



Borders College Carbon Management Plan 2016 - 2020

Carbon Management Plan (CMP2)

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Foreword from Chair of Sustainability Committee

Borders College has committed to a policy of reducing adverse impact on the environment and embedding sustainability in our business functions and in the curriculum. This "whole College" approach sees specific actions identified within our business support services, the development of student programmes in sustainable technologies and also the inclusion of a sustainable ethos across all of our full-time provision. The Carbon Management Plan is central to all aspects of this policy, driving the input actions and measuring outcomes.

The College recognises that, in promoting and embedding such a culture of sustainability, real improvements across the business can be delivered in terms not only reducing our carbon footprint, but also making financial savings and delivering greater efficiency and effectiveness in our business. We also recognise our place as a role model and example of good practice for all our stakeholders,

This Plan (CMP2) follows on from the Carbon Management Plan (CMP1) which focussed on the Scottish Borders Campus and was developed in conjunction with Heriot-Watt University's School of Textiles and Design who share that site. Over the five year period of that plan, the institutions reduced CO₂ emissions by 27.5%, exceeding the target of 25%. Following the introduction of mandatory reporting, the institutions have developed separate Plans, although it is likely that many actions taken under this Plan will benefit both occupants of Scottish Borders Campus.



Pete Smith

Vice Principal – Finance and Resources.

Executive Summary

Reducing our impact on the environment is a key priority for the Scottish Government; the introduction of the Climate Change (Scotland) Act 2009 places duties on institutions to reduce greenhouse gas emissions and graduate to a low carbon economy which will increase sustainable economic growth. Borders College is continually developing targets and opportunities to ensure we are engaged in and supportive of this important national target.

Borders College has placed sustainability as a key strategic objective within “*Our Strategy – Towards 2020*”. The College has already embarked on a variety of sustainable initiatives including recycling, energy awareness, travel policies and travel reduction strategies, implementing energy efficient products and services and energy efficiency with estates development over the past 7 years of our co-location with Heriot-Watt University at Scottish Borders Campus.

Our previous Carbon Management Plan (CMP1) covering Scottish Borders Campus had a CO₂ reduction target of 326 tonnes (25% from a baseline of 1500 tonnes). This was exceeded by 10%, reducing the Campus emissions from 1550 tonnes in 2010 to 1123 in 2015. The new baseline set for this Carbon Management Plan (CMP2) reflects the changes in reporting requirements for Borders College and Heriot-Watt University and the inclusion of previously unaccounted data for estates activities and redefined areas of reporting responsibilities; therefore, the new baseline is more reflective and specific to Borders College activities across all sites and activities.

The Plan sets out both the carbon and financial benefits of adopting a proactive and structured approach to carbon management. It quantifies the College baseline CO₂ emissions as 765 tonnes per annum calculated from gas, electricity, transport and waste costs generated in 2014 across all 3 campuses: Galashiels, Hawick, and Newtown St Boswells and our outreach centre in Jedburgh and training centre in Edinburgh. A reduction target of 10% in CO₂ emissions over the period 2016-2020 has been set.

By conducting a review of departmental activities we have identified additional projects to reduce our emissions by 10% over the next 5 years, saving a total 82 tonnes of CO₂ per annum. Implementing the CMP2 will also realise ongoing cash savings of over £31,000 annually with an average payback for capital investments of 3 years. Whilst reducing our CO₂ emissions, implementing the Plan will also help to bridge the gap between current energy costs and the future predicted rise in expected energy costs.

Included within the CMP2 are 5 quantified projects as detailed in Section 4.0 and Appendix A. One of the projects has commenced with the replacement of over 300 compact fluorescent lamps (CFLs) completed across the main building with LED equivalents.



The concept of the Plan and financing the implementation of individual projects at Scottish Borders Campus has previously received approval from the Campus Management Committee, enabling the utilisation of Campus sinking funds where appropriate, financing projects from current Facilities Management budgets and attracting external income streams.

The ongoing progress and success of the CMP2 will be managed by the College's Sustainability Committee whose main role is to implement and monitor its effectiveness as detailed in Section 5.0.

By implementing the CMP2 the College will ultimately benefit financially; however, the education of our staff and learners on the importance and benefits of acting in a sustainable, energy efficient and responsible manner provides significant unrealised future benefits for the organisations and wider community.

The main focus of the CMP2 is to reduce the environmental impact of our day to day business and reduce our carbon emissions through improving our corporate performance. By implementing the projects identified within the CMP we will take a significant step towards achieving our strategic and financial objectives.

Borders College will reduce its CO₂ emissions by 10% by 2020.

1.0 Introduction

Borders College is a small, rural college serving the Scottish Borders Region which covers an area of 1800 square miles and which has a population of almost 114,000. The College is the largest provider of post-compulsory education in the Scottish Borders and in 2014-2015 enrolled 1270 full-time learners and 3950 part-time learners.

