

Loughborough University

Carbon Management Programme

Carbon Management Plan



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Contents

Management Summary	3
1 Introduction	8
1.1 Purpose of the Carbon Management and Implementation Plan	8
1.2 Background	8
2.3 Timescale	9
2.4 Approval and Sign Off	9
2 Carbon Management Strategy	10
2.1 Context of Carbon Management at Loughborough University	10
2.2 Drivers for Carbon Management at Loughborough University	10
2.3 Our Corporate Strategy	12
2.4 Vision	13
2.5 Targets and Objectives	14
3 Emissions Baseline and Projections	15
3.1 Scope	15
3.2 Boundary of Emissions	16
3.3 Data Collection	18
3.4 Carbon Emissions Baseline	19
3.5 Relative Carbon Emissions	20
3.6 Factors Affecting Carbon Emissions	22
4 Projections and Targets	24
4.1 Target Reductions in CO2 Emissions	24
4.2 Interim Targets	26
5 Carbon Reduction Opportunities	27
5.1 Carbon Hierarchy	27
5.2 Carbon Reduction Opportunities	28
5.3 How to Meet the Carbon Reduction Targets?	34
6 Financing and Implementation Plan	36
7 Carbon Management Ownership and Management	40
7.1 Management Structure	40
7.2 Reporting and Evaluation	42
Appendices	44

Management Summary

Background

The purpose of this strategy and implementation plan is to set out the framework to deliver a long term carbon management programme at Loughborough University.

The overall goal of the project is to reduce the campus CO₂ emissions by 43% by 2020, compared to a baseline year of 2005/06; these targets have been set by the Higher Education Funding Council for England (HEFCE) and align with the targets that have been set by the Government in The Climate Change Act 2008.

It is anticipated that future funding from HEFCE will be linked to progress against this carbon management plan and achieving these targets will present a significant challenge for everyone at the University and will require the full commitment from the Executive Leadership Team to drive the low carbon agenda forward.

The target reductions will not simply be achieved by investing in low carbon technologies as part of capital projects, investing in energy saving project or improving staff awareness. The carbon management programme will require radical and significant changes in the way that the University operates, manages its space and develops the campus both in terms of the buildings and the infrastructure.

If the University is serious about meeting the challenge of achieving the targets set out within this plan and be seen as a leading low carbon campus within the Higher Education sector, every member of staff and the student body needs to engage in the carbon agenda.

In recent years there has been growing concern about climate change, depletion of non-renewable resources and the security of supply of carbon based fuels which has provided a new impetus for prudent management of energy consumption.

Achieving the target reductions in CO₂ emissions is both a major challenge and a sensible precaution for the financial and environmental future of the University.

Carbon Emissions Status

An emissions Baseline analysis was carried out to establish a starting point against which all future CO₂ reduction targets could be set, measured and reported.

In line with the HEFCE guidance, the baseline year selected for the carbon management programme was 2005/06.

The scope and definition of what has been included within the baseline emissions calculation is detailed within the carbon management plan. In summary all building that are owned and operated by Loughborough University and areas occupied by University based tenants have been included within the baseline calculation. The emissions that make up the baseline are absolute.

The total CO₂ emissions that make up the 2005/06 Baseline are **29,505 tonnes**.

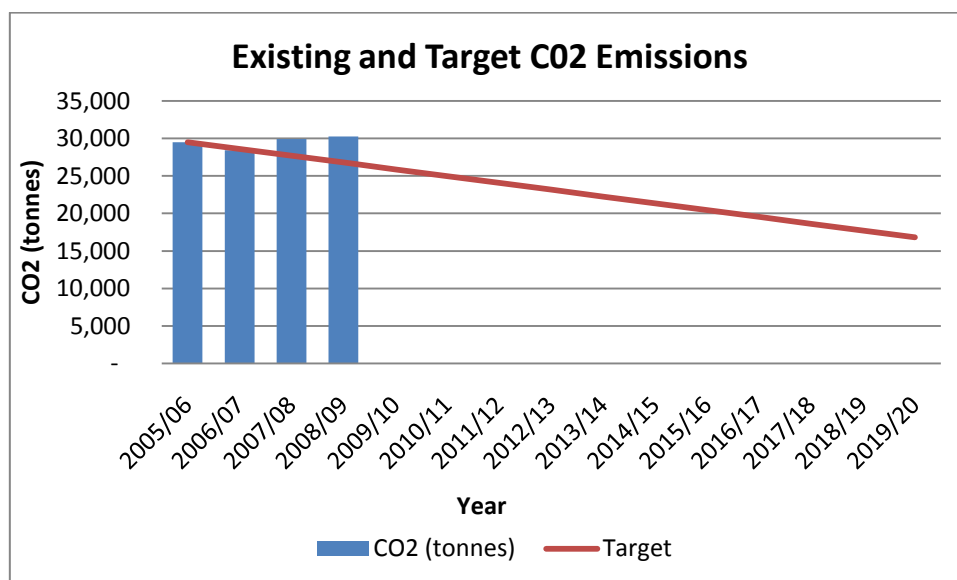
Carbon Reduction Targets

The driving target for the reduction in CO2 emissions at the University is the HEFCE target that was published in January 2010. Progress against this target will potentially impact on both future funding opportunities and also the reputation of the University in terms of its sustainability aspirations

The targets that have been established under the carbon management plan are summarised in the following table:

Target:	Equivalent to:
Reduce CO2 emissions by 43% by 2020, compared to 2005/06 baseline	Reducing CO2 emissions to 16,818 tonnes by 2020 (saving 12,685 tonnes)

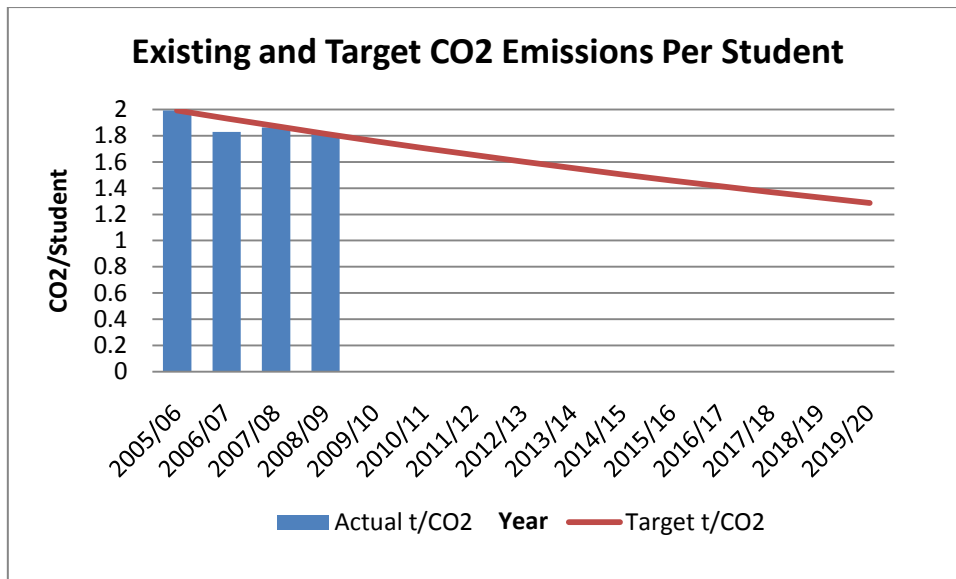
The CO2 emissions for the period 2005/06 to 2008/09 have been plotted against the target reduction in emissions, the data is presented in the following graph:



The measured carbon emissions in 2008/09 were 3,447 tonnes above the target consumption.

In order to get back on target by 2011/12, the current level of absolute CO2 emissions (2008/09) need to be reduced by 5,259 tonnes.

The carbon emissions at the University are directly related to student numbers. In order to provide an indication of the relative consumption, the absolute carbon emissions have been related to student numbers, this data has been plotted against the target reduction of 43% by 2020, the data is presented in the following graph:



The relative consumption for the period 2005-2009 is in line with the emissions reduction targets.

Impacts on Carbon Emissions

There are a number of factors that will inherently have a direct impact on carbon emissions across the campus, these factors and the impact they have need will need to be clearly identified and managed. Factors that will impact on the University carbon emissions include:

- Campus developments.
- Campus operations in general.
- Student, staff and external customer's expectations.
- Energy intensive research.
- Increase in utilisation of sports facilities and on-site accommodation in the run up to the 2012 Olympic Games.
- Increase use of the site services.
- Poor space utilisation of departments/buildings.
- Staff and student numbers.
- Size of the estate.
- Age and condition of the estate
- New property purchases.
- External factors such as the weather.
- Increase in the use of the campus for non University activities such as conferences and summer schools etc

Carbon Reduction Opportunities and Projects

A wide and in some cases radical range of projects and policies will need to be implemented across the campus in order to meet the stringent targets set within this carbon management plan.

The following diagram illustrates the range of projects that will have to be considered for implementation if the targets set out within this plan are to be achieved:



Funding the Carbon Management Plan

Capital funding will need to be secured in order to deliver the aspirations and targets set out within this carbon management plan.

A number of funding mechanisms are already established to implement carbon reduction projects. The Revolving Green Fund is supported by both HEFCE and Salix Finance and is a £250k invest to save fund. Existing budgets for both capital projects and long term maintenance projects should also be used to fund energy improvements measures which can be implemented as part of planned projects across the campus.

When major capital project are implemented, part of the funding should be 'ring fenced' to implement carbon reduction measure that will deliver long term carbon benefits.

Significant capital investment will be required to both assess the feasibility and implement major infrastructure projects that will deliver significant carbon benefits.

A full review of the grants and financial support that are available at both a local and national level should be undertake periodically to ensue the University maximise the funding opportunities that are available.

1 Introduction

1.1 Purpose of the Carbon Management Strategy and Implementation Plan

This Carbon Management Plan is an update on the Carbon Management Strategy and Implementation Plan that was produced in 200. The original plan sets out a target reduction in CO₂ emissions of 15% over a 5 year period.

In line with the carbon reduction targets set out within the Climate Change Act 2008, the Higher Education Funding Council for England (HEFCE) has established a set of carbon reduction targets for the Higher Education sector. The targets have been published in its policy document - Carbon Reduction Target and Strategy for Higher Education (published in January 2010).

The HEFCE target is a reduction in CO₂ emissions of 43% by 2020 and 83% by 2050, compared to a 2005 baseline. This carbon management plan sets out a strategy to achieve these targets reductions.

