

SUSTAINABILITY REPORT 2015/16

1 Issue for consideration

Annual report on sustainability performance for 2015/16.

2 Background information

The attached report demonstrates continual improvements towards achieving the goals for the 2020 sustainability strategies and carbon footprint reduction in a number of areas, with continued substantial long term investment in low carbon areas.

Net energy usage overall has increased this year by 3.45% across all site, with 5.36% annual reduction in our carbon footprint, mainly due to the electricity ratio calculation being reduced due to the amount of national green energy being produced. The increase is also associated with the major expansion of the estates m/2 during the year.

Recycling is now well embedded across all 3 College sites. Our new waste contract has now eliminated all general waste going to landfill, all residues are baled and go to refuge derived fuel (RDF) for energy generation. This completes one of our long term strategic aims of zero general waste to landfill.

The completion of the Science, Engineering and Innovation Centre (SEIC), which is designed to BREEAM Excellence, should be generally neutral on future general building energy levels in coming years, with an EPC of 'A' – 24 and 150KWHs of solar panels. The current year is a mixture of contractor use, commissioning and is not a true reflection of future trends.

3 **Decision required** To note the report.

4. **Risk rating:** Low.

5. Risk register

			Risk Register 2015/16
No.	Risk rating	Risk	Comments
8.7	M	Change in legislation since February 2016 to increase penalties and sentencing	Good systems in place, but recognise that the penalties are very severe for any prosecution.
13.1	L	Previous floods and storm damage, fire, snow, frost, ice, tree falls, power cuts.	Regular buildings, trees, equipment and insurance inspections. Consultancy advice. Business continuity plans. Risk assessments.
13.6	L	Price increases in energy and landfill tax.	Risk now reducing, energy prices have fallen, we have locked into a 3 year fixed contract, gas and electricity until August 2018.
13.8	M	Failure to achieve carbon reduction targets for 2020 of 34%.	<p>Risk that funding may be linked to success in carbon reduction (as is currently being implemented in HE sector).</p> <p>Absolute currently at 31.91% with 4 years remaining to achieve 34%.</p>

Author: Director of Facilities

Date prepared: September 2016

Executive Summary

Key Observations

- Carbon footprint 31.91% against 2020 target of 34% from 2005 baseline.
- Total energy usage increased by 3.45%
- Increase in estate of 2,158 metres squared.
- 150KWHs increase in PV during the year.
- Reduction in total energy costs by £15,351 to £334,067.
- Zero general waste to landfill, full use of RDF.

Key Actions/Recommendations

- Continue to target a carbon footprint of 34% or greater by 2020.
- To encourage elimination of waste, or reuse whenever possible. New systems and technology will be a key driver.
- To review how to cost effectively produce more in house green energy.
- Methods for faster interaction with students, as normally limited to a two-year period before they leave and new students arrive. Key ways of getting all the messages across.
- Consider different options for energy renewal process in 2018.

SUSTAINABILITY REPORT 2015/16

1 Energy

The data below indicates a +3.45% increase in the year's total energy consumption overall compared with a targeted -3% as indicated within the 2015/16 Strategic Plan.

A number of on-going issues affected the annual target:

- (a) Contractors using additional services during the construction of the SEIC Building commissioned during February 2016. Especially 24 heating to dry out the concrete slabs ready for flooring.
- (b) First full operational year of the Patterdale Building.
- (c) Continual change in usage of some campus buildings, especially XLC, with the new building online from February 2016.
- (d) A colder and long winter, compared to the previous year.
- (e) Extensive use of air conditioning during a hot period in Eskdale.
- (f) Installation of new replacement boilers at Eskdale and new hot water units at Dalehead.
- (g) Installation of 150KWH of photo voltaic (PV) on the SEIC roof at the end of the 2015 year and a full year of Patterdale Building PV generation.
- (h) Long term 3-year energy contract, reducing financial costs overall per KW hour.