The College operates across the region with the Scottish Borders Campus in Galashiels providing the *hub* for a number of *spokes* - two further campuses at Newtown St Boswells and at Hawick, an outreach centre in Jedburgh and a training centre in Edinburgh. The college also delivers community-based provision in towns across the Borders. This wide reach reflects and responds to the diverse and dispersed nature of our communities and our land-based and countryside provision - including agriculture, gamekeeping, animal care, horse care and horticulture - has been developed to support the rural nature of our environment. The remainder of the College provision is broad-based and covers business, computing, IT and administration; construction and engineering; art and design, hair, beauty and catering; health and social care; access programmes and a range of community and leisure courses. The vast majority of our students come from the local area (89%) and, of our new full-time students each year, around 33% are school leavers from local Borders schools.

Since 2009, the College has occupied modern, fit-for purpose estate in all three main campuses as a result of the completion of an ambitious estates strategy. In Galashiels the College is co-located with the Heriot-Watt University School of Textiles and Design which supports our ambition to provide coherent and efficient further education provision for our region. Our innovative and efficient approach to the development and delivery of shared services has supported financial sustainability for our college during a challenging financial period.

CMP2 will contribute to at the College in its widest sense by the reduction of our carbon footprint and by identifying opportunities to improve efficiency across our business functions and activities within the 5 year period of the Plan.

Sustainability issues are currently managed by the Sustainability Committee which has already achieved some significant success with CMP1 since its inception in 2010, the most significant installations being a 50kw solar PV plant and installing a new and innovative SHARC heating system designed to operate by removing heat from passing waste water as a renewable heat source for the Scottish Borders Campus. We have also reduced waste, significantly increased recycling, reduced our transport fleet and conducted a review of student transport arrangements along with re-lamping a significant amount of light fittings across the estate to energy efficient LEDs.

2.0 Carbon Management Strategy

2.1 Our Commitment

Borders College is committed to improving our corporate performance to ensure the future sustainability of the environment and our organisations. The College's Strategic Plan "*Our Strategy – Towards 2020*" contains the following statement under Building Sustainability.

'Implement an ambitious low carbon strategy, building on our sustainable SHARC heating and solar energy projects'.

Committing to the Carbon Management Plan will further cement our position as a responsible organisation in helping to tackle increasing carbon emissions and global warming; we will also demonstrate to our staff and learners the important benefits of carbon reduction and ensure this ethos is embedded across our organisation.

2.2 Context and Drivers for Carbon Management

The increase of CO₂ levels is having a detrimental impact on the environment in relation to climate change; this impacts institutions locally and nationally. We value our rural location and in order to protect our environment for future generations actions are required to tackle rising CO₂ emissions.

The College will continually review and monitor our environmental performance in all our activities, the implementation of the CMP2 will allow the College to evaluate our current performance and assess and prioritise projects to ensure significant carbon savings can be made whilst providing medium to long term financial return on any investments. The previous and predicted future rise in energy costs provides a major motivation to promote and modify wasteful energy behaviours and implement suitable and sufficient safeguards to minimise the impact of increased operational costs.

By becoming more efficient we will: -

- Reduce the impact of energy cost increases against significant budgetary pressures.
- Reduce our energy consumption.
- Reduce our CO₂ emissions.
- Reduce our impact on climate change.
- Increase staff members' and learners' awareness of climate change issues and help alter wasteful behaviour.
- Improve our plant and equipment's operational effectiveness and life cycle.

- Comply with national and sector-specific initiatives such as Climate Change Declaration and UCCCfS.

2.3 Our Low Carbon Vision

The College has a major role and significant influence within the Borders area, predominantly with the younger generation. We have a responsibility to lead and guide climate change and carbon reduction at a local level. We have the opportunity to influence behaviour and help preserve the environment and support the aspirations of future generations. We can achieve this by demonstrating our commitment to all by implementing the carbon reduction measures contained within the CMP2, driving behavioural change, reducing our carbon footprint and improving our financial stability.

2.4 Strategic Aims

In terms of climate change, the key aims for Borders College are: -

- To manage our estates to minimise adverse impact on the environment and embed sustainability in our day-to-day business.
- To evaluate our current plant and equipment to ensure efficient operation/procurement and establish longer term financial benefits.
- To embed environmental sustainability into the curriculum.
- To reduce our energy consumption.
- To use energy more efficiently.
- To influence and modify wasteful behaviour across staff and student body.

2.5 Targets and Objectives

The main objective is to implement the projects contained within the project list within the 5 year life span of CMP2 to meet our 10% reduction target.

3.0 Emissions Targets

3.1 Calculating our Baseline

In order to establish a baseline required for the CMP2 a review of utilities, waste and fuel costs was completed for year 2014. The sources of emissions were calculated from conducting a review of the following sources: -