HEFCE have indicated that future University funding will be linked to performance and progress made against the published carbon management plan.

The purpose of the carbon management plan is to detail the case for action for implementing a carbon management programme and illustrates the carbon reduction opportunities associated with the investment in carbon management projects across the University.

The carbon management programme at Loughborough will bring together the various carbon management projects that are being implemented across the University both operationally and within the academic sector into a consistently managed and coherent programme that embeds carbon management into all our activities.

1.2 Background

There has been an increase in the commitments the University faces towards the environment, sustainable development and climate change.

Loughborough University has been affected by the introduction of a number of mandatory reporting schemes relating to carbon management, these carry financial penalties for non compliance and include:

- The Climate Change Levy (CCL).
- The European Union Emissions Trading Scheme (EUETS).
- The Combined Heat and Power Quality Assurance (CHPQA).
- The introduction of the Carbon Reduction Commitment Energy Efficiency Scheme (CRC).

It is anticipated that further mandatory schemes will be introduced in future years as the Government strives to meet its target of cutting CO₂ emissions by at least 34%

by 2020 and at least 80% by 2050, against a 1990 baseline, as set out in the Climate Change Act 2008.

The University has also been affected by the impact of rising utility costs that have resulted from volatile trading conditions within the utilities markets.

1.3 Timescale

The implementation plan has set a target reduction in CO2 emission of 43% by 2020, compared to a 2005 baseline.

Achieving a 43% reduction in CO2 emissions is a significant challenge for the University, but offers the opportunity to develop a truly sustainable campus and be a leader on environmental sustainability within the Higher Education sector.

1.4 Approval and Sign Off

The implementation plan will be formally approved and signed off by the Estates Management Committee.

The Estate Management Committee will be responsible for the ongoing monitoring and commitment to the carbon management programme throughout the implementation plan and will act as the formal link to the University's management committee structure.

2 Carbon Management Strategy

2.1 Context of Carbon Management at Loughborough University

The Carbon Management Plan provides the impetus for Loughborough University to put climate change and carbon management into context for the community of both staff and students. The programme aims to bring together existing and future carbon management projects into a consistently managed and coherent programme.

Carbon management is now viewed by many of Loughborough University's Executive Leadership Team (ELT) as being of primary importance to the future operation and development of the University.

The University has made a commitment within its Corporate Strategic Plan (2006 – 2016) that:

'The University will enhance the sustainability of the campus by the adoption of appropriate techniques and technologies to make Loughborough one of the UK's leading exemplars of sustainability in the academic sector'

The University is well placed to lead changes in both the knowledge base and the practical delivery of a range of aspects of environmental sustainability and is committed to leading change in this area.

This will involve working with our own academics, researchers and others across the sector, to ensure that innovative ideas are considered for application in the management and development of our own campus.

We envisage that adopting a procedure to significantly reduce Loughborough's carbon emissions has a number of strategic benefits for the environmental and financial status of the University. These are critical in committing to the Carbon Management Programme, and are vital for continued support during the implementation plan.

2.2 Drivers for Carbon Management at Loughborough University

Available scientific evidence indicates that global average temperature is continuing to rise in a manner that is related to (and caused by) elevated atmospheric concentrations of "greenhouse gasses, most notably CO₂. This threat to global climate posed by increasing CO₂ emissions is already defining new policy, regulation and legislation locally, nationally and internationally.

At the Copenhagen Climate summit in December 2009, large emitting nations agreed to continue negotiations on CO₂ reduction policies. They will meet again in June and December 2010

The UK Government has set targets within the Climate Change Act 2008 for reductions in UK CO₂ emissions of 34% by 2020 and 80% by 2050 against a 1990 baseline.

In January 2010, the Higher Education Funding Council for England (HEFCE) committed Higher Education Institutions (HEI's) to these Government targets in respect of scope 1 and scope 2 emissions.

As many HEI's do not have accurate emissions data for 1990, HEFCE has decided to also use 2005 as an alternative baseline year against which to monitor carbon emissions.

Using the 2005/06 baseline year, HEFCE's target reduction is 43% by 2020 and 83% by 2050, with the aspiration to achieve still greater reductions.

HEFCE also proposes that the HEI sector commits to making reductions in scope 3 emissions, with the intention of setting targets for these emissions once protocols are more developed.

It is widely anticipated that HEFCE will link the distribution of future capital investment funding to performance against the HEI's published carbon management plan.

The definition of the emissions is as follows:

Scope 1: These are direct emissions that occur from sources that are owned or controlled by the organisation, for example emissions from combustion in boilers, furnaces or fleet vehicles.

Scope 2: These are emissions from the generation of purchased electricity consumed by the organisation.

Scope 3: These are all other indirect emissions which are a consequence of the activities of the organisation, but occur from sources not owned or controlled by the organisation – for example, commuting and procurement.

In addition for the need to comply with legislation relating to carbon management, (with financial penalties for non-compliance), historically the energy supply market has been very volatile, this is expected to continue and it seems inevitable that prices will fluctuate and rise over the coming years.

Significant fluctuations in energy costs have historically placed great demands on University budgets.

The University's current performance in relation to carbon management and sustainability is well placed compared to other HEI's within the Sector. In the 2009 "Green League", prepared by the student group "People and Planet", the University was placed 26th out of a total of 126 institutions.

Loughborough University completed the Business in the Community (BiTC) Environmental Index in 2008. The University achieved an overall score of 66.78% against the HE sector average of 62.11% across 56 HEIs and the Business average of 81.27%.

(The University has completed the submission for the 2009 index and is awaiting the publication of the results).

Other Drivers

Other drivers to support the low carbon agenda include:

- Opportunity to encourage environmentally aware behaviour in staff and students.
- The development and implementation of a structured carbon management plan will assist in gaining access to funding for implementation programmes, both internally and externally.
- Opportunity to align with Government policies on carbon reduction and climate change.
- Potential for more inclusive environmental progress across the campus by integrating Departments in the progression towards the low carbon objectives.
- Integration of low carbon research aligned to the University Carbon Management Programme

2.3 Our Corporate Strategy

Strategic Plan - (2006 – 2016)

Loughborough University's Strategic Plan "Towards 2016" states that:

"Our priority is to develop and maintain a sustainable and attractive campus that will provide the optimum environment for students, staff and key partners. We will do this by continuing to invest in the renewal and refurbishment of existing buildings, develop sports and arts facilities and by adopting environmentally sustainable practices across campus"

We are committed to leading change in environmental sustainability and we are well placed to lead change in both the knowledge base and the practical delivery of a range of aspects of environmental sustainability.

We will:

- Work with our own academics and others across the sector to ensure that innovative ideas are considered for application in the management of our own campus.
- Use our expertise in transport and sustainability to make a major contribution to the sustainability agenda in the East Midlands.
- Enhance the sustainability of the campus by the adoption of appropriate techniques and technologies to make Loughborough one of the UK's leading exemplars of sustainability in the academic sector.

Sustainability Implementation Plan

The University has published a Sustainability Implementation Plan; this is included within Appendix 1 of this document.

Capital Plan

The Capital plan sets out the comprehensive development programme for the University. Implementation and delivery of the Capital plan will potentially have a major impact on the future carbon emissions and carbon footprint of the University.

The adoption of sustainable construction methods and low carbon technologies within planned new buildings, major refurbishment, and planned maintenance projects will form an important and integral part of the University's Carbon management implementation plan and will be key in delivering the target reductions set out in this document.

University Aspirations

The University has a vision to become and maintain a position of environmental leadership within the HEI sector and aspires to be a leading low carbon campus.

The Carbon Management Plan will be used as a mechanism to develop strong relationships with academic departments and research activities relating to carbon management and sustainability.

To be seen to take a leading role in relation to carbon and energy management issues will enhance the University's corporate image and reputation and may assist with future student recruitment and retention.

2.4 Vision

“The University aspires to reduce its environmental impact by reducing its carbon emissions, investing in low carbon technologies and implementing a culture change amongst its staff and student body”.

We envisage a low-carbon campus in which:

- There is efficient and reliable energy generation and use on-site.
- There is innovative and energy efficient buildings.
- The campus environment is inspirational and an example to both students and staff, and complements the educational and research environment.
- Every employee is aware of their environmental responsibility and their role to reduce carbon emissions, and be aware of actions to reduce Loughborough's environmental impact.
- Loughborough's reputation for environmental management matches its excellent reputation for academic and research performance.
- The University is proud of its genuine achievements in environmental management and performance.

2.5 Targets & Objectives

The main driver for the reduction in CO2 emissions at the University is the HEFCE target that was published in January 2010. This is a key target as progress against this target will potentially impact on both future funding opportunities and also the reputation of the University in terms of its sustainability aspirations

The targets that have been established under the Carbon Management Plan are summarised in the following table:

Target	Equivalent to:
Reduce CO2 emissions by 43% by 2020, compared to 2005/06 baseline	Reducing CO2 emissions to 16,818 tonnes by 2020 (saving 12,685 tonnes)

The key objectives associated with the development and implementation of a structured carbon management programme is:

- To identify an accurate baseline for our carbon emissions.
- To use the baseline data to establish clear targets for carbon reductions over a defined period.
- To identify and quantify carbon reduction projects that will meet the annual reduction targets.
- To develop a business case to assist in securing funding to support the implementation of carbon reduction projects.
- To implement an annual programme of carbon reduction projects.
- To embed carbon management in all our activities and ensure that the challenge of carbon management is shared and promoted at both a strategic and individual level across the university.
- To use the University committee structure to report the progress of the carbon management project on an annual basis.

3 Emissions Baseline and Projections

3.1 Scope

The purpose of this implementation plan is to set out the framework to deliver a long term carbon management programme at Loughborough University.

Calculating an emissions baseline is the first step in enabling the University to quantify its Carbon Footprint and to gain a better understanding of its overall carbon contribution. The baseline will be used to measure the University's emissions reduction performance as carbon-saving initiatives are implemented.

The emissions sources included in the baseline calculation are direct emissions under the control of the University i.e. scope 1 and 2 emissions.

Other indirect emissions from sources not directly controlled by the University (i.e. scope 3 emissions), occur as a result of its activities but are not included in the baseline calculation.

Under the scope 3 emissions, data relating to waste and travel-related emissions should start to be recorded, and these figures will be reported in future years once reliable and robust data has been collected and an accurate baseline can be established.

