

# Middlesex University

## Higher Education

# Carbon Management Plan

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**Owners:** Mark Norman, Environmental Manager & Andrew Dickie, Director of EFMS

**Approval:** Melvyn Keen, Deputy Chief Executive

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2.0	Updated by Susie Page Environmental Manager	01.10.11	SP
2.1	Minor updates to target progression, Mark Norman, Environmental Manager	22.02.13	MN
2.2	Minor updates to progression and areas of responsibility. Updated spend profile and savings projection.	28.03.14	MN
2.3	Minor update due to typo's on dates	01.09.14	MN

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# 1 Executive summary

Global climate change is recognised as a key environmental threat facing the world. Concerns over fossil fuel depletion, security of energy supplies and rising energy costs are focussing the attention of individuals, organisations and governments on the need for energy conservation and carbon emission reduction.

In 2009 the University calculated our carbon emissions footprint, to set targets for reducing our carbon emissions, and to formulate a plan to deliver the target.

This document, the University Carbon Management Plan, sets out our strategy for reducing carbon emissions by 25% over a seven year period from 2008/2009 to 2014/15, from a baseline of 2005/06.

An aspirational target for 2020 using the baseline of 2005/06 was set at a 35% reduction with a comprehensive review set for 2014-15 in terms of scopes, projects and feasibility.

Our carbon baseline for the year 2005/06 was made up of emissions from non-residential buildings, water consumption, waste to landfill. Total emissions for the year have been calculated at 9421 tonnes of CO<sub>2</sub> equivalent (tCO<sub>2</sub>e).

The direct costs of the programme and the projected returns on investment and emissions reductions over the next 7 years can be seen in the table below:

<b>Total Estimated Capital Expenditure (£K)</b>								<b>£500K</b>
<b>Total Annual Cost Savings</b>								
<b>Year</b>	<b>08/09 savings</b>	<b>09/10 savings</b>	<b>10/11 savings</b>	<b>11/12 savings</b>	<b>12/13 savings</b>	<b>13/14 savings</b>	<b>14/15 savings</b>	<b>7 year Total</b>
<i>Annual Savings (£K)</i>	<b>0</b>	<b>0</b>	<b>50</b>	<b>50</b>	<b>100</b>	<b>200</b>	<b>100</b>	<b>500</b>
<b>Total Annual Carbon Reductions (tCO<sub>2</sub>e)</b>								
<b>Year</b>	<b>08/09 savings</b>	<b>09/10 savings</b>	<b>10/11 savings</b>	<b>11/12 savings</b>	<b>12/13 savings</b>	<b>13/14 savings</b>	<b>14/15 savings</b>	<b>7 year Total</b>
<i>Carbon Reduction (tCO<sub>2</sub>e)</i>	<b>0</b>	<b>41</b>	<b>560</b>	<b>280</b>	<b>748</b>	<b>312</b>	<b>415</b>	<b>2356</b>

Table 1: Annual cost savings and emissions reductions arising from Carbon Management.

The majority of the direct investment detailed in table 1 is from University budgets although a small amount was secured through the Salix Green Fund.

## **1.1 Introduction**

In the UK there are major concerns over fossil fuel depletion and the increasing toll caused to the World's climate by the continuation of the burning of fossil fuels. There are also concerns over security of energy supplies and rises in energy costs and this has focussed the Government into providing long term commitments to reducing our dependence on fossil fuels.

This paper sets out Middlesex University's response to the need to provide a plan that will commit us to reducing our energy use and hence reducing our production of carbon into the atmosphere. Middlesex University has formulated a sustainable development policy as part of our commitment to implementing Eco-campus environmental management system, which will help to improve our environmental performance. The University realises that in order to engage student and staff in a drive to improve its performance, it must introduce some measures to demonstrate commitment.

Under the broad umbrella of the sustainability development policy the University has introduced some measures such as: a new waste contract ensuring that more recycling takes place; water conservation measures; a green travel plan; and Eco-campus environmental management system.

Our Carbon Management Plan sets out our strategy for reducing carbon emissions from the baseline year of 2005 for the seven year period to 2012/2013 and introduces a range of measures both strategic and technical which will reduce emissions over the Estate.

## **2 . Carbon Management strategy**

### **2.1 Context and drivers for Carbon Management**

#### *International*

In the international arena the Kyoto Protocol remains the only worldwide binding agreement to reducing CO<sub>2</sub> emissions (by 5% between 1990 and 2008-2012) and there has been no successor to the Kyoto protocol. Developed countries are expected to take the lead in reducing emissions by setting an

example. Recently in Cancun 2010 developing nations such as China, Brazil, India and Indonesia have been encouraged to make voluntary commitments to reducing carbon emissions.

### *European*

At the European level, legislation includes the European Union Emissions Trading Scheme (EUETS), and the EU Energy Performance of Buildings Directive (EPBD). At Middlesex University we are affected by the EPBD which requires us to display energy certificates on some of our larger buildings. The University has taken this a step further and is displaying a similar certificate at a number of our smaller buildings. It is expected that the public display of energy performance certificates will increase energy awareness and engagement across our sites.

### *National*

The Climate Change Bill introduced in 2007 by the UK Government commits the country to 60% reduction in CO<sub>2</sub> emissions by 2050. The 2008 Climate Change Act (CCA) takes this commitment further by agreeing a carbon reduction target of 80% by 2050 against 1990 levels, with an interim target of a 26% reduction by 2020 and this made the UK to first country in the world to set legally binding targets.