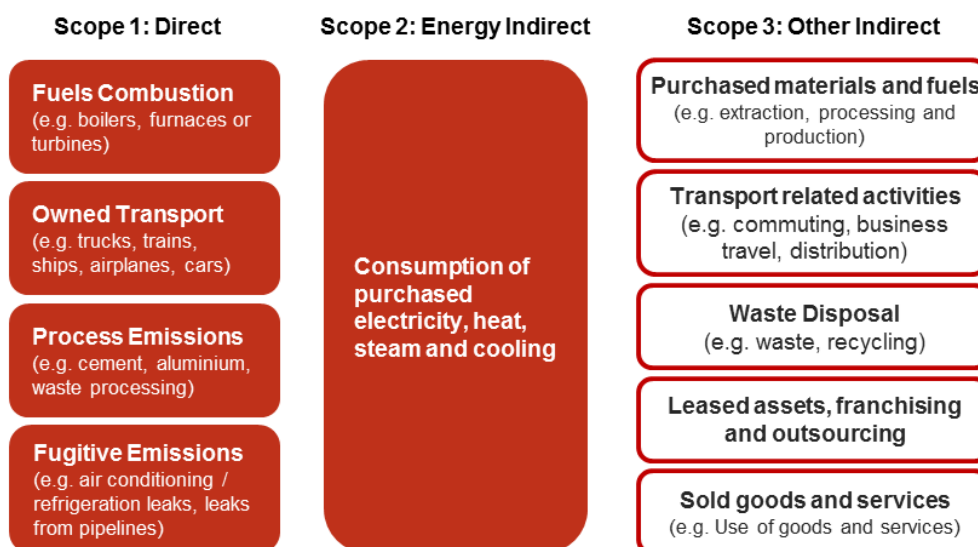
- Scope 1- Natural Gas, Heating Oil and vehicle fuel from the Scottish Borders Campus Main Building and Technical Training Centre, Hawick and Newtown St Boswells Campuses. This equates to 206 tonnes of our CO₂ emissions.
- Scope 2- Electricity generation across all sites 435 tonnes of CO₂.
- Scope 3- Waste disposal, Water supply and treatment and all staff business travel during 2014/15 producing 124 tonnes of CO₂.

3.2 The College Baseline 2014

The College baseline is calculated from a combination of Gas, Electricity and Oil usage, waste generation and fuel costs over academic year 2014/15. Total carbon Emissions were calculated at 765 tonnes of CO₂ per annum

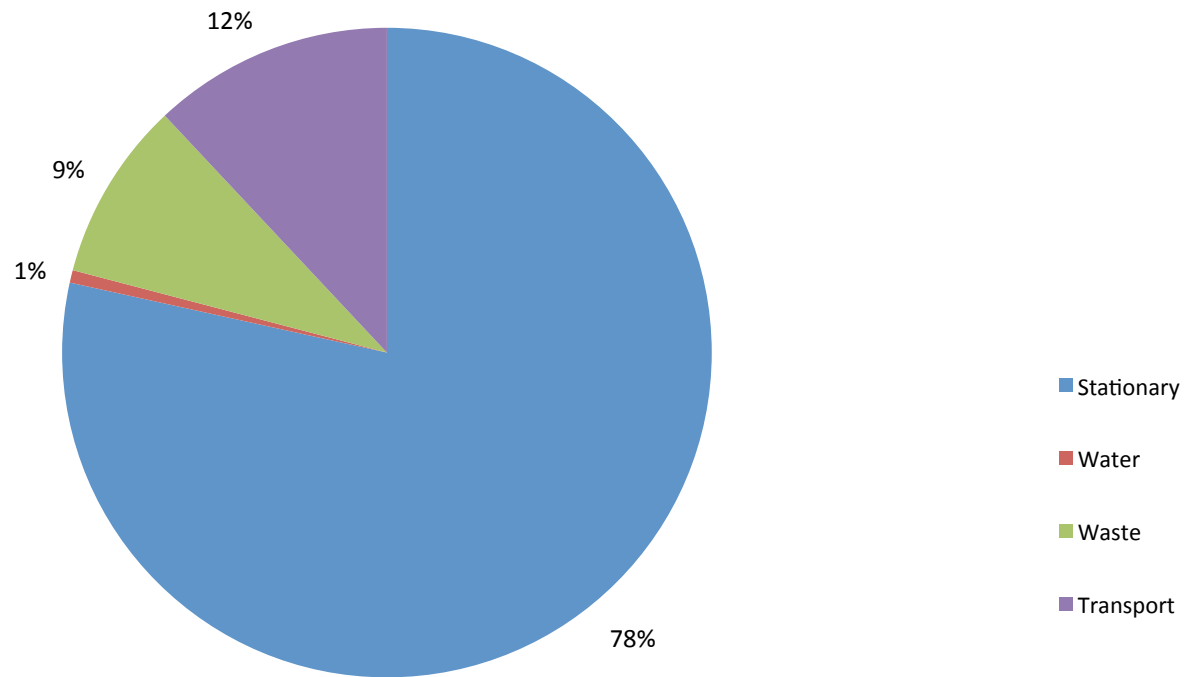
	Total	Scope 1	Scope 2	Scope 3
Baseline CO₂ emissions (tonnes)	765	206	435	124