An action within the plan is to delegate responsibility for the collation and reporting of the various data streams that will be needed as part of the on-going carbon reporting process.

The definition of scope 1, 2 and 3 emissions is detailed within the following table:

Scope	Description	Example
Scope 1 : Direct emissions	Direct emissions occur from sources that are owned or controlled by the HEI.	Direct fuel and energy use ie gas for heating. Transport fuel used in institutions' own fleet vehicles.
Scope 2 : Electricity indirect emissions	Emissions from the generation of purchased electricity consumed by the HEI.	Purchased electricity.
Scope 3 : Other Indirect emissions	Scope 3 emissions are a consequence of the activities of the HEI, but occur from sources not owned or controlled by the HEI.	Water Waste Land –based business travel Commuting (both staff and students) Air travel (business, international students, student exchange) Procurement

3.2 Boundary of Emissions

The University has set the boundary of emissions that will be included within the carbon emission baseline calculation, this boundary will form the basis of the emissions and target reductions that we will be reporting.

3.2.1 Emissions Baseline Calculation Methodology

The University has developed over a number of years and is made up of a diverse range of buildings that provide academic accommodation, residential accommodation and high class sporting facilities.

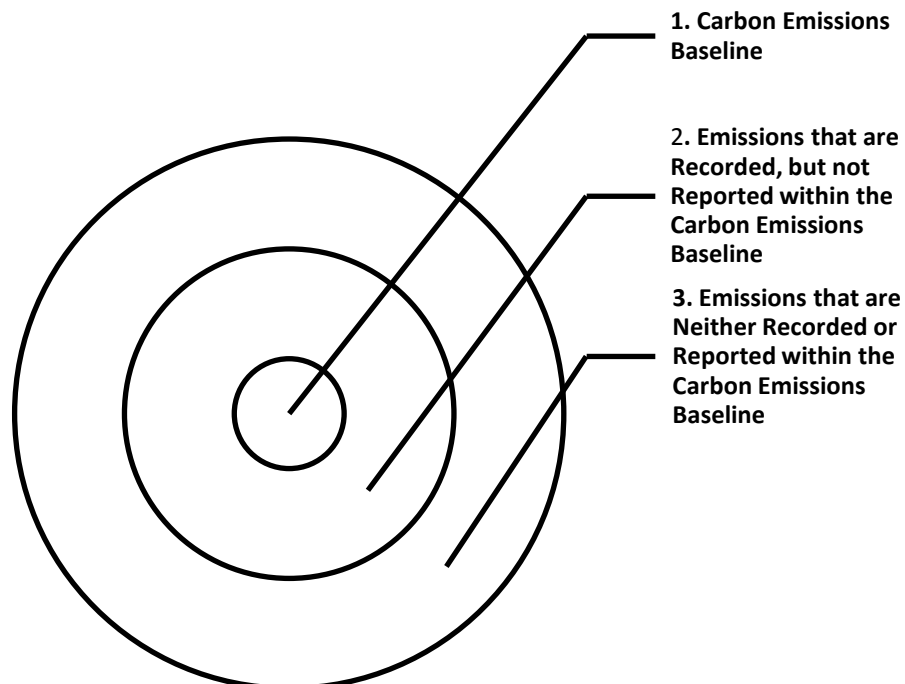
In addition to the buildings that are occupied by the University, external and University based tenants occupy a number of buildings or areas of buildings across the campus.

In establishing a carbon emissions baseline for the University, a full review of the various types of building and accommodation across the campus was undertaken.

Not all of the buildings across the campus have been included within the baseline. The methodology behind the decisions on what constitutes the buildings and associated emissions within the baseline is detailed below:

Definition of What is Included within the Carbon Emissions Baseline

The carbon emissions across the campus have been broken down into three areas; these are illustrated in the diagram below:



Carbon Emissions Baseline

This is the baseline emissions (carbon footprint), that will form the basis of the target reduction within this carbon management plan.

All emissions from academic and residential buildings that the University own, occupy and operate are included within in this carbon emissions baseline.

Emissions associated with the buildings (or areas of buildings) that are occupied by University based tenants are also included within the carbon emissions baseline.

A full schedule of the buildings that are included within the carbon emissions baseline is included within Appendix 2.

Emissions that are Recorded – but Not Reported

These are the emissions that are associated with residential buildings that are owned by a third party, but are managed by the University.

Although the University is not directly responsible for the carbon emissions associated with these buildings, the University is in a position to influence the building users and tenants in terms of good practice relating to carbon management and performance.

Note – there are a number of issues associated with collecting energy data for buildings where the University does not manage or control the utility supply contract.

A full schedule of the buildings that are recorded but not reported is included within Appendix 3.

Emissions that are Neither Recorded or Reported

These are the emissions that are neither recorded nor reported.

This includes residential buildings that are owned and managed by a third party, tenants that are not related to the University and also buildings on the campus that are not the direct responsibility of the University.

A full schedule of the buildings that neither recorded nor reported is included within Appendix 4.

The summary of the buildings that are included within baseline calculation is illustrated within the following table:

Loughborough University Total Carbon Emissions	
Included within Carbon Emissions Baseline	Excluded from Carbon Emissions Baseline
All Academic and Research Buildings All LU Sports Facilities LU Owned and Managed Accommodation Burleigh Court The Link at Loughborough Percentage of Holywell Park (*) Michael Pearson East	Accommodation Owned by a Third Party 64% Percentage of Holywell Park (*) Non University Tenant Areas Michael Pearson West Henry Ford College Student Union

Note (*) - Based on the latest floor area data available, the University and University based tenants occupy approximately 36% of the Holywell Park complex. As tenants change within the building, the percentage splits may need to be adjusted in future years to reflect the University occupation of the building.

3.3 Data Collection

Accurate data is essential in ensuring that an accurate baseline is established and to ensure consistent reporting on the progress of the carbon management plan.

Initially scope 1 and scope 2 emissions will be included within the carbon management plan, however moving forward scope 3 emissions will need to be measured and incorporated within the plan.

The table below illustrates the areas of responsibility for monitoring and recording the various data streams:

Data	Scope	Owner	Responsibility	Sources
Energy Consumption	1 and 2	F.M	Greg Watts Jenny Turner	Invoices Meter Reads
Fleet Vehicles	1	F.M	Clive Douthwaite	Internal Records Mileage Charts
Land based Business Travel	3	Finance	TBA	Staff Claim Forms
Waste	3	FM & Imago	Nic Hunt	
Water	3	FM	Greg Watts	Invoices Meter Reads
Commuting (both staff and students)	3	TBA	TBA	TBA
Air Travel (international students, student exchange, business)	3	TBA	TBA	TBA
Procurement	3	Purchasing Office	Tim Burton	TBA

3.4 Carbon Emissions Baseline

The carbon emissions baseline will be calculated using data based on the 2005/2006 university financial year (August 2005-July 2006).

This year has been chosen as it reflects the target dates that have been detailed within the HEFCE policy document – Carbon Reduction Target and Strategy for Higher Education in England (January 2011/01).

The scope 1 and 2 data for this period is considered to be accurate and reliable

Note – The alternative baseline year could have been 1990. The University does not have accurate consumption records relating to this period.

Electricity

The University is currently supplied with 50% ‘green’ electricity and as such the supply is exempt from CCL charges and in theory the CO₂ emissions associated with the electricity consumption are zero.

However for the purpose of the baseline calculation and for calculating the CO₂ saving from implementing energy improvement projects, a fixed CO₂ factor for grid connected electricity has been applied to all electricity supplied to the University.

Electricity generators who generate and supply pure ‘green electricity’ have claimed the CO₂ credits at the point of generation and therefore if end users also claim zero carbon for the electricity supplied to the site, the CO₂ benefits will be double accounted.

Note – The above guidance is based on information from both the Carbon Trust and Defra)

Carbon Emission Factors

Defra publish carbon emission factors each year for various emissions.

These figures change slightly each year to reflect the mix of fuels that combine to provide the UK electricity production and gas supplies.

For the purpose of this carbon management plan and in order to allow annual comparisons and progress to be monitored on the same basis, the Defra emission factors that were published in 2005/06 will be used to convert scope 1 and scope 2 emissions into a carbon emissions value:

Electricity : 0.53655 kg CO₂/kWh
Gas : 0.206 kg CO₂/kWh

These conversion figures will be used for throughout the reporting of the carbon management plan.

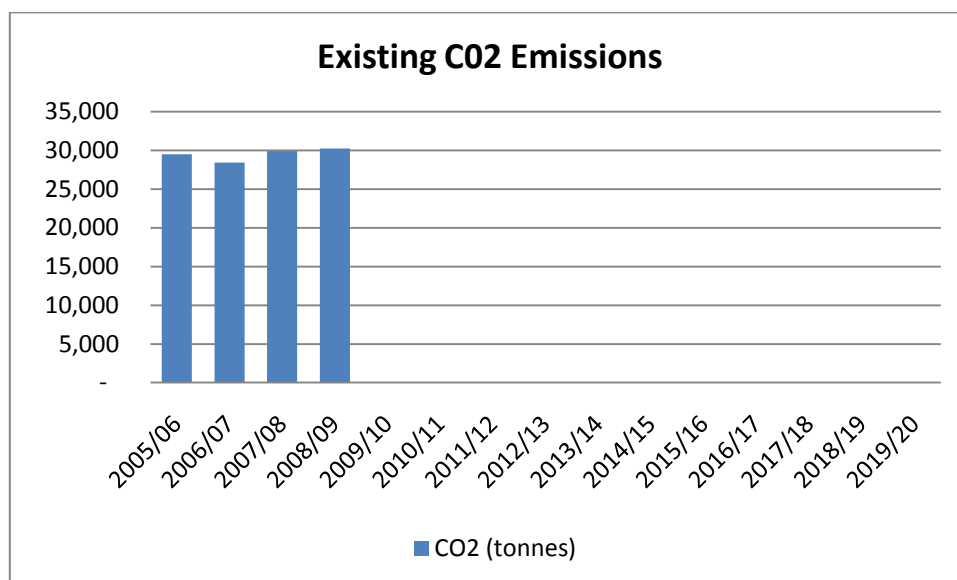
Baseline Carbon Emissions

The baseline data associated with the **absolute emissions**, together with the data for the subsequent years is presented in the following table:

Year	Absolute CO2 Emissions (tonnes)			
	Electricity	Gas	Fleet Transport	Total
Baseline Year	14,569	14,934	no data	29,503
2006/07	14,983	13,422	no data	28,405
2007/08	15,035	14,872	no data	29,907
2008/09	14,911	15,322	31	30,264

Note – The fleet transport data is only available for the vehicles with Facilities Management. Data for other departmental vehicles is being collated and will be reported in future years.

