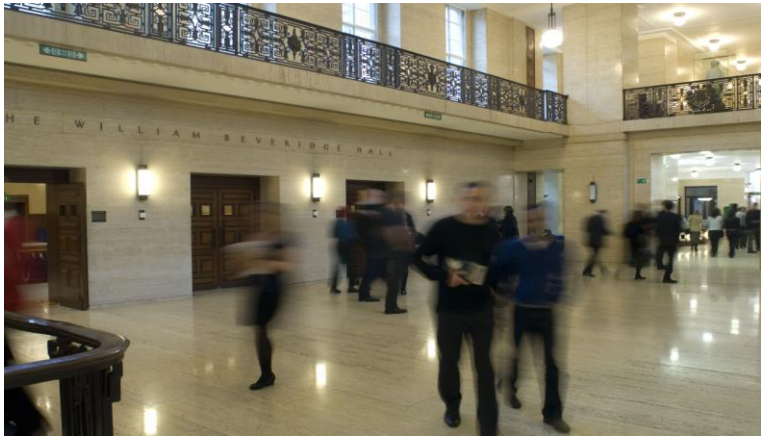
University of London

RE:FIT: Early Adopter case study

Ian Lane

Energy Manager



The University

Is a federal University and is among the oldest, largest and most diverse universities in the UK.

Established by Royal Charter in 1836, recognised globally as a world leader in Higher Education.

19 self-governing Colleges of outstanding reputation.

The University has a very culturally diverse student population of over 165,000 students