Summary of emissions reporting by scope

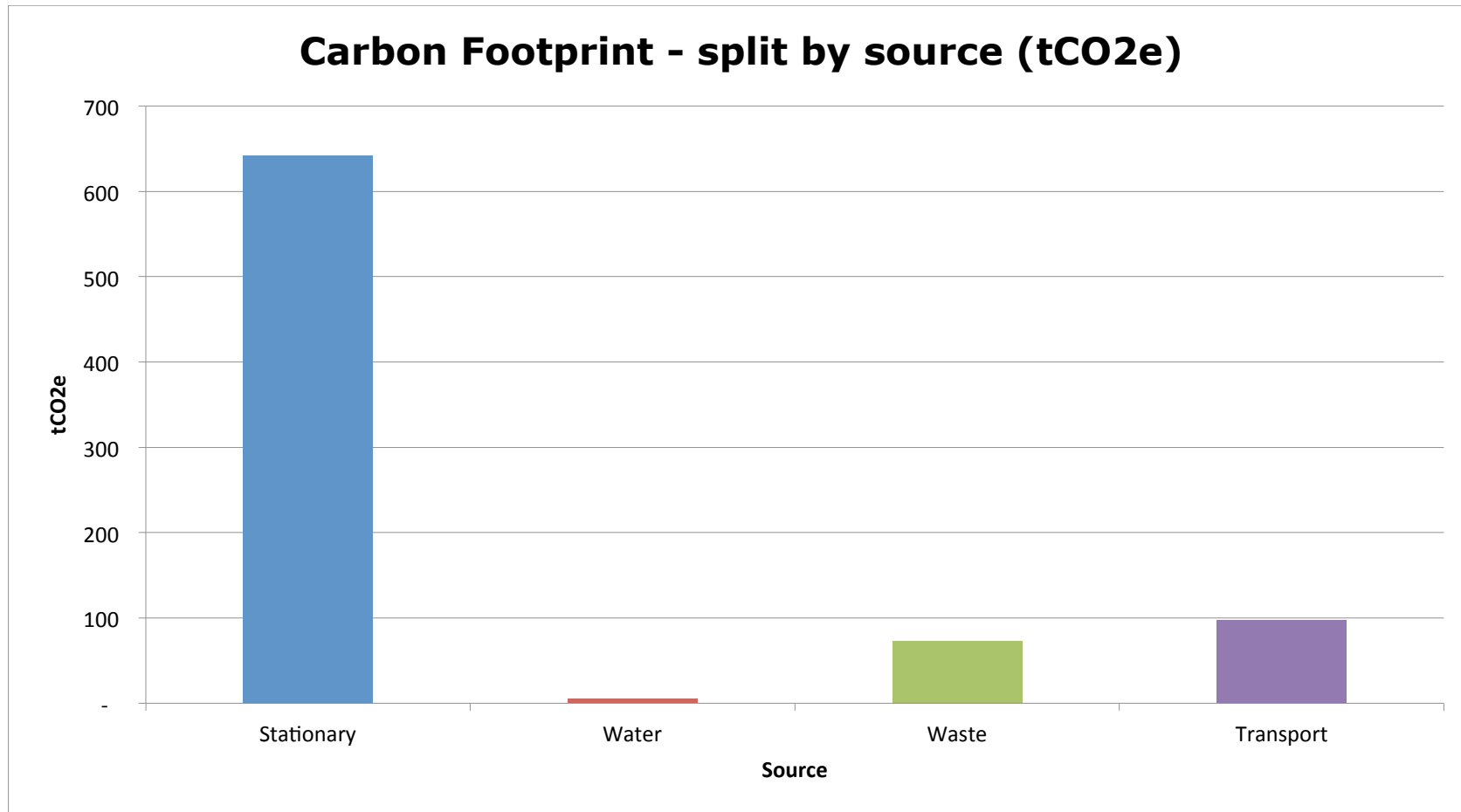


Total **Cost of CO₂** Emissions from Buildings, Transport and Waste

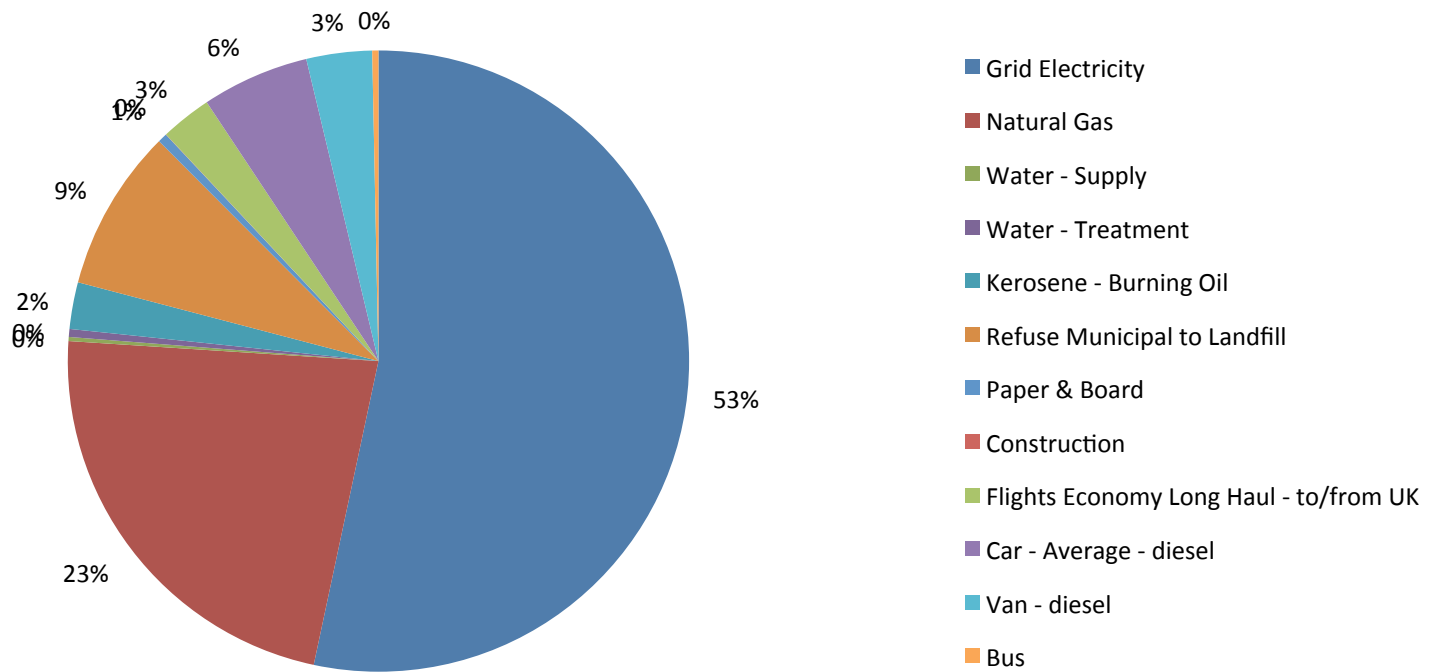
Carbon Footprint - split by source (tCO₂e)