Year	2015/16	2014/15	2013/14	2012/13	2011/12	2010/11	Change from 2014/15 to 2015/16 - = saving	% change
Electricity KWH								
Langdale Road	1,601,885	1,567,198	1,702,543	1,869,779	1,768,152	1,833,934	+34,687	+2.21
Euxton Lane	402,002	394,237	390,457	429,883	519,677	514,352	+7,765	+1.97
Market Street	167,762	174,762	173,239	176,887	148,995	178,429	-7,000	-4.01
Total electric	2,171,649	2,136,197	2,266,239	2,476,549	2,436,824	2,526,715	+35,452	+1.66
Total £	£239,453	£242,634	£247,536	£239,417	£247,578	£226,692	-£3,181	-1.3%
Gas KWH								
Langdale Road	2,064,718	2,032,200	2,089,892	2,984,257	2,622,751	3,215,062	+32,518	+1.60
Euxton Lane	466,956	349,793	402,578	578,784	474,500	464,683	+117,163	+33.49
Market Street	383,850	399,111	390,994	464,849	424,151	415,158	-15,261	-3.83
Total gas	2,915,524	2,781,104	2,883,464	4,027,890	3,521,402	4,094,903	+134,420	+4.83
Total £	£94,614	£106,784	£108,458	£127,698	£109,387	£114,983	-£12,170	-11.40%
Total energy KWH								
Langdale Road	3,666,603	3,599,398	3,792,435	4,854,036	4,390,903	5,048,996	+67,205	+1.87
Euxton Lane	868,958	744,030	793,035	1,008,667	994,177	979,035	+124,928	+16.80
Market Street	551,612	573,873	564,233	641,736	573,146	593,587	-22,261	-3.88
Total energy, all sites	5,087,173	4,917,301	5,149,703	6,504,439	5,958,226	6,621,618	+169,872	+3.45
Total £	£334,067	£349,418	£355,994	£367,115	£356,965	£341,675	-£15,351	-4.39%

2 Photovoltaic Panels (PV)

The Langdale campus now operates 4 separate sets of photovoltaic panels, all generating electricity and a further large array at Euxton Lane, which has been generating for a part year. The arrays have a total maximum output capacity of 228 KWH. The units have produced 62,078 KWH this year due to the large increase in capacity on our new buildings. Total generated electricity 282,391 KWH since their initial installation.

Resultant saving of 173 metric tonnes of carbon since installation and reduced importation of energy.

A full year's generation from the XLC is predicted to be above 110,000KWHs and around 77 metric tonnes of carbon savings.

3 Water

This year is the first for many years when we have had very little construction activity at Langdale Road, so it should help in future years to see a more representative comparison of usage.

Euxton Lane campus due to the construction of the SEIC again is difficult to take any trend analysis from and the building has now increased by 2,057 metres square.

Market Street has always been an estimate provided by the utility company, this year is the first with a meter fitted and actual readings provided. We have been under charged in previous years. The relocation from August will also have a major effect on next year's figures.

Water cu m	2016/17	2015/16	2014/15	2013/14	2012/13	2011/12	Change from 2013/14 to 2014/15 - = saving	% saving
Langdale Road		13,270	13,357	15,412	16,492	13,932	-87	-0.6%
Euxton Lane		2,489	2,347	1,809	2,905	3,111	+142	+6.1%
Market Street		3,026	1,098	1,009	1,150	1,150	+1,928	+275.5%
Total water		18,785	16,802	18,230	20,547	18,193	+1,983	+11.80%

4 Waste Streams - Recycling

Our new contract was fundamentally placed with the aim to achieve zero general waste to landfill, by all remaining non-recyclable waste going to Refused Derived Fuel (RDF) being burned to produce energy. This target has now been achieved.

Waste Metric /Tonnes (M/T)	2016/17	2015/16	2014/15	2013/14	2012/13	2011/1	Change from 2014/15 to 2015/16 (-) = saving M/T	% Reduction M/T +/-
Refuse derived fuel (RDF)		197	36 (part year)	0	0	0	+161	+547%
Landfill general waste.		0	214	222	281	367	-214	-100%
All other waste in recycling chains		294	158	168			+136	+86%
Total of all types of waste.		491	408	390			+83	+20%

We have achieved our goal of zero landfill from general waste, with the remaining 197 tonnes of waste directed for use as RDF, for energy production.