The Drivers

1. Commit to reducing Scope 1 and 2 emissions by 80 per cent by 2050 and by at least 34 per cent by 2020

2. Aspires to reduce Scope 1 and 2 emissions by 50 per cent by 2020 and by 100 per cent by 2050

3. Commit to reducing Scope 3 emissions and to improving measurement of Scope 3 emissions

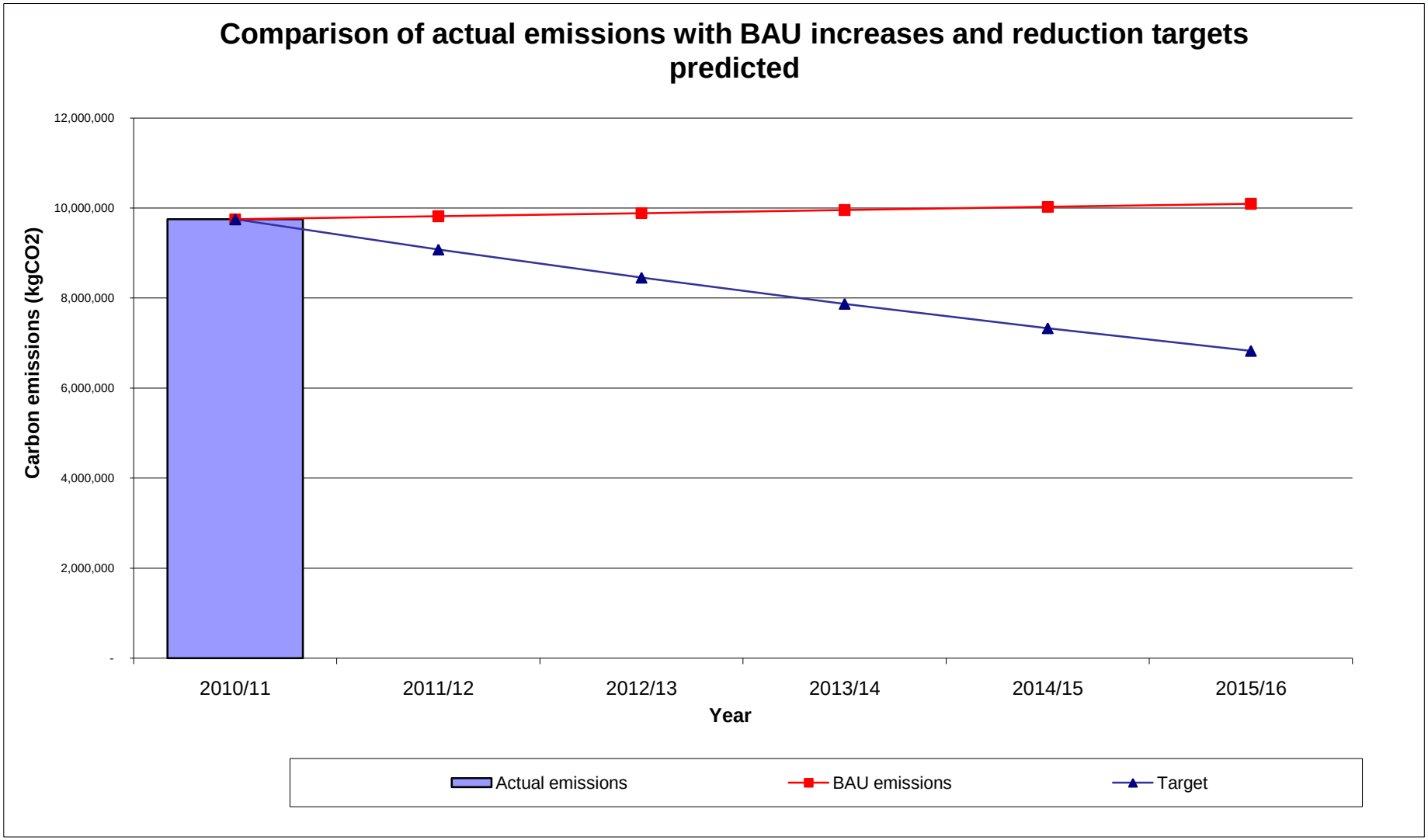
The Drivers continued…

Participant of the Higher Education Carbon Management Programme

CRC EES

Carbon Management Plan

UoL BCP


Comparison of actual emissions with BAU increases and reduction targets predicted
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
-
Carbon emissions (kgCO2)
2010/11
2011/12
2012/13
2013/14
2014/15
2015/16
Year
Actual emissions
BAU emissions
Target