The following graph presents a graphical representation of the absolute emissions data:



3.5 Relative Carbon Emissions

The number of students on the campus has a major impact on the level of carbon emissions.

Data relating to the number of staff and student and the gross building area is presented in the following table:

Year	Students	Staff (total)	Building Area (gross m2)
Baseline Year	14,805	2,915	299,800
2006/07	15,539	3,036	238,879
2007/08	16,045	3,158	244,000
2008/09	16,646	3180	244,000

Source of Data – University Web Site: Facts and Figures

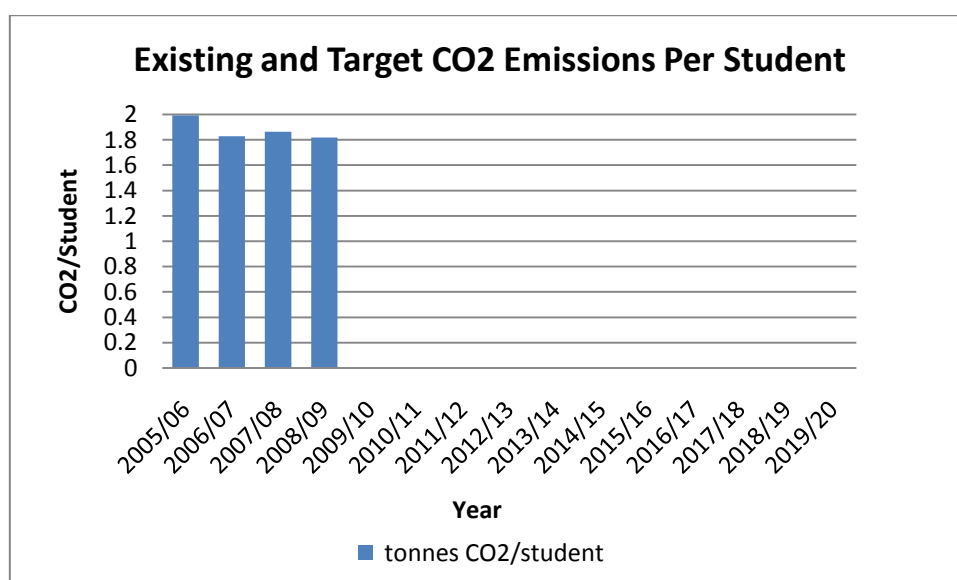
The relative carbon emissions have been calculated in terms student numbers and are presented in the following table.

Year	Absolute CO2 Emissions (tonnes)	Student Numbers	CO2/Student	% Difference to Baseline
Baseline Year	29,503	14,805	1.9928	-
2006/07	28,405	15,539	1.8280	- 8.27
2007/08	29,907	16,045	1.8639	- 6.47
2008/09	30,264	16,646	1.8181	- 8.77

The relative emissions in 2008/09 are 8.77% lower than the baseline year.

The absolute emissions in 2008/09 are 2.51% higher than the baseline year.

The data relating to the relative carbon emissions is presented in the following graph:



3.6 Factors Affecting Carbon Emissions

There are a many factors that will inherently have a direct impact on carbon emissions across the campus, these include:

- Campus developments.
- Campus operations in general.
- Student, staff and external customer's expectations.
- Energy intensive research.
- Increase in utilisation of sports facilities and on-site accommodation in the run up to the 2012 Olympic Games.
- Campus developments.
- Increase use of the site services.
- Poor space utilisation of departments/buildings.
- Staff and student numbers.
- Age of Estate.
- Size of the estate.
- New property purchases.
- External factors such as the weather.
- Increase in the use of the campus for non University activities such as conferences and summer schools etc

Capital Developments

Since 2005/06, there have been a large number of developments on the campus that have (or will have) a significant impact on the carbon emissions.

The major developments are summarised in the following table:

Building	Project	Date	Carbon Impact
Business School Extension	New Build	2007	Increase
Burleigh Court Extension	New Build	2008	Increase
Michael Pearson East	Purchase	2007	Increase
Michael Pearson West (*)	Purchase	2007	Increase
Clyde Williams Building	New Build	2008	Increase
New Student Accommodation (*)	New Build (PFI)	2009	Increase
Multi Storey Car Park	New Build	2009	Increase
East Park Bungalows	Demolition	2010	Decrease
Sport Park (*)	New Build	2010	Increase
The Link at Loughborough	Purchase	2010	Increase
East Park Design Centre	New Build	2011	Increase
Central Park CHP	Infrastructure	2011	Decrease
Hazlerigg Refurbishment	Refurbishment	2010	Increase
The Towers Refurbishment	Refurbishment	2010	Decrease
Haslegrave Refurbishment	Refurbishment	2010	Increase
James France Refurbishment	Refurbishment	2010	Increase
Pilkington Library re-lighting	Refurbishment	2010	Decrease
Powerbase Ventilation	New Plant	2010	Increase

(* Although these developments will impact on the overall carbon performance of the University, these building are actually excluded from the boundary of the carbon emissions baseline that we are reporting for the Carbon Management strategy.

4 Projections and Targets

4.1 Target Reduction in CO2 Emissions

The target CO2 reduction in scope 1 and 2 emissions is 43% by 2020, compared to a baseline year of 2005/06.

This equates to a reduction in CO2 emissions of 12,685 tonnes.

To achieve the 43% reduction. The CO2 emissions in 2020 will need to be 16,818 tonnes.

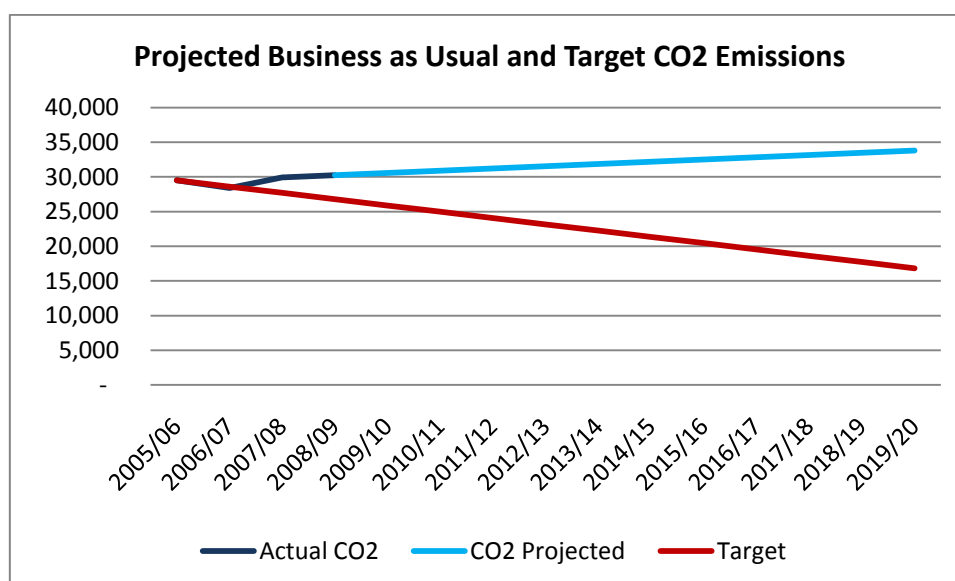
In order to meet the target reduction in CO2 emissions, the University will need to reduce its emissions that are included within the scope and boundary of the carbon management plan **906 tonnes of CO2 year on year**.

To achieve this reduction in CO2 emissions, the following annual reduction targets have been established:

Year	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Target CO2	Baseline	28,597	27,691	26,785	25,878	24,972	24,066	23,160
Actual CO2	29,503	28,405	29,907	30,232				
Difference	Baseline	-192	+2,216	+3,447				

Year	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Target CO2	22,254	21,348	20,442	19,535	18,629	17,723	16,818
Actual CO2							
Difference							

The following graphs presents an illustration of the current, projected and target absolute emissions during the period to 2020

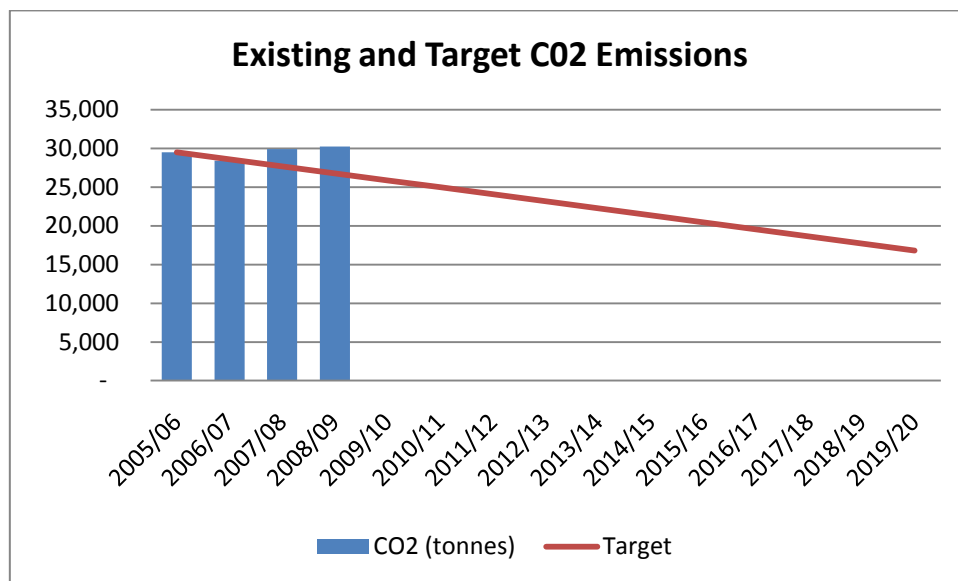


The dark blue line indicates the actual emissions for the period 2005/06 – 2008/09.

The light blue line indicates the projected emissions under the Business as Usual (BAU) scenario, this being the forecast position if potential carbon management opportunities are not implemented.

The red line indicates the target emissions that need to be achieved if the University is to meet the targets that are set within this carbon management plan.