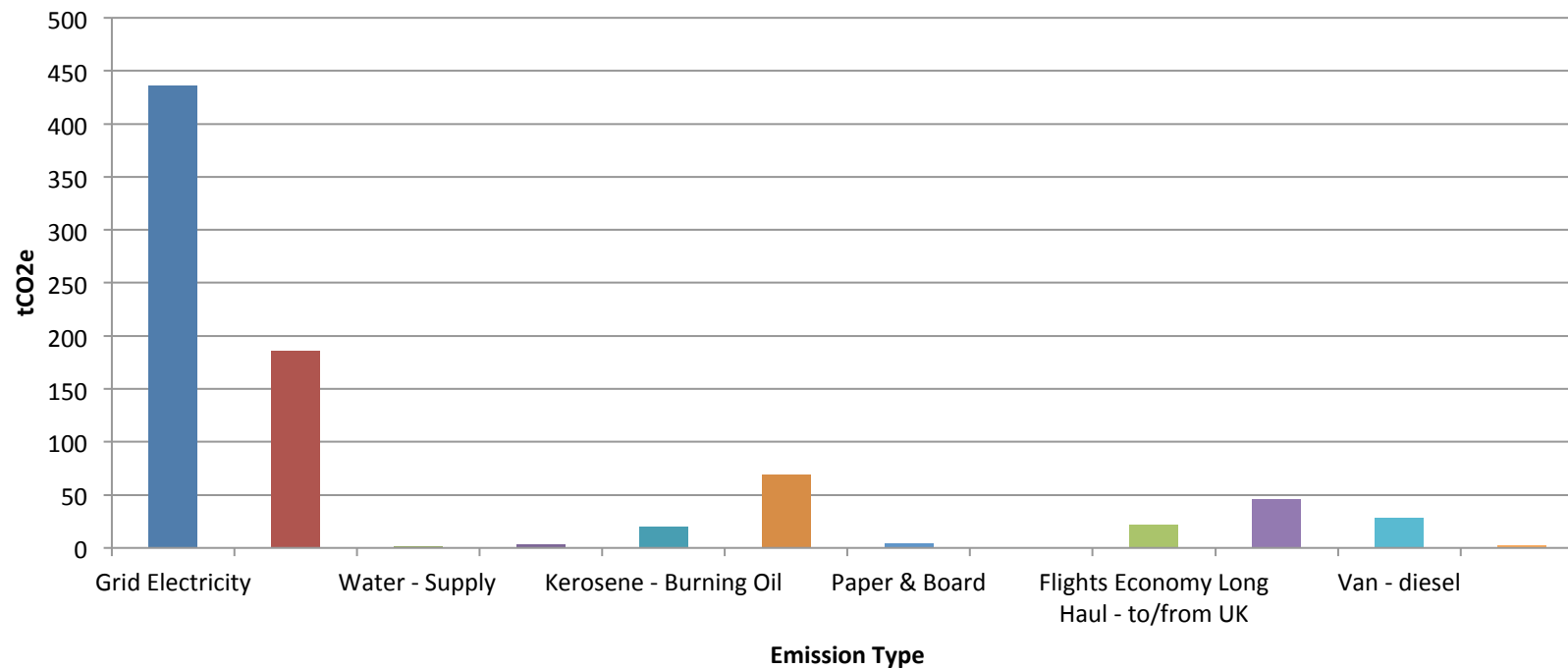
Carbon Footprint - split by source (tCO₂e)