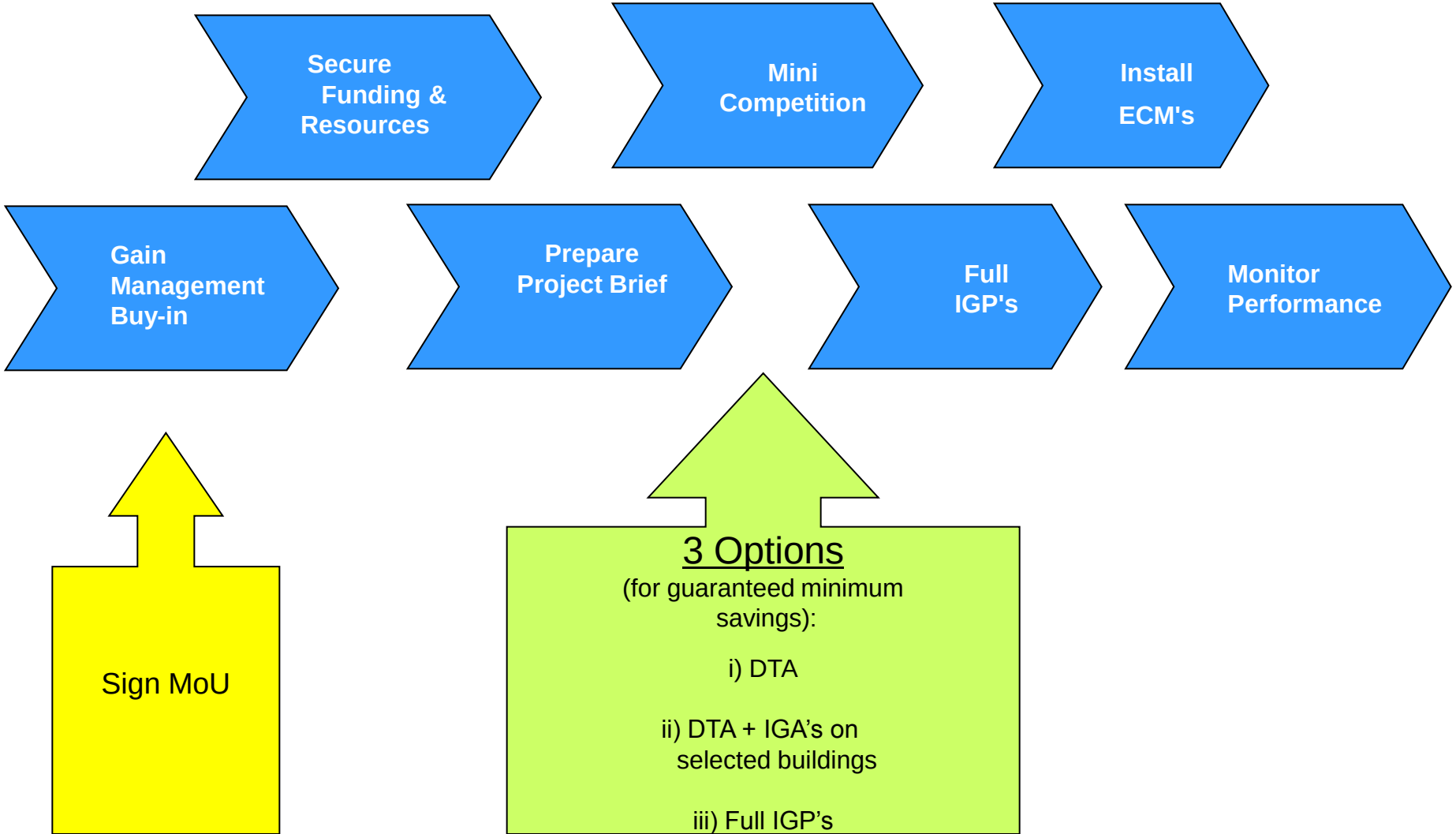
What we are looking for

"The University wishes to appoint a main contractor for the provision and management of Carbon Reduction Projects. This will entail providing an Investment Grade Proposal(s) on