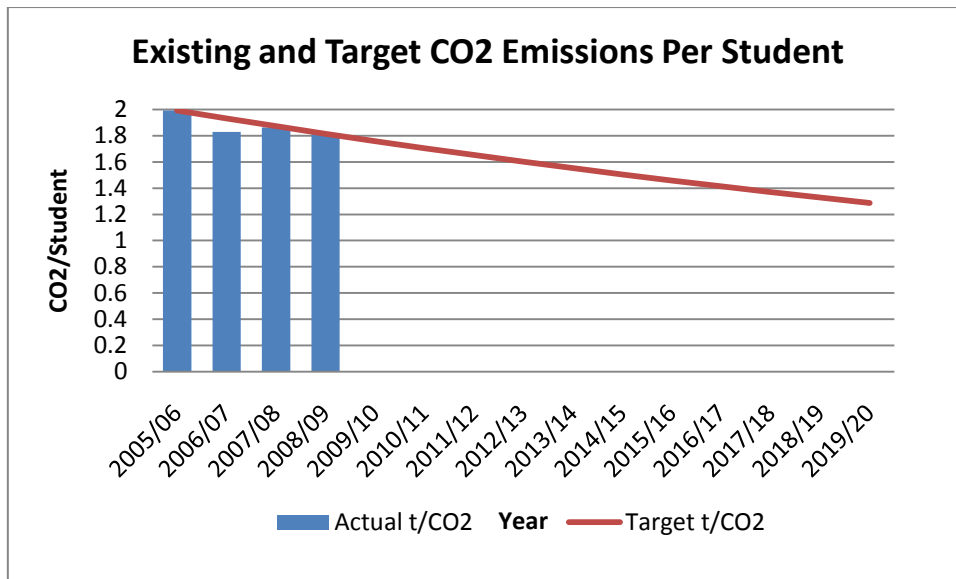
The following graph illustrates the actual **Absolute** carbon emissions for the period 2005 – 2009 plotted against the emission levels that need to be achieved to meet the targets set out within this carbon management plan:



The measured carbon performance in 2008/09 was 3,447 tonnes above the target consumption.

In order to get back on track by 2010/11, the current level of emissions needs to be reduced by 5,259 tonnes.

The following graph illustrates the **Relative** carbon emissions for the period 2005 – 2009 plotted against the emission levels that need to be achieved to meet the targets set out within this carbon management plan.



As can be seen, the relative carbon performance in terms of student numbers is decreasing in line with the 2020 target reductions.

4.2 Interim Targets

In order to track and report the progress of the carbon management plan against the target reductions, a number of interim targets have been established.

The proposed interim targets are presented in the following table:

Target	Date	Target Emissions
1	2013/14	21,411
2	2016/17	18,376
3	2019/20	16,818

5 Carbon Reduction Opportunities

5.1 Carbon Hierarchy

The carbon hierarchy provides a systematic and structured approach to managing and reducing emissions in a socially responsible and cost-effective way.

Actions at the top of the hierarchy are more transformative and lasting in terms of reducing emissions.

REDUCE energy/fuel demand	Avoid unnecessary use	MONITOR <ul style="list-style-type: none"> • Learn from existing projects and practice • Apply control measures • Evaluate impacts
	Passive features (for example insulation, daylight, solar gain/shading, thermal mass)	
	Encourage energy-conscious behaviours	
EFFICIENCY of equipment and energy/fuel sources	Use energy-efficient equipment	
	Provide simple and effective controls	
	Recover useful heat	
	Use clean fossil fuel technology	
DECARBONISE energy/fuel supplies	On-site or near-site renewable energy sources, including community schemes	
BEFRIEND	Seek partnerships to increase your capacity to do the above	
NEUTRALISE energy/fuel supplies	Consider responsible carbon offsetting schemes	
	Procure green electricity supplies	

5.2 Carbon Reduction Opportunities

A wide and in some cases radial range of projects and policies will need to be implemented across the campus in order to meet the stringent targets set within this carbon management plan.

An illustration of the range of projects that could contribute towards the target reduction is presented in the following diagram:



Implementation of Carbon/Energy Saving Projects

The low carbon agenda should be a key component of any future projects that are implemented across the University.

There are many opportunities to incorporate long term energy and carbon saving in major capital programmes, refurbishment programmes and planned Long Term Maintenance projects.

Potential areas where low carbon projects could be implemented include:

- Major Capital Projects
- Refurbishment Projects

- Revolving Green Fund
- Long term Maintenance (LTM) Projects
- Ad hoc Energy Projects.
- Externally funded 'one off' projects.
- General 'day to day' maintenance improvements.
- Research projects.
- Projects implemented by Departments.
- Carbon Neutral Developments.

Low Carbon Design Guides/Standards

An input at the very early stages of design and refurbishment projects is essential and key if long term sustainable solutions are to be incorporated and embedded into projects.

Sustainable solutions should not be seen as a luxury but a key component of the design that cannot be compromised. This will require clear input from the sustainability team at the conception stage of projects and continued involvement and support in terms of project consultation as the designs evolve.

The full long term CO₂ impact of any development (regardless of size) should be fully analysed and reported at the early stages of the design process.

This will require greater co-operation and communication between the design teams and the development of new 'University' policies and guides in relation to low carbon standards

- New build/refurbishments.
- Green design guide.
- Maintenance guides.
- Carbon Impact assessment Guide.
- Carbon reduction target guides
- Carbon screening of all research opportunities.

Any guides will be updated and reviewed periodically to ensure they are aligned with any new Government or local policies that are introduced relating to carbon management or sustainability.

Awareness

Increasing staff and student awareness towards effective energy management at a local level has proved to be an effective method of achieving and maintaining energy and carbon savings across the University.

An increase in the level of staff and student awareness campaigns, combined with major behavioural change will be required as part of the on-going carbon reduction strategy.

- Staff awareness campaigns

- Student awareness campaigns
- Staff induction programmes
- Key staff group training (FM services, security, cleaners etc)
- Development of specialised training and information dissemination sessions

The Staff based 'It's Better Off' campaign has proved to be an effective vehicle to increase energy awareness across the campus. This campaign should be developed and expanded to incorporate the wider sustainability agenda.

Devolved Budgets

At present the only departments that are billed directly for the energy consumption and costs are: Imago, Sports Development Centre (SDC) and certain tenant areas. The University cover the utility costs for the majority of the academic buildings.

Devolving budgets to a building/ departmental level would result in individual buildings/department having responsibility for the annual energy expenditure. As the energy expenditure is one area of a departmental budget that could be controlled, this should encourage departments to be more aware of their consumption and cost, thus hopefully leading to a reduction in consumption.

SDC are a major user of energy on the campus and they have proved that by having responsibility for their energy budgets and actively managing their consumption, they are able to reduce energy consumption and expenditure.

Infrastructure Investment

The University is currently investing heavily in the infrastructure development across the campus

Key projects that have been implemented include:

- **Combined Heat and Power(CHP)**
1.5 MWe of CHP plant has been installed and an additional 1.6 MWe plant is being installed on the central campus in 2010/11
- **Infrastructure**
Replacement of old heating mains and linking the Central and East Park district heating systems with resulting energy and maintenance savings.
- **Thermal Plant**
Replacement of old inefficient thermal plant.

Further opportunities exist to improve both the efficiency and resilience of the University infrastructure.

Proven Renewable Energy Technology

The implementation of proven renewable energy technology could provide a significant contribution towards the carbon reduction targets.

The University is currently reviewing the technical and financial feasibility of installing a 1-2 MW wind turbine on the campus. This study is at the early stages and it could be up to 2 years before the outcome of the feasibility study is known.

The University obtained external funding from The East Midlands Development Agency to undertake a biomass feasibility study. The aim of the study was to assess the technical and financial feasibility associated with installing, operating, fuelling and maintaining biomass boiler plant or biomass CHP plant on the campus.

Opportunities for renewable energy technology include:

- Biomass boiler plant.
- Biomass Combined Heat and Power plant.
- Wind Turbines.
- Photovoltaics.
- Solar thermal.

Feed In Tariffs – ‘Feed in Tariffs’ were introduced by the Government in April 2010. The aim of the tariffs is to help increase the level of renewable energy generation in the UK.

Feed in Tariffs are payments to ordinary energy users for the electricity they generate, they give three financial benefits:

- A payment for all electricity that is produced.
- Additional bonus payments for electricity that is exported to the grid.
- A reduction on the electricity costs associated with using ‘grid’ electricity.

The renewable energy technologies that are covered by the Feed in Tariffs are Anaerobic Digestion, Hydro (up to 5 MW), Micro CHP (< 2kW), Solar Photovoltaics – PV (up to 2 MW) and Wind (up to 5 MW)

The Feed in Tariff rate for PV’s ranges from 29.3 – 41.3 p/kWh generated.

The Feed in Tariff rate for wind power ranges from 4.4 – 34.5 p/kWh generated.

The introduction of the Feed in Tariffs could assist with the business case for installing a wind turbine and also with installing PV’s both in existing buildings and as part of new build or refurbishment projects.

The University would be eligible for the Feed in Tariff if it generates its own electricity from one (or more) of the qualifying technologies.

Green IT

Staff and student use of computers and ancillary equipment is a major energy consumer across the University.

The carbon impact of the IT equipment needs to be reduced and areas to investigate further with the IT Department include:

- Energy efficient cooling of data centres.
- Thin client PC technology.
- Central point Multi Functional Device (MFD) printing.
- High efficiency UPS and transformers.
- Energy efficient purchasing and operation of PC's and servers.
- Auto switch off and other energy saving software.
- Management and utilisation of the student PC labs.

Space Utilisation

Good space management not only reduces carbon emissions, it also frees up resources that can be used for teaching and research.

Improving the space utilisation and potentially changing the way in which departments both function and co-operate will provide significant carbon reduction opportunities, but will also present a challenge to implement.

There are a number of opportunities for improving the space utilisation, these include:

- Maximise building and space utilisation.
- Improve space utilisation through improved time tabling.
- Combine facilities with similar needs.
- Group 'energy intensive' processes together in a single location.
- Review the requirement and need for off Campus properties
- Decommission/demolish poor carbon performing or poorly utilised buildings

Decommissioning or demolishing buildings is a radical way to reduce carbon emissions and would require a significant change in the way the University operates.