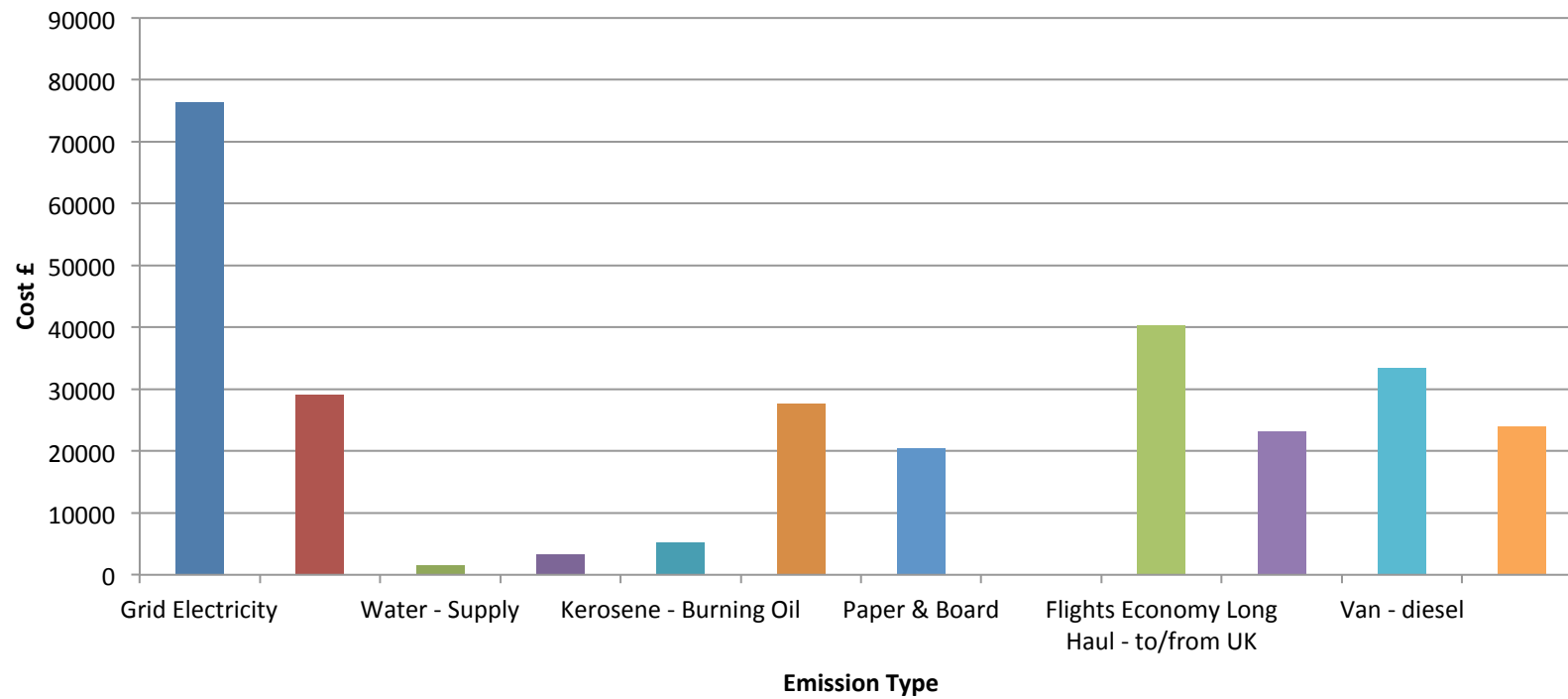
Carbon Footprint - split by emission type (tCO₂e)



Carbon Footprint - split by emission type (tCO₂e)



Carbon Footprint - split by emission type (Cost £)



4.0 Projects

4.1 Project list

Ref	Projects	Owner	Cost		Annual Savings (yr 1)				RAG Status and % Progress	% of CO2 Target	Implementation Year
			Capital	Operational	Financial (Gross)	tCO2 Savings	BC tCO2 Savings	Pay Back Yrs			
BC01	Implement an Energy management programme, incorporating policy, training, awareness & performance measurement		£0	£0	£6,901	38.9	19.5	0			
BC02	Insulate pipe work & Fittings in all plant rooms		£0	£1,040	£439	1.8	0.9	2.4			
BC03	Replace 517 Compact Fluorescents across SBC		£8,659	0	£5,299	32.1	17.6	1			2016/17
BC04	Implement a Metering, Monitoring & Targeting programme, incorporating sub metering of Electricity & Gas & MMT software.		£20,600	£0	£11,707	62.4	31.8	1.8			
BC05	Voltage Optimisation (iVolt)		£38,000		£6,751	40.6	20.7	5.7			
BC06	Water reduction systems on taps										
BC07	Food waste recycling										
BC08	External street lighting Led upgrade										
BC09	Better use of Borders Railway for business travel										
BC10	Control of heating plant outside BMS, including xbox nu air units										
BC11	Chalmor etrvs to reduce heat loss in unoccupied areas										
BC12	Lighting sensors to reduce use during low/non occupied periods.										
BC13	Re Lamp ICT and other offices with LED equivalent (scope to be determined)										
		Totals	£67,259	£1,040	£31,097	175.8	90.5				



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The above reporting structure ensures the Sustainability Committee communicates the implementation plans effectively.

5.3 Data Management – Measuring the Difference, Measuring the Benefit

In advance of developing the CMP2, significant progress has been achieved with developing systems designed to measure and monitor the plan's effectiveness. Plotting of weekly data utilising an online software package provides valuable data which is used to measure against targets and highlight progress made by converting kWhrs used into real cost/CO₂ reductions and reported quarterly to the Sustainability Committee and annually through annual progress report.