The tonnage of waste disposal for 2015/16 (197) compared with the previous year (250) reflects a decrease of approximately 21% and this now going to RDF. This is not a true reflection, as all the waste is now processed via a waste transfer station and some of the recyclables are removed before the remaining is sent to RDF. This is then added into our other recyclable stream data, creating a potential increase.

Overall, waste streams are now being processed by one contractor. The measurement of data is different from previous years, recyclable elements are an average percentage of what is processed by the plant per week and recycled as a percentage. There is still some concern over the accuracy of the new waste contractor's measurement of waste and it is being currently challenged. Current figures based on the data supplied.

5 Recycling

Blakely's system for card, paper, cans and plastic for Euro bins is different and collected by one vehicle, with separation at the transfer station, this makes it difficult to give exact figures for comparison with previous years.

The overall figures for all bulk recycling streams are continuing to make positive progress, with landfill for general waste now eliminated, with all general wastes going to various higher tiers of recycling.

Some areas that have gone to red (increased), with less recycling are still positive aspects:

- Fluorescent tubes and bulbs due to the introduction off LED units has reduced recycling massively, as these units have a minimum of 7 years guarantee, so no disposals required.
- Toner cartridges are another example of reduced usage, following the greater use of MFDs and massive reduction in use of classroom desktop printers. The new 4 year MFD/Printer contract rolled out during July 2016, should again aid future recycling, with collection of all empty units under the contract.
- Food waste is another example of less recycling, but positive in that food is not needing to be disposed of via better initial management controls.

Further involvement of all staff and students is essential to keep these quantities increasing.

The following data is an indication of recycling streams and quantities compared with the previous years when appropriate, figures are not a true like for like due to new tender and different processing system:

Year	2015/16	2014/15	2013/14	2012/13	2011/12	2010/11	Actual change + = increase	% Reduction +/-
Fluorescent tubes and bulbs (no.)	40	195	4,200	11,500	1,821	1,182	-155	-80%
Clear glass (tonne)	1	1	1	1	1	1	0	0
Coloured glass (tonne)	1	1	1	1	1	1	0	0
Cans / plastic (tonne)	41.01	14.73	6.670	8.950	5.620	4.650	+26.28	278%
Shredded paper (tonne)	6.962	5.360	6.401	9.990	8.010	4.465	+1.602	30%
Paper / card (C/Metre) (tonne)	45.68	23.03	27.98	51.670	50.330	50.230	+22.65	98%
Cooking oil (litre)	1,440	990	2,005	1,780	875	2,500	+225	45%
Engine oil (litre)	0	0	0	125	0	205	0	0
Toner cartridges (no.)	96	57	114	217	672	400	+39	68%
WEEE items (tonne approx.)	Now by item number	Now by item number	3.32	1.98	0.88	0.376	0	N/A
Small batteries (tonne)	0.140	0.090	0.065	0.090	0.240	0.00	+0.05	55%
Scrap metals (tonne)	5.06	5.88	6.16	4.44	11.98	0.80	-0.82	-14%
Food waste (Kg's)	4,090	4,880	2,400	2,000	3,800	700	-790	-16%
Re-use items via British Heart Foundation bins. (240L bins)	7	9	8	11	11	3	-2	-22%

Polystyrene from IT packaging in 2x1 metre bags.	New system return to supplier.	New system return to supplier.	267	156	62	105	0	N/A
Mixed recycling 2011/12. (M/T)	N/A Now RDF	107	111	141	184	N/A	0	N/A
Refuse derived fuel (RDF)	197	36	N/A	N/A	N/A	N/A	+161	547%

6 Carbon footprint

Our strategic objective is to continually reduce the College's Carbon Footprint from our agreed 2005/06 datum. Carbon data conversion factors are now regularly being updated following feedback from processes. Initially our first few years' data used basic calculation principles, followed by a change to the Carbon Trust more in depth data. We now use the UK conversion factor carbon smart calculator, which is more accurate and being accepted as the industry norm. The ratio for electrical carbon calculations is reducing quickly due to the large increase in the UK of green energy production from wind and solar.