As an **illustration** to show the level of carbon reductions that could be achieved, a number of legacy buildings have been selected and the potential carbon savings have been calculated.

The potential carbon savings will only be realised if the existing functions are relocated within the existing building stock.

The potential impact is presented in the following table:

Building	Area (m2)	Combined CO2 Emissions
S Building	9,054	1,113
Chemistry	4,534	945
Bridgman	4,490	366
Wavy Top	2,992	254
Admin 1	840	109
Total	21,910	2,807

A full building league table of carbon emissions associated with electricity and gas consumption is included within Appendix 5.

Policy

New policies and procedures relating to carbon management will need to be developed that will be aligned to the carbon management plan.

- Carbon impact should be a key consideration in all major projects and estate developments going forward.
- The Carbon impact should be considered when purchasing new buildings.
- The Carbon agenda will impact on how the campus is developed.
- Review and Enforce policies that will impact on the carbon in the day to day operation of the campus – Heating, Cooling, Out of hours Heating etc
- Strengthen links with research.
- Carbon screening of all research opportunities.

Carbon Offsetting

Carbon Offsetting is covered within the HEFCE Documentation - Carbon Reduction Target and Strategy for Higher Education in England – point 89 states:

“Carbon offsetting may not be used to meet the institution’s carbon reduction target for scope 1 and 2 emissions. However, carbon offsetting may form part of the institution’s carbon management plan”.

“Before choosing to offset, it is important that steps are taken to measure and where possible, avoid and reduce emissions. To be able to offset, HEI’s can then calculate their avoidable emissions to know how many tonnes of CO₂ they wish to offset. Once the number of tonnes is known, quality- assured offset credits can be purchased”.

- Carbon offsetting should only be considered as a last resort to achieving the carbon reduction targets.
- Only a specified level of emissions will be allowed to be offset.
- Carbon offsetting will only be implemented via recognised and authorised companies.

5.3 How to Meet the Carbon Reduction Targets?

The following diagram illustrates the potential impact of the range of projects on the overall target reduction:



As can be seen, even by implementing a wide and diverse range of projects, the target reduction cannot be achieved and there is a shortfall of 30%, this equates to 3,806 tonnes of CO2.

To put this in context, the projected CO2 savings from the new central park CHP are 2,247 tonnes CO2. Therefore, the shortfall is nearly twice this!!

The following diagram illustrates **how** the target shortfall could be achieved:



The target shortfall (30%) could be met by implementing two significant and radical projects.

The installation of a biomass boiler plant could reduce the target emissions by 10% and improving the space utilisation by decommissioning a number old legacy building would reduce the target emissions by 20%.

An alternative way to achieve the target is to opt for carbon offsetting, this can only be implemented once all the carbon reduction opportunities have been implemented and must be implemented through an authorised and recognised carbon offsetting company.

6 Financing the Implementation Plan

The implementation of long term low carbon solutions, both in major capital projects and also in smaller stand alone projects will required significant financial backing.

It is difficult to accurately quantify the levels of funding that would be required to deliver the target carbon reductions.

There are a number of programmes and projects, both existing and potential that could provide a funding vehicle to enable low carbon solutions to be implemented:

- Capital Programme.
- Revolving Green Fund.
- Long Term Maintenance Programme.
- Research Projects.
- External Grants.
- Third Party Support.



Capital Programme

Budgets for major capital project and refurbishment projects should be set to reflect the additional costs that will be associated with delivering low term carbon reductions. The 'carbon budgets' within projects should be 'ring fenced' and protected from aspects of 'value' engineering.

LTM Programme

The University have an annual Long Term Maintenance (LTM) programme that is generated by the condition surveys that are carried out across the campus.

Every opportunity should be taken to incorporate energy saving improvements within any LTM projects and budgets.

Revolving Green Fund

The University has benefitted from involvement within the Revolving Green Fund that is backed by HEFCE and Salix Finance. Under the scheme, the University has established a £250k 'ring fenced' fund that will be used to implement energy saving projects across the campus.

The financial savings from the projects are re-cycled into the ring fenced fund, thus allowing investment in further energy saving opportunities.

Research Projects

There are a large number of research and under graduate projects that are being implemented across the University in relation to sustainability and low carbon solutions.

The University is aiming to improve the link between operation activities and academic research, this offers the potential to implement and monitor carbon reduction projects as part of a research project

External Grants

The potential exists to access sources of external funding, both at a national and local level to assist with the implementation of low carbon technology.

As part of the on-going management of the carbon management implementation plan, opportunities for external funding will be continually reviewed and evaluated to maximise the potential to secure additional funds to support the implementation plan.

Third Party Support

The opportunity exists to work in partnership with a third party to implement and deliver low carbon solutions.

A number of companies now offer energy performance contracts or energy supply agreements. These provide a financial vehicle to implement carbon reduction

projects, as part of the performance contract, the third party will invest in the low carbon technology and offer guarantees on the levels of carbon and financial savings that the technology could offer.

The University would enter into a long term contract with the third party and the financial investment would be paid back via the guaranteed savings that the technology delivers.

Carbon Profit and Loss Account

As part of the reporting for the carbon management plan a carbon profit and loss account should be established that starts with the baseline year.

This will provide a clear indication on the progress of the implementation plan.

7 Carbon Management Ownership and Management

7.1 Management Structure

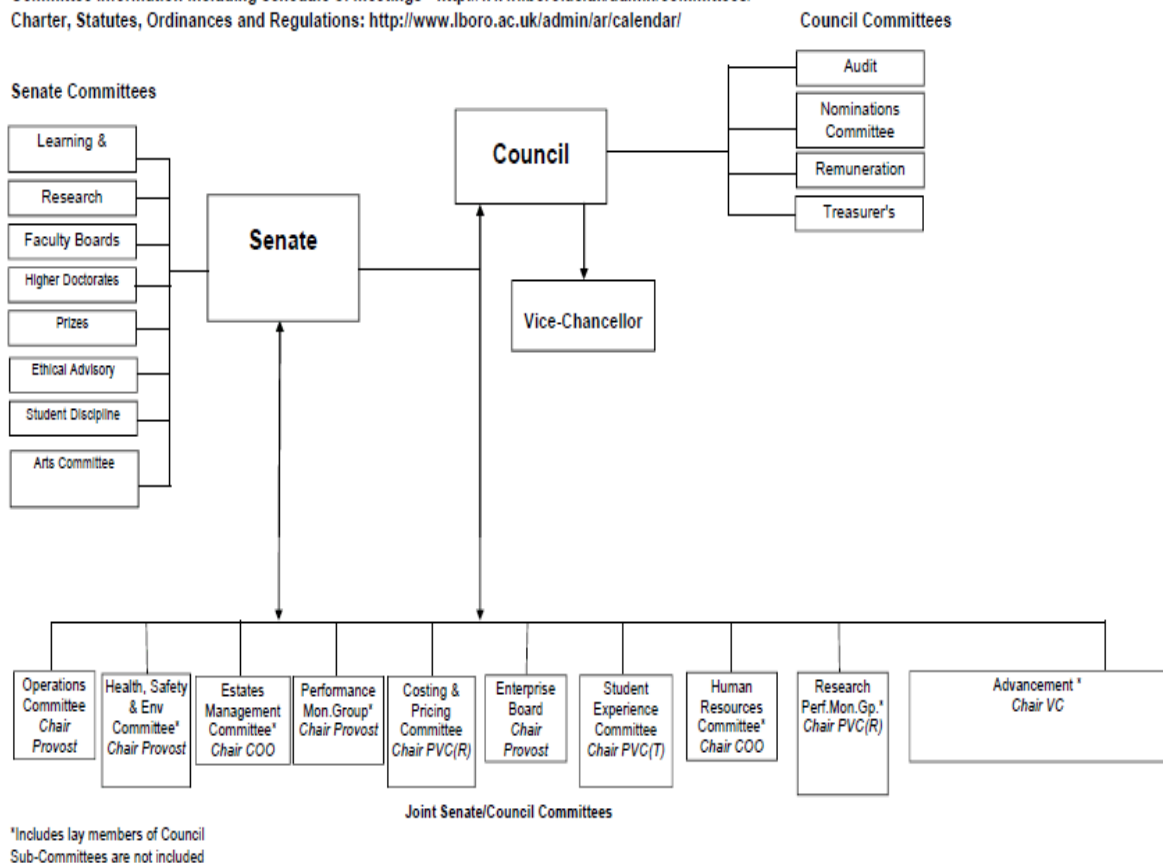
In order to ensure that there is effective and ongoing ownership of the carbon management programme, it is important to define a governance or accountability structure for the programme.

The current University committee structure is illustrated in the following diagram:

Useful Web Addresses

Committee information including schedule of meetings - <http://www.lboro.ac.uk/admin/committees/>

Charter, Statutes, Ordinances and Regulations: <http://www.lboro.ac.uk/admin/ar/calendar/>



Committee Structure

Implementation of the Carbon Management plan will impact on many areas of the University operations and developments. Performance against the plan will potentially impact on future funding for the University

The carbon management plan therefore needs to be reported via both the Operations Committee and the Estates Management Committee.

The Estates Management Committee will effect the ongoing monitoring and commitment to the carbon management plan.

Senior Sponsor (Chief Operating Officer)

The senior sponsor will be responsible for setting the strategic direction for carbon management at Loughborough University, agreeing the resources to be devoted to the actions in the implementation plan and reviewing progress against the objectives outlined within the plan.

Sponsor (Director of Facilities Management)

The project sponsor will be responsible for the delivery of the targets and objectives as set out within the implementation plan. The sponsor will be a link between the project delivery team and the Senior Sponsor.

Project Delivery Team

Delivery of the carbon management implementation plan will involve a wide range of projects, supported by a large and diverse project delivery team.

The project delivery team will need to be established as the plan develops.

As a guide, the following **could** be involved as part of the project delivery team:

Facilities Management

- Energy Manager
- Energy Technician
- Sustainability Manager
- Deputy Director Projects
- Deputy Director Services
- Capital Projects Co-ordinator
- Asset Manager Engineering
- Maintenance Manager
- Maintenance Contract Manager
- Controls Technician

Academic Representation

- Dean of Science – or management representative
- Dean of Engineering – or management representative
- Dean of SSH – or management representative

Others

- Finance Director – or senior management representative
- IT Director – or senior management representative
- Director of Change Projects
- Representative from Imago
- Representative from Student Union Management Team
- Representative from Sports Development Centre

7.2 Reporting and Evaluation

Following the publication of the carbon management plan and during the subsequent years in which carbon reduction projects will be identified and implemented, there will be regular updates on the programme targets and evaluation of the programme status, this will:

- Ensure that carbon management is being implemented effectively.
- Enable management of the programme to be adapted and improved where necessary.
- Provide data that can be used to update the emissions targets and programme scheduling

Any significant updates or changes to the implementation plan will be reported to the Estates Management Committee and the Operations Committee as required.