behalf of the University of London to achieve a minimum carbon saving of 20% (based on 2009/2010 energy consumption) from the organisation's Stationary Sources"

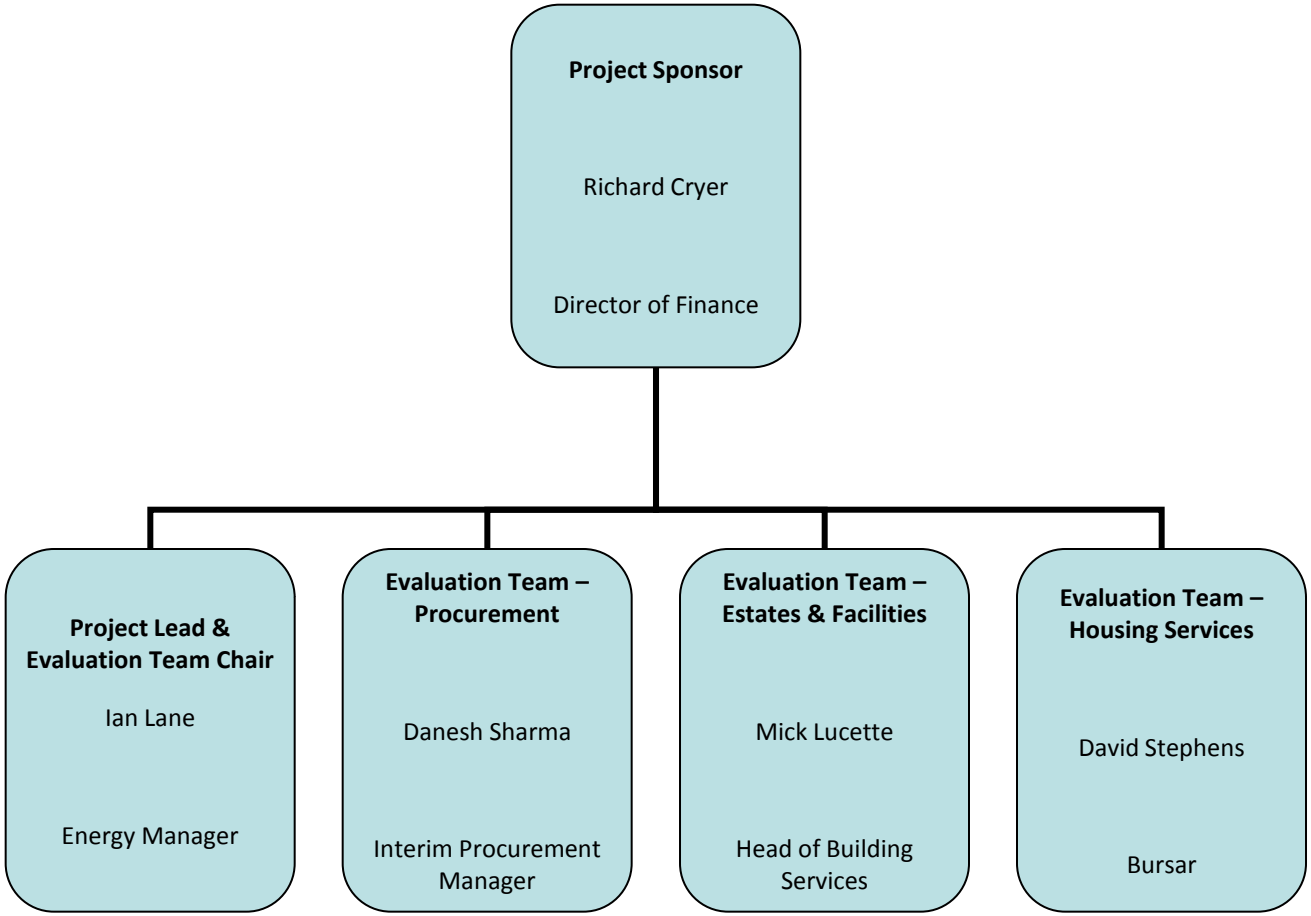
What are the benefits to the University?