5.4 The Carbon Management Team – Delivering the Projects

The team empowered to deliver the majority of the projects identified within the CMP2 consists of P Smith – Vice Principal – Finance and Resources, R Hewitt – Facilities Manager, P Elliot – Assistant Facilities Manager and various sub-contractors engaged for their expertise. The current members all form part of the College's Finance and Resources team and, as such, have the authority and budget control to decide upon the day-to-day aspects of implementing projects subject to the College's financial controls. A structure of weekly meetings is already in place which will be adapted to accommodate the CMP2 requirements.

5.5 Succession planning for key roles

The Vice Principal – Finance and Resources is a member of the College's Senior Management Team and, acting as Executive Sponsor for the Plan, reports to both the SMT and wider College Management Team. He also reports to the Regional Board and its sub-committees on all relevant areas, including this Plan. At a senior management level, the College has embedded a collective responsibility ensuring that, in the absence of one member, all duties and responsibilities can be met. Thus, in the absence of the Vice Principal – Finance and Resources, immediate executive responsibility would pass to another member of SMT, while operational decision-making would continue to rest with the Facilities Manager. In the absence of the Facilities Manager, the Assistant Facilities Manager would take on short-term responsibilities for the CMP until the Facilities Manager was replaced.

5.6 Approval

The CMP2 will be submitted to the Sustainability Committee in September 2016. This will also form the date for annual reviews of the plan in future years. Key internal milestones and timelines will be determined by each project and will be subject to Committee approval at quarterly intervals. Each project timeline will be monitored and funding reviews completed prior to the start of next academic year.

Appendix A: Definition of Projects

Project: Reference:	BC-001										
Owner (person)	Pete Smith										
Department	Sustainability Committee Chair										
Description	<p>Implement an Energy Management Programme, incorporating policy, training, awareness & performance measurement. A simple Energy Policy has been incorporated within the Sustainability Policy. This should be further developed, including some key overall consumption targets. It is also necessary to develop a structured approach to energy awareness, and this should be instigated by incorporating energy awareness wherever possible within the Campus's training programmes.</p> <p>Potential energy savings throughout the site will be highlighted through the creation of a formal framework for increasing awareness managed by the Sustainability Committee. Energy awareness education to the staff and students needs to be carried out on a regular basis. Staff and students should be consulted to provide their opinions on whether there are any energy efficiency issues with either the process equipment or the building services. Also, the usage and monitoring of control systems, such as the heating, A/C and lighting controls should be included.</p>										
Benefits	<p>By implementing the above the following benefits will be realised</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Financial Savings PA</th> <th>Payback Period</th> <th>CO₂ reduction PA</th> <th>% of CO₂ Target</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">£6,901</td> <td style="text-align: center;">0.0yrs</td> <td style="text-align: center;">38.9 tonnes</td> <td></td> </tr> </tbody> </table>			Financial Savings PA	Payback Period	CO ₂ reduction PA	% of CO ₂ Target	£6,901	0.0yrs	38.9 tonnes	
Financial Savings PA	Payback Period	CO ₂ reduction PA	% of CO ₂ Target								
£6,901	0.0yrs	38.9 tonnes									
Funding	No funding required										
Resources	Staff time to implement through sustainability Committee										
Ensuring Success	A member of staff should be given responsibility for management of energy. The Campus should now consider the creation of a formal action plan for achieving further energy savings. The recommendations made in this report could be used as the basis of the action plan and as a platform for further investigation.										
Measuring Success	Conduct pre and post evaluations of utilities usage over time and during periods of active campaigning.										
Timing	6-12 Months										
Notes											

Project:	BC-002										
Reference:											
Owner (person)	Robert Hewitt										
Department	Facilities										
Description	<p>Insulate pipe work and fittings in all plant rooms. Some sections of hot water pipe work, and most fittings (such as valves, flanges, elbows and tees) are un-insulated. Un-insulated or poorly insulated hot water pipe work and fittings increase the gas consumption of space heating boilers and water heaters. By insulating any bare sections of pipe work and fittings, the energy, and hence carbon and cost savings, could be made.</p>										
Benefits	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>Financial Savings PA</th> <th>Payback Period</th> <th>CO₂ reduction PA</th> <th>% of CO₂ Target</th> </tr> </thead> <tbody> <tr> <td>£1,040</td> <td>2.4yrs</td> <td>1.8 tonnes</td> <td></td> </tr> </tbody> </table>			Financial Savings PA	Payback Period	CO ₂ reduction PA	% of CO ₂ Target	£1,040	2.4yrs	1.8 tonnes	
Financial Savings PA	Payback Period	CO ₂ reduction PA	% of CO ₂ Target								
£1,040	2.4yrs	1.8 tonnes									
Funding	Future FM budget										
Resources	FM time to complete										
Ensuring Success	All exposed pipe work should be insulated										
Measuring Success	Reduction in gas consumption within TTC										
Timing	0-3 Months										
Notes											