Procedure for Reporting Achievements

Estates Management Committee – A formal update report will be presented at all estates management committee meetings.

Operations Committee – As required update reports will be prepared for operations committee.

Executive Leadership Team - As required update reports will be prepared for the Executive Leadership Team.

University Council - As required update reports and presentation reports will be prepared for the University Council.

Annual Carbon Management Report - An annual report on the carbon management programme will be published each October. This report will be available University wide and will detail the progress of the carbon management implementation plan during the year.

Website – The Carbon Management Programme will occupy pages with the University sustainability website.

The website will be used to communicate all aspects of the carbon management programme

The website can be accessed at the following address:

<http://www.lboro.ac.uk/sustainability/index.html>

Energy Awareness Campaigns – The staff and student awareness campaigns will be used as a vehicle to communicate the aims, objectives and achievements of the carbon management programme.

The staff based 'It's Better Off' campaign is well established and has a dedicated network of 250 environmental champions across the campus.

Internal and External Publications – Internal and external publication and communication channels will be used as appropriate to report the progress and achievements of the carbon management programme.

APPENDICES

- 1 Sustainability Implementation Plan**

- 2 Schedule of Building Included within the Carbon Emissions Baseline**

- 3 Emissions that are Recorded – but Not Reported**

- 4 Emissions that are Neither Recorded or Reported**

- 5 Summary of Academic Buildings Carbon Emissions**

Appendix 1 : Sustainability Implementation Plan

Council annually reviews the suite of Strategic Implementation Plans which includes one for sustainability which was approved in November 2008 at the start of the institutional change project.

Each year those responsible are asked to report on progress against the targets and to identify priorities for the following year.

Sustainability was a theme of the Strategic Planning Day and some over-arching priorities came out of this which complement and add to the original plan.

This paper includes:

- An update on the original November 2008 targets (for information and not for the paper to ELT/Council)
- An update on the priorities reported to Council in July 2009
- A proposed revised set of targets based on the priorities identified at the Senate and Council planning day which forms the basis for future targets and priorities for 2010/11.

The Sustainability Strategic Group has approved this.

Anne Mumford

Loughborough University
University Strategy 2006-2016 (approved by Council November 2008)
Implementation Planning Progress Report 2009/2010

Sustainability	Target Dates	Progress
<i>Establish accountability at strategic and operational levels:</i>		
Establish EMG accountability for research, curriculum and operations.	End 2008	Completed and Sustainability Strategic Group established.
Establish University Project to cause a "step change".	End 2008	Project established and good progress made
Put in place an operational group across campus services to ensure a corporate approach is taken.	April 2009	This has been established with Andrew Burgess as Chair and Jo Hasbury as convenor.
Appoint a Sustainability Officer	November 2008	Appointment made, Jo Hasbury started November 2008. In addition Jenny Turner has been appointed as Energy Technician.
<i>Reduction in Carbon Footprint</i>		
Energy reduction actions to include: <ul style="list-style-type: none"> • To look at best practice in the HE sector and other sectors • Establish what will be measured. • Agree metrics and normalisation. • Set targets for annual and longer terms reduction. • Develop a policy on carbon offsetting. 	Ongoing	<ul style="list-style-type: none"> • Robust measurement and reporting now in place. • Targets for reductions have been set and reductions achieved through improved building management and energy awareness campaign – It's Better OFF. • It is not intended to use carbon offsetting as part of our carbon emissions targets.
Set new challenging targets for waste reduction which cut across all activities (currently separate measures by Facilities Management, imago, LSU)	Ongoing.	<ul style="list-style-type: none"> • Audit undertaken during the year. • Improvements made in the way we measure and report • Training for those involved across campus undertaken. • Opportunities in the future as we re-tender waste contract.
Travel <ul style="list-style-type: none"> • To establish measurement methodologies for on-campus travel, business travel and travel to work • To put in place innovations to make it easier for people to travel in ways which have less environmental impact. 	Ongoing	<ul style="list-style-type: none"> • "Get on Yer Bike" and car sharing schemes in place and promoted during the year.. • Business travel impact being analysed. • Transport Sustainability Group re-launched. Travel Plan and Car Park Management Strategy being developed in conjunction with the Landscape Strategy • Work commenced in analyzing opportunities presented by changing fleet vehicles to cleaner fuels.
To set a standard for the quality of new buildings and for refurbishments and to address the worst performing buildings (from an energy use point of view) which have the longest expected lifetime and target these for improvements using a business case	May 2009 for building standard, other actions and improvements ongoing.	<ul style="list-style-type: none"> • BREEAM "very good" approved by Council as the standard for new buildings with an aspiration for "excellent". Refurbishments to be decided. Clyde Williams Building achieved BREEAM very good, Design Centre will do and

related to long term savings.		<p>SportPark may achieve excellent.</p> <ul style="list-style-type: none"> Invest to save plans underway using the HEFCE Salix Finance rolling green fund programme.
To measure and publish the University's carbon footprint and targets for overall reduction.	End of 2008	<ul style="list-style-type: none"> 5% reduction achieved. Energy use and carbon footprint published on LU web site.
Financial Aspects		
<ul style="list-style-type: none"> Consider ethical investment policy To consider the incorporation of environmental sustainability in the University's procurement policies To monitor impact of reduction in energy use on the University's finances 	July 2009	<ul style="list-style-type: none"> Ethical Investment policy approved by Council in summer 2009. Development of supply chain policy still under development. Financial savings resulting from energy campaign have been calculated and reported.
Staff Engagement		
To build on the pilot work undertaken by Facilities Management	Ongoing	<p>Excellent progress on this through the "It's Better Off" campaign. Survey repeated at the end of year one and results will be published. 254 environmental champions recruited who are making a difference.</p> <p>The Centenary celebrations also provided opportunities to engage staff through the Centenary Lectures and other events.</p>
Promotion and Recognition		
Undertake return for Universities that Count (based on BITC survey)	March 2009	<p>A return was made in March 2009 under the whole Corporate Responsibility Index for the "Universities that Count" initiative which builds on the BITC index and is supported by HEFCE.</p> <p>University achieved a score of 60.7% for the over-arching Environment and Social Responsibility Index and 66.7% (up from 46% the previous year) for the Environment part for the 2007/8 return.</p> <p>Council have set a target of a "bronze award" of 70% for the overall and the environment indices for the 2008/9 return.</p>
Audit the awards in this area and submit the University for awards in 2008/9 aiming for major national recognition in 2010.	January 2009	<p>Sustainability Strategic Group reviewed award some of which we submit for and others are a result of assessing our web based information. Award submissions made in 2010 for the BITC regional Carbon Positive Award and for the national Climate Change Award.</p> <p>The University has been shortlisted in the 2010 Green Gown Awards in the</p>

		<p>Carbon Reduction category for the “It’s Better OFF” campaign.</p> <p>Baggeley won the Committed to Sustainable Construction award for SportPark.</p>
Headline successes and link activities through new web pages		Externally and internally facing pages developed. Promoted through the top level pages most of the time.

**Loughborough University
University Strategy 2006-2016
Implementation Planning Priorities 2009/10**

Sustainability Implementation Planning Priorities	Target Dates if applicable	Progress
Ensure that the Strategic and Operations Groups become embedded.		Both groups have met during the year and have a clear remit, membership and relationship.
Development of externally facing web site to better evidence our work across operations, research, teaching and enterprise.	November 2009	Completed, though work is obviously constantly ongoing.
Get robust and routine data measurement and collection for those aspects of carbon footprint measurement where this is not currently the case (waste, travel). Much of this work to be undertaken as part of the move to implement EcoCampus, the environmental management system.	End 2009	<ul style="list-style-type: none"> • Prior to this we had robust energy data. • Work undertaken during the year on waste which has shown inconsistencies in previous years and we cannot show improvements. However we now have a baseline. • Information re business travel is not easy to obtain when claim forms are used. We can get carbon use from our two main suppliers and can find mileage travel information from a gresso.
When HEFCE announce their carbon footprint targets for the sector we need to review existing targets and baseline data and report to Council on this.	Carbon management plan by autumn 2010, other actions ongoing	HEFCE have set targets of 48% reduction by 2020 and 80% reduction by 2050 based on 2005/6 baseline – these need to be adopted. Work is ongoing to establish the right baseline figures and buildings to include to ensure consistency of data collection and reporting. This will be part of the carbon management plan to be developed by autumn 2010.
Strategies and implementation plans for ethical investment and procurement developed and approved by Council	May 2010	<p>Ethical investment plan approved by Council.</p> <p>Work on the supply chain considerations is at a very early stage of development.</p>
Develop three examples of research incorporated into operations.	May 2010	<ul style="list-style-type: none"> • Measurement being undertaken of the FM Helpdesk area to establish a thermal comfort baseline using both staff views and data provided by a mannequin. Tiles to then be implemented and tests undertaken. • Work being undertaken in conjunction with AAE to look at best value wins for fleet conversion to cleaner fuels.