1. Significantly reduced procurement timescales
2. Works can be identified and installed in-line with our aspirations
3. Opportunities provide guaranteed carbon / financial savings
4. <u>Value for money</u>

Gaining internal support



The Evaluation Panel

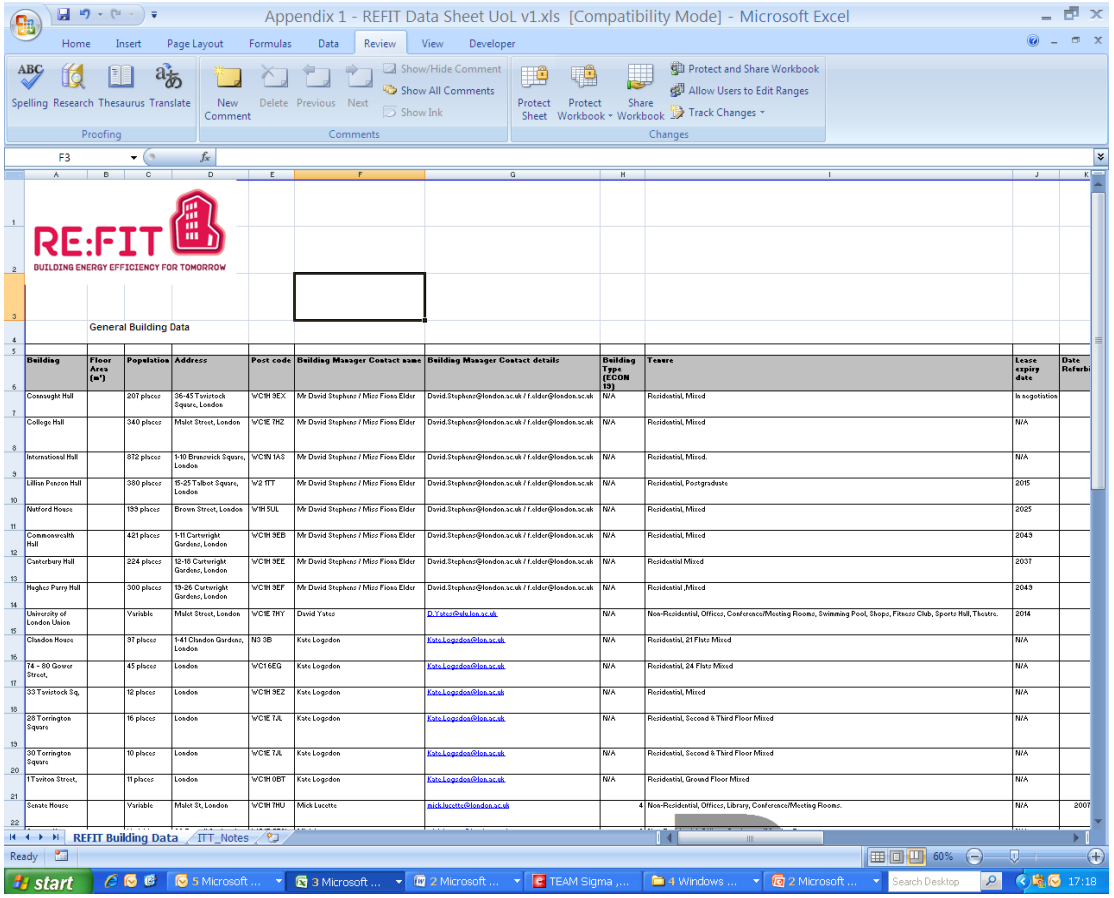


The process

Indicative Tender Timetable	
RE:FIT ITT released to tenderer's	**6th September 2010**
Time allotted for site surveys	15th & 16th September 2010 (further details in Section 2)
Investment Grade Proposal submitted to UoL	11th October (12 Noon)
ITT Evaluation	14th October 2010
Presentations to UoL	25th – 26th October 2010 (Senate House, room location and times to be confirmed
Preferred ESCo identified	5th November 2010
Contract signed	19th November 2010
Contract start	**1st December 2010**

What was provided to Tenderers

- Description of buildings
- RE:FIT data sheet
- Energy profiles



Building	Floor Area (m²)	Population	Address	Post code	Building Manager Contact name	Building Manager Contact details	Building Type (ECON 19)	Tenure	Lease expiry date	Date Refurbi
Connaught Hall		207 places	36-45 Tavistock Square, London	WC1H 9EX	Mr David Stephens / Miss Fiona Elder	David.Stephens@london.ac.uk / f.elder@london.ac.uk	N/A	Residential, Mixed	In negotiation	
College Hall		340 places	Malet Street, London	WC1E 7HZ	Mr David Stephens / Miss Fiona Elder	David.Stephens@london.ac.uk / f.elder@london.ac.uk	N/A	Residential, Mixed	N/A	
International Hall		872 places	1-10 Brunswick Square, London	WC1N 1AS	Mr David Stephens / Miss Fiona Elder	David.Stephens@london.ac.uk / f.elder@london.ac.uk	N/A	Residential, Mixed.	N/A	
Lillian Penson Hall		380 places	15-25 Talbot Square, London	W2 1TT	Mr David Stephens / Miss Fiona Elder	David.Stephens@london.ac.uk / f.elder@london.ac.uk	N/A	Residential, Postgraduate	2015	
Nutford House		199 places	Brown Street, London	W1H 5UL	Mr David Stephens / Miss Fiona Elder	David.Stephens@london.ac.uk / f.elder@london.ac.uk	N/A	Residential, Mixed	2025	
Commonwealth Hall		421 places	1-11 Cartwright Gardens, London	WC1H 9EB	Mr David Stephens / Miss Fiona Elder	David.Stephens@london.ac.uk / f.elder@london.ac.uk	N/A	Residential, Mixed	2043	
Canterbury Hall		224 places	12-18 Cartwright Gardens, London	WC1H 9EE	Mr David Stephens / Miss Fiona Elder	David.Stephens@london.ac.uk / f.elder@london.ac.uk	N/A	Residential Mixed	2037	
Hughes Parry Hall		300 places	13-26 Cartwright Gardens, London	WC1H 9EF	Mr David Stephens / Miss Fiona Elder	David.Stephens@london.ac.uk / f.elder@london.ac.uk	N/A	Residential ,Mixed	2043	
University of London Union		Variable	Malet Street, London	WC1E 7HY	David Yates	D.Yates@ulu.lon.ac.uk	N/A	Non-Residential, Offices, Conferences/Meeting Rooms, Swimming Pool, Shops, Fitness Club, Sports Hall, Theatre.	2014	
Chandos House		37 places	1-41 Chandos Gardens, London	N3 3B	Kate Logsdon	Kate.Logsdon@lon.ac.uk	N/A	Residential, 21 Flats Mixed	N/A	
74 - 80 Gower Street,		45 places	London	WC1 6EQ	Kate Logsdon	Kate.Logsdon@lon.ac.uk	N/A	Residential, 24 Flats Mixed	N/A	
33 Tavistock Sq,		12 places	London	WC1H 9EZ	Kate Logsdon	Kate.Logsdon@lon.ac.uk	N/A	Residential, Mixed	N/A	
26 Torrington Square		16 places	London	WC1E 7JL	Kate Logsdon	Kate.Logsdon@lon.ac.uk	N/A	Residential, Second & Third Floor Mixed	N/A	
30 Torrington Square		10 places	London	WC1E 7JL	Kate Logsdon	Kate.Logsdon@lon.ac.uk	N/A	Residential, Second & Third Floor Mixed	N/A	
1 Tavitton Street,		11 places	London	WC1H 0BT	Kate Logsdon	Kate.Logsdon@lon.ac.uk	N/A	Residential, Ground Floor Mixed	N/A	
Senate House		Variable	Malet St, London	WC1H 7HU	Mick Lucette	mick.lucette@london.ac.uk	4	Non-Residential, Offices, Library, Conferences/Meeting Rooms.	N/A	2007

