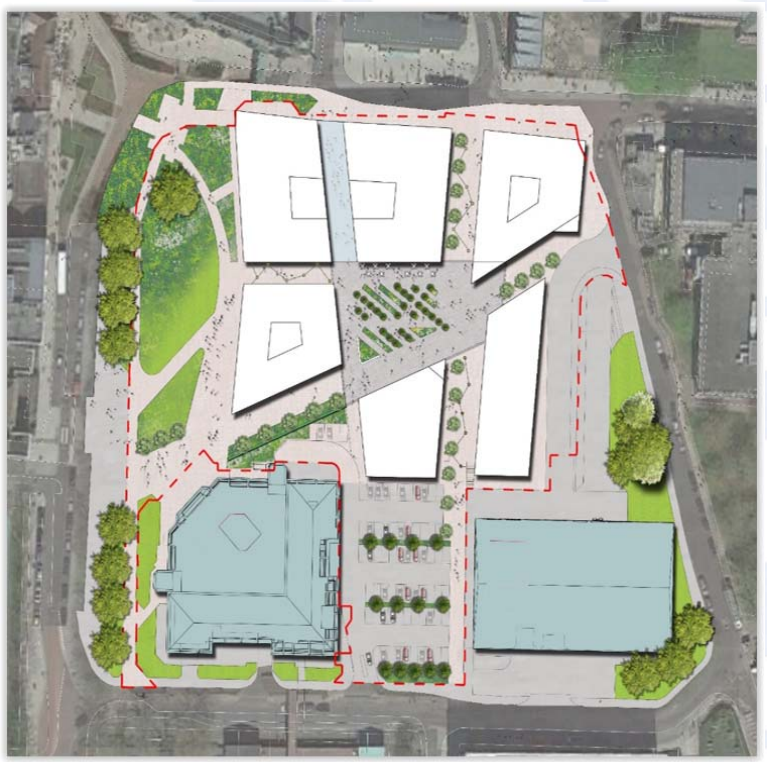
The University

- ❑ Changing the sky line
- ❑ More refurbishment
- ❑ More buildings…

The Sustainable Buildings Framework

- ❑ Full Integration in New Builds
- ❑ Make it standard for Refurbishment

- ❑ Monitor It – Is it working?



Conclusions

Pick out the bit you want in a standard

(and be prepared to fight for them!)

Integration is Key – work with the Development Team

Make it clear and simple - easy to adopt.

It is not finished - we view it as an iterative process

(We expect it to change with time).

Questions ?