Project:	BC-003										
Reference:											
Owner (person)	R Hewitt										
Department	Facilities										
Description	Replace 517 Compact Fluorescents across SBC with Led equivalent, the current CFL units require 2 x 26watt bulbs (52 watts per fitting) equivalent of 90,075 Kwhrs P/a @ £0.09/ kwhr = £8106. The Led units are 18 watt with equivalent output and can be retrofitted in house provided with a 5 year warranty. Each unit costs £10 with E fittings costing £40.										
Benefits	<table border="1"> <thead> <tr> <th>Financial Savings PA</th> <th>Payback Period</th> <th>CO₂ reduction PA</th> <th>% of CO₂ Target</th> </tr> </thead> <tbody> <tr> <td>£5299</td> <td>1.6</td> <td>32.1</td> <td></td> </tr> </tbody> </table>			Financial Savings PA	Payback Period	CO ₂ reduction PA	% of CO ₂ Target	£5299	1.6	32.1	
Financial Savings PA	Payback Period	CO ₂ reduction PA	% of CO ₂ Target								
£5299	1.6	32.1									
Funding	Sinking Fund replacing existing light fittings, cost to replace 517 units £8659 with 5 year warranty.										
Resources	Time for in house staff to fit and hire of cherry pickers to complete reception fit out.										
Ensuring Success	Replace all reception lights (approx. 70) to establish reliability prior to replacing the remaining 440 over 2016/17/										
Measuring Success	Monitor effectiveness over 5 year period.										
Timing	Within 1-2 years.										
Notes											

Project:	BC-004										
Reference:											
Owner (person)	Robert Hewitt										
Department	Facilities										
Description	<p>Implement a Metering, Monitoring & Targeting programme, incorporating sub-metering of electricity and gas & MMT software.</p> <p>The introduction of sub metering at strategic points across the campus allows us to measure and monitor key parts of the Campus and identify opportunities to reduce energy wastage and improve efficiency. Sub-metering should be installed on the gas supply to each plant room and kitchen. It is recommended that the electrical supply to each plant room (supplying pumps & controls) is also sub-metered, along with each air handling unit (AHU) and the main server room. It is also recommended that the existing gas and electric sub-meters in the Technical Training Centre, the fiscal gas meter for the site, and the fiscal electric meter in the High Mill, have automatic meter reading (AMR) installed. This is achieved by ordering Automatic Meter Reading from the main energy provider or from an independent AMR provider</p> <p>The sub-metered data will be analysed alongside the existing site-level electrical half hourly consumption data (HHD), and HHD from the other gas and electric fiscal meters. This analysis will be used to identify energy saving opportunities, particularly those relating to the timing of equipment being turned on/off. The analysis should also be used to track the progress of energy saving interventions. This would form part of an ongoing metering and monitoring energy management exercise.</p>										
Benefits	<p>By implementing the above the following benefits will be realised</p> <table border="1"> <thead> <tr> <th>Financial Savings PA</th> <th>Payback Period</th> <th>CO₂ reduction PA</th> <th>% of CO₂ Target</th> </tr> </thead> <tbody> <tr> <td>£11,707</td> <td>1.8yrs</td> <td>62.4 tonnes</td> <td></td> </tr> </tbody> </table>			Financial Savings PA	Payback Period	CO ₂ reduction PA	% of CO ₂ Target	£11,707	1.8yrs	62.4 tonnes	
Financial Savings PA	Payback Period	CO ₂ reduction PA	% of CO ₂ Target								
£11,707	1.8yrs	62.4 tonnes									
Funding	To be funded by Campus Management Committee, to be submitted to CMC for final approval and implementation monitored by Sustainability Committee.										
Resources	The additional data provided by sub-metering will not provide a saving unless adequately analysed and appropriate measures suggested and implemented. Consideration by Sustainability Committee to assign or appoint someone to the role of energy manager, ensuring they have the necessary training to analyse the HHD.										
Ensuring Success											
Measuring Success	Metering implementation and quantifiable data available for analysis										
Timing	6-12 Months										
Notes											

Project: Reference:	BC-005										
Owner (person)	Robert Hewitt										
Department	Facilities										
Description	<p>Voltage levels provided by power companies in the UK are not typically matched to the optimum level for most electrical equipment. Voltage optimisation is a method of reducing mains voltage to save energy, reduce costs and maximise equipment such as refrigeration and air cooling devices, 3-phase motors, high density discharge and fluorescent lighting. In Europe generating companies are required to provide customers with a voltage between 207v and 235v, the average across the Uk in 245v, As a result most electrical equipment is designed and specified to operate most effectively and efficiently at 220V.</p> <p>ivolt is an award winning innovative variable voltage regulator/stabiliser that automatically adjusts the incoming voltage to ensure that the output voltage is always constant at 220v +or- 1.5%.</p>										
Benefits	<table border="1"> <thead> <tr> <th>Financial Savings PA</th> <th>Payback Period</th> <th>CO₂ reduction PA</th> <th>% of CO₂ Target</th> </tr> </thead> <tbody> <tr> <td>£6751 (AV)</td> <td>5.7</td> <td>40.6</td> <td></td> </tr> </tbody> </table>			Financial Savings PA	Payback Period	CO ₂ reduction PA	% of CO ₂ Target	£6751 (AV)	5.7	40.6	
Financial Savings PA	Payback Period	CO ₂ reduction PA	% of CO ₂ Target								
£6751 (AV)	5.7	40.6									
Funding	Utilisation of Campus sinking fund to provide payback on savings made.										
Resources	Installation only										
Ensuring Success	Monitoring of financial and operational savings made										
Measuring Success	Monitoring of financial and operational savings made										
Timing	If approved to be completed summer 2017										
Notes											