The ECM's

Project description	Gas / Electricity / Heat	Amount saved per year, kWh	% fuel	% total current kWh	Savings per annum £	Capital Cost £	Simple Payback years	Savings 4 years £	Carbon Saving kg CO2e
PowerPerfector x 2 units	Electricity	117198	14.54%	4.99%	8,204	30129	3.7	32,815	63898.79
TOTAL SAVINGS		117,198		4.99%	8,204	30129	3.67	32,815	
AMR & M&T (2% reduction)	Combined	44,656	1.90%	1.90%	2,518	6,966	2.8	10,072	8,352
Assumes 1 year monitoring period									
FINAL TOTALS	Combined	161,854		6.9%	10,722	37,095	3.5	42,887.7	72,251

M&V

Diagnostic Sensors will be installed to establish a baseline using the following 3 key data points that are collected from the actual building/s. In summary the Data points established are:

1) The actual amount of hours that lights are switched on.
2) The amount of hours that areas in a building are occupied.
3) The difference is what constitutes the savings potential

This survey is done at the outset and will give both BBWP and UoL the key data to agree and establish the baseline.

M&V

Then once the intervention has been installed the Diagnostic sensors are then reinstalled and used to measure the same sample areas to confirm and gauge the ongoing savings, occupancy, and effectiveness baseline.

The overall site energy consumption would also be analysed utilising the AMR/Team system.

Benefits of this approach

- The Data Points gathered are from various areas and area types across a building
- The actual occupancy is measured from the areas across the building
- The actual lights on is measured and the savings potential is based on specific customer data rather than hypothetical estimates.

For the ongoing M&V – the temporary installation of diagnostic sensors will measure and verify that the occupancy sensors are operating and controlling the spaces as effectively as possible (IE when spaces are un-occupied the lights will be off) as well as gauge changes to overall occupancy baselines.

The objective is to provide a relatively simple and cost effective methodology that provides ongoing data points by which to Measure and Verify the effectiveness, changes to the baseline, and overall occupancy of the spaces where the intervention has been installed.

Project description	Gas / Electricity / Heat	Amount saved per year, kWh	% fuel	% total current kWh	Savings per annum £	Capital Cost £	Simple Payback years	Savings 4 years £	Carbon Saving kg CO2e
Fan inverters	Electricity	20,000	3.6%	1.2%	1,400	5,000	3.6	5,600	10,904
Window Sealants	Heat	119,424	10.5%	7.1%	5,374	23,547	4.4	21,496	22,121
Lighting controls	Electricity	57,431	10.3%	3.4%	4,020	15,756	3.9	16,081	31,313
TOTAL SAVINGS		196,855		11.6%	10,794	44,303	4	43,177	
AMR & M&T (2% reduction)	Combined	29,872	1.77%	1.77%	1,799	8,966	5.0	7,197	5,352
Assumes 1 year monitoring period - including Window Thermograpic Surveys									
FINAL TOTALS	Combined	226,727		13.4%	12,593	53,269	4.2	50,373.7	69,690