Year	2015/16 tonnes of carbon	% of total	2014/15 tonnes of carbon	% of total	2013/14 tonnes of carbon	% of total	2012/13 tonnes of carbon	% of total	2005/6 tonnes of carbon (Datum year)	% of total
Gas	536	32.97	514	29.30	529	27.88	739.52	33.43	914	38.28
Electric	895	55.04	1055	60.13	1,189	62.68	1,299.20	58.74	1,225	51.31
Student buses - All	131	8.05	117	6.70	112	5.90	101.61	4.59	120E	5.03
Staff travel	34	2.10	33	1.90	33	1.74	34	1.54	30E	1.26
College vehicles	20	1.23	21	1.20	19	1.00	20	0.91	22E	0.92
Employee commuting, estimated	2	0.12	2	0.11	2	0.11	2	0.09	1.5E	0.06
Waste disposal landfill emissions	0	0.00	5	0.26	6	0.32	7.64	0.35	70E	2.93
Water	8	0.49	7	0.40	7	0.37	7.85	0.35	5	0.21
Total absolute	1,626	100%	1,754	100%	1,897	100%	2,212	100%	2,388	100%
Cumulative absolute carbon from datum year %	-31.91		-26.55		-20.57		-0.52		0.00	
m/3 % increase all sites	+23.88		+16.65		+16.90		+14.20		0.00	
From datum	1237.71		1,461.95		1,583.24		1,893.32		2,388	

year adjusted for m/3 growth. Carbon tonnes										
2020 target, 34% absolute reduction	1,576 Tonnes									
Current absolute 31.91%	1,626 Tonnes									

The 2015/16 figures indicate an absolute 31.91%, 762 tonnes reduction in our carbon footprint emissions across all sites. Carbon footprint reduction from the datum point of 2005/6 including allowing for a cumulative 23.88% increase in building metre squared (m/s) for 2015/16, equivalent to an additional saving of 388 tonnes of carbon.

The same energy level on a static size estate, would have achieved our 2020 carbon goal. With the potential from installed PV and further energy measures the absolute target is still achievable by the 2020 target date, with a further 3.08% reduction required.

7 Ecology

The Science, Engineering and Innovation Centre (SEIC) at XLC, is designed to the BREEAM Excellence standard. This required detailed ecology surveys, to ensure we have a positive ecological gain at the end of the projects. This has resulted in a much improved external environment.

The Science, Engineering and Innovation Centre project, has achieved 70.3% at the pre-construction phase. The contractors are fully aware of the requirement to deliver BREEAM Excellence as a grant condition and are reviewing all potential options to increase this score for contingency for the post BREEAM certification.

Further planting in various areas at LRL has been completed following feedback from our stakeholders.

9 Travel Plan

Our Travel Plan has been approved via LCC and has been operational for 2 of the 5-year programme. Good progress has been made in a number of areas:

- Improved and additional car parking at XLC.
- Additional drop off and pick up points.
- Encouraging car sharing, via HR co-ordination.
- Encouraging wellbeing events and consideration of walking to College.

The installation of electrical vehicle charging points was considered as an option during the year, but currently considered too expensive to progress.

10 Conclusion

Good progress is continuing to be made in many areas, following further committed programmes of capital and revenue expenditure. Although total energy usage increased by 3.45% this needs to consider Patterdale was fully operational for a full year, when the previous building Borrowdale was demolished and not taking any energy. Also part way through the year the new SEIC was handed over and came on line, in a full year a more balance PV output will adjust some of this increase in electricity. We also had a very hot spell during June/July when extensive use of air conditioning was authorised to be activated, which has not been used over the last 5 years.

These programmes will continue to move the College further towards its 2020 carbon reduction programme of an absolute 34%, with a current figure of 31.91%. If the College had not increased in size and made the equivalent energy savings, we would exceed our 2020 target already.