		<ul style="list-style-type: none">• SLEUTH project – looking at sustainable communities in halls on campus.
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Sustainability: Implementation Planning Priorities 2010/11 (based on output of Strategic Planning Day)

Sustainability Implementation Planning Priorities	Target Dates if applicable	Comments
Create a Demonstrator Campus	July 2011	<ul style="list-style-type: none"> • To build our research and enterprise activities into our operations and to evidence this in 2010/11 through: move to green fleet; Active Travel programme; installation of ceiling tiles for room cooling. • To create information boards, screens and other visible ways to inform people of how we are implementing our commitment to sustainability. • To be known for our commitment through recognition in the Universities that Count Survey, through the People and Planet Green League and through awards (e.g. BITC, EAUC).
Take Action to Reduce our Carbon Footprint by 48% by 2019/20 and by 84% by 2049/50 compared with a 2005/6 baseline	Carbon management plan by autumn 2010. CHP plant by July 2011. 5% reduction in year 2.	<ul style="list-style-type: none"> • To develop a carbon management plan with clear scope, baseline figures, allocated responsibilities, reporting mechanisms and interim targets. • To implement a step-change technology through CHP development on central park. • To reduce consumption by a further 5% through behavior change delivered through the It's Better OFF campaign.
Utilise space more effectively	Timetabling system used for room bookings sem. 2 2010/11 and for scheduling sem. 1 2011/12	<ul style="list-style-type: none"> • Implementation of a central timetabling system • Space Allocation Sub-Committee to review existing space use and post-occupancy use as part of commenting on the need for further space. • Space utilisation to be expanded beyond pool teaching space.
Change Behaviour	Ongoing for campaigns. Green Travel Plan by July 2011.	<ul style="list-style-type: none"> • Students: through Imago & LSU campaigns and LSU action programme; through their programmes of study and through the Employability Award. • Staff: through the It's Better OFF campaign and deliver a further 5% reduction in energy use. • Develop a Green Travel Plan
Evidence improvement through externally verified review and internal environmental management system	Universities that Count results in July each year.	<ul style="list-style-type: none"> • <u>Universities that Count</u>. Council target for 2009/10 is to achieve bronze in both Environment and

	<p>EcoCampus – achieve silver by July 2011.</p>	<p>overall ESR (note that the results will be available prior to final Council paper). Target is to achieve silver in our return for 2010/11 undertaken in late 2011 which will be reported in 2012. Our aspiration is to achieve silver level for 2009/10 return undertaken in late 2010.</p> <ul style="list-style-type: none"> • <u>EcoCampus</u> – achieved bronze level in March 2010. Target is silver in 2010/11 year. This requires evidence of implementation of legal requirements and the ratification of an environmental policy with associated aims, objectives and targets.
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Appendix 2

Schedule of Building Included within the Carbon Emissions Baseline

The following buildings are included within the Carbon Emissions baseline:

Residences

The University Residences that are included within the Carbon Emissions Baseline are the properties that are owned and operated by the University – Imago

Name	Area (m2)	Managed By
Butler Court	7,168	Imago
Cayley Hall	4,766	Imago
David Collet (A-F and Dining Hall)	8,281	Imago
Falkner/Eggington	8,665	Imago
Faraday Hall	6,449	Imago
Royce Hall	5,823	Imago
Rutherford Hall	4,058	Imago
Telford Hall	4,715	Imago
Towers	8,053	Imago
Whitworth	1,746	Imago
Cayley/Rutherford.Dining	1,397	Imago
Faraday/Royce Dining	1,397	Imago
Towers Dining Hall		Imago
Originally Elvyn Richards Blocks: <ul style="list-style-type: none"> • Village Court • David Collet G • Faraday 22–27 • University Lodge • Elvyn Richards Refectory 	11,980	Imago

Main Campus - Academic, Teaching, Sports and Resource Buildings

Name	Area	Campus Location
Admin Building 2	1,003	Central
Ann Packer	1,506	East
Bridgeman Centre	4,489	East
Brockington	1633	Central
Brockington Extension	3305	Central
Burleigh Cottage	178	Central
Burleigh Court	6,500	West
Chemistry	4,531	Central
Dan Maskell Tennis Centre	2,847	East
Dance Studio	465	East
Edward Herbert	5,733	Central
EIS/LU Performance Centre & Gym	6,049	East
Estates Workshop & Store	1,819	Central
Fairbairn Library	691	East
Fine Art LUSAD	3,869	East
GG Block	744	Central

Graham Oldham	547	Central
Great Hall LUSAD	596	East
Haslegrave Building	3,655	Central
Haslegrave Pavilion	152	Central
Hazlerigg Hall	2,767	Central
Clyde Williams	N/A	East
Herbert Manzoni	2,202	Central
High Performance Athletics Centre	4,937	Central
Hockey Pavilion	461	Central
Holywell Drive 3, 7 & 11	422	Central
Imago Services	653	Central
Innovations Centre	6,644	Central
James France	3,950	Central
James France (Admin)	836	Central
John Clements	635	East
John Cooper	573	East
John Hardie	496	East
John Pickford	1,006	West
Keith Green	1,252	West
Lecture block G	299	Central
LTA Tennis Centre	3,643	East
LUSAD - 3D Design	1,908	East
LUSAD - Admin Block	2,438	East
LUSAD- Textiles	1,602	East
Martin Hall	3,706	East
Matthew Arnold	1,771	East
Mechanical Engineering/WolfSch	5,079	West
Medical Centre	443	Village
Mumford Arts and Pottery Cottage	341	Village
Music school	472	East
Netball/Badminton	3,488	East
Pilkington Library	9,296	West
Rutland Hall	1,528	Central
S Building	8,950	West
Schofield	4,581	Central
Security Gatehouse	307	East
Sir Arnold Hall (Administration 1)	825	Central
Sir David Davies	12,686	West
Sir David Wallace Sports Centre	3,424	East
Sir Frank Gibb	4,197	West
Sir Frank Gibb Labs	3,052	West
Sir John Beckwith	2,381	East
Sir John Ferguson (National Cricket Academy)	2,888	Central
Sir Richard Morris (inc extension)	5,840	Central
Stadium Pavilion	593.94	Central
Stewart Mason Building	2,153	Central
Stewart Miller Building	4,729	West
Student Accommodation	114	Central
Student Services Building	602	Central
Swimming Pool	2,893	East
University House	389	Village
Victory Hall	1,107	East

W.E.D.C. 1,2,3	765	West
Wavy Top	2,991	Central
WolfSchofMech/ManEng	3,747	West
Wolfson Annex	536	West

Holywell Park

Charnwood Wing	}	30,098	Holywell
Chem Tech Bldg		1,759	Holywell
Garendon Wing		17,527	Holywell
Energy Centre		1,001	Holywell
Holywell Bldg		2,623	Holywell
Sir Denis Rooke		4,036	Holywell

Note – 36% of the area of the Holywell Park campus is allocated to University operations or University tenants.

Loughborough Park

Michael Pearson East – (Loughborough Park 1)	2,735	Loughborough Park
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Off Campus

The Link at Loughborough	N/A	Off Campus
LUSAD – Fredrick Street	2,074	Off Campus

Appendix 3

Emissions that are Recorded – but Not Reported

Data is recorded for the following buildings, but not reported within the Carbon Emissions baseline:

Residences

Name	Managed By
Elvyn Richards	UPP
Hazlerigg & Rutland	UPP
John Philips Court	UPP
Robert Bakewell	UPP

Holywell Park

Charnwood Wing	}	30,098	Holywell
Chem Tech Bldg		1,759	Holywell
Garendon Wing		17,527	Holywell
Energy Centre		1,001	Holywell
Holywell Bldg		2,623	Holywell
Sir Denis Rooke		4,036	Holywell

Note – 64% of the area of the Holywell Park campus is allocated to non University tenants.

Sport Park

Main Building	5,500	Sport Park
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Appendix 4

Emissions that are Neither Recorded or Reported

Data is neither recorded or reported for the following buildings:

Residences

Name	Managed By
Forest Court	Derwent Housing
Harry French	Unite
The Holt	Unite
William Morris	Unite

Loughborough Park

Michael Pearson West - Loughborough Park 2	2,074	Loughborough Park
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Miscellaneous

Henry Ford College	Campus
Student Union Building	Campus
Rutland Lodge (Nursery, Shops and Bank)	Campus
Miscellaneous Town Centre Accomodation Properties	Town

Appendix 5: Summary of Academic Buildings Carbon Emissions

Building	Electricity		Gas		Total CO2 (tonnes)
	kWh	CO2 (tonnes)	kWh	CO2 (tonnes)	
Pilkington Library	1,805,190	976	4,889,696	996	1972
Burleigh Court & Springs	1,573,845	851	2,112,240	430	1281
Elvyn Richards Dining	486,031	263	4,264,424	869	1132
Haslegrave Building	1,642,740	888	932,025	190	1078
S Building	1,423,229	769	1,297,750	264	1034
Sir David Davies	1,173,201	634	1,839,470	375	1009
Edward Herbert Building (EHB)	1,075,704	581	1,662,855	339	920
Chemistry	1,019,927	551	1,155,660	235	787
Swimming Pool	786,202	425	1,729,898	352	777
David Collet ABC	428,309	232	1,700,068	346	578
Stewart Miller Building	784,944	424	685,850	140	564
Sir Frank Gibb Laboratories	557,478	301	1,191,861	243	544
Butler Court A/B	414,586	224	1,344,323	274	498
EIS/LU Performance Centre & Gym	543,745	294	970,381	198	492
James France	308,652	167	1,007,505	205	372
Netball/ Badminton	361,806	196	857,326	175	370
Bridgeman Centre	283,588	153	983,310	200	354
Schofield	184,343	100	1,165,860	238	337
Sir Frank Gibb Building	315,027	170	608,565	124	294
Mechanical Eng/Wolfson School	254,864	138	736,455	150	288
Sir Richard Morris	349,938	189	390,245	80	269
Wavy Top	185,684	100	762,960	155	256
Stewart Mason Building	252,289	136	549,015	112	248
Brockington Extension	139,107	75	842,775	172	247
National Cricket Centre (Sir John Ferguson)	392,450	212	169,006	34	247
Herbert Manzoni	214,264	116	561,765	114	230
Martin Hall	112,322	61	811,833	165	226

Sir John Beckwith Centre for Sport	220,883	119	521,658	106	226
High Performance Athletic Centre	202,458	109	529,601	108	217
Wolf School of Mech/Man Engineering	188,075	102	543,460	111	212
New Sports Hall (Sir David Wallace)	184,779	100	549,439	112	212
Caley Rutherford Dining	177,644	96	356,210	73	169
Whitworth Building	127,022	69	445,230	91	159
LTA Centre	234,136	127	148,379	30	157
Faraday / Royce Dining	134,951	73	355,980	73	145
Matthew Arnold	87,710	47	388,287	79	127
Brockington	32,676	18	416,415	85	103
Dan Maskell Tennis Centre	140,357	76	115,958	24	99
Admin Building 2	73,981	40	255,765	52	92
Ann Packer	19,006	10	329,814	67	77
Sir Frank Gibb Annex	15,860	9	318,625	65	73
Business School Extension	76,622	41	151,303	31	72
Keith Green Building	94,234	51	89,405	18	69