In order to reach this target the Government introduced the Carbon Reduction Commitment Energy Efficiency Scheme (CRC), in 2008 which is designed to encourage organisations with over 6000MWH per annum consumption to report their carbon emissions and pay £12 per ton of CO<sub>2</sub> emitted. It is mandatory for all public sector organisations to take part in this scheme, and Middlesex University has submitted its first footprint and annual report to the Environment Agency in July 2011.

### *HEFCE*

The Department for Innovation, Universities and Skills' grant letter to HEFCE for 2009-10 required the higher education (HE) sector in England to implement a carbon reduction target of at least 80% by 2050 against 1990 levels. HEFCE has announced that, from 2011, capital allocations will be linked to carbon reduction. HEFCE, Universities UK and Guild HE have published their 'Carbon reduction target and strategy for higher education in England' (HEFCE 2010/01). Institutions are required to develop individual carbon management plans and to report on progress and the results achieved.

### *Other drivers*

In addition to the above another driver was to enhance the campus from the poor quality buildings that were erected mainly in the 60's. These buildings were well past their use-by date and the decision was made that these had to be replaced but in addition it was clear that the University would benefit by bringing more of its Estate into one location such as Hendon.

## **2.2 Our low carbon vision**

Middlesex has undertaken rationalisation of its estate to get more with less. The University's campus was originally made up of almost eleven different sites some very small and over the years this has been consolidated into two substantial sites: the main campus at Hendon began in 1930, and a country estate at Trent Park. Much of the property at all the sites was built in the 60's and very inefficient and was coming to the point when a decision had to be made to either commit large sums on refurbishing old difficult buildings or whether to sell some sites and reinvest the proceeds into modern buildings.

The University Strategic plan is committed to consolidating our estate at our Hendon campus and this Carbon Management Plan includes that decision and its effect on our production of carbon.

This has carbon benefits by decreasing the amount of space it needs to heat, light and cool. The University has substantially increased the value of its built estate at Hendon with several new buildings. Sheppard Library completed in 2007 incorporates rainwater harvesting and solar thermal; Hatchcroft building which opened in October 2008 is BREEAM 'Excellent' with features such as natural ventilation, CHP and a ground source heat pump.

In 2011 a new arts and design building opened which is also BREEAM 'Excellent' and includes onsite combined heat and power system with an absorption chiller, energy efficient air source heat pumps, solar panels on the sedum roofs, a natural ventilation system, and daylight and occupancy sensors for artificial lighting.

The Utilities budget was approximately £1.8m in 2010/11.

## **2.3 Targets and objectives**

Middlesex University aims to:

- Reduce its carbon emissions from utilities by 25% by 2014/15 on 2005 baseline
- Reduce carbon emissions from staff and student travel
- Reduce carbon emissions from waste disposal
- Reduce carbon emissions from bought-in products and services

Though challenging, the target is considered achievable if the actions detailed in the Carbon Management Plan are fully implemented. The target would set the University on a course for an 80% cut in emissions by 2050, in line with the Government's emissions reduction target embodied in the Climate Change Act 2008.

An aspirational target of 35% was set for 2020 with a review planned for 2014-15 to determine success to date, growth forecasts for the Estate and Operations, as well as to benchmark current emissions with additional scopes added in. It will also include a review of third party assessed energy and carbon management certification schemes available and what would be of most benefit to Middlesex.

To achieve the midterm target of a 25% reduction in emissions there is a requirement to increase the resources available for carbon management. The University will achieve emissions reduction by:

- Engaging staff and students in the Carbon Management Plan through Green Impact staff engagement program and Student Union People and Planet Society.
- Investing in energy conservation measures in buildings where the payback period is short
- Consolidation of campus sites
- Improving utility metering so that the impact of such measures can be monitored.
- Assessing the feasibility of other measures for reducing carbon emissions from buildings and other sources
- Delivering actions to meet the targets embodied in the University Travel Plan.
- Continuing to look for ways to monitor and manage emissions from other sources.
- Reviewing and updating appropriate policies and plans to ensure that carbon management is fully integrated into business planning.

## 3 Emissions baseline and projections

### 3.1 Scope

#### Non – residential buildings.

All emissions from gas and electric in this sector are included in the baseline. Data pre-2008 is not good however it has been improved and is already reported via the Estate Management Statistics exercise (EMS). In 2011 a new energy software program is being installed to further improve the accuracy of data measurement and reporting. The utilities budget for 2007/08 for non residential buildings was approximately £1.0m.

#### Travel

Emissions relating to staff travel were not included on the baseline. However, Middlesex University is committed to reducing emissions from staff and student travel and has a green travel plan which is currently being implemented. The target for 2011 is to create a baseline carbon footprint for staff and student travel so that future reductions can be measured against this.

#### Procurement

Some purchasing information is available for a range of consumables and equipment (e.g. stationery, PC's, photocopiers etc.), but the exact information is not good and they have not been included within the baseline. Middlesex University is currently operating at Level 3 on the Government Sustainable Procurement Flexible Framework which means any new contracts and services have measurable environmental criteria which is weighted and used for selecting new contracts, services and products.

#### Waste Disposal

The percentage of waste recycled and incinerated by the University is reported via the EMS. A new waste contract was implemented in 2010 increasing the quality of waste reporting and measurement.

#### Water Consumption

Emissions from this source are small but they have been included in the baseline.

### 3.2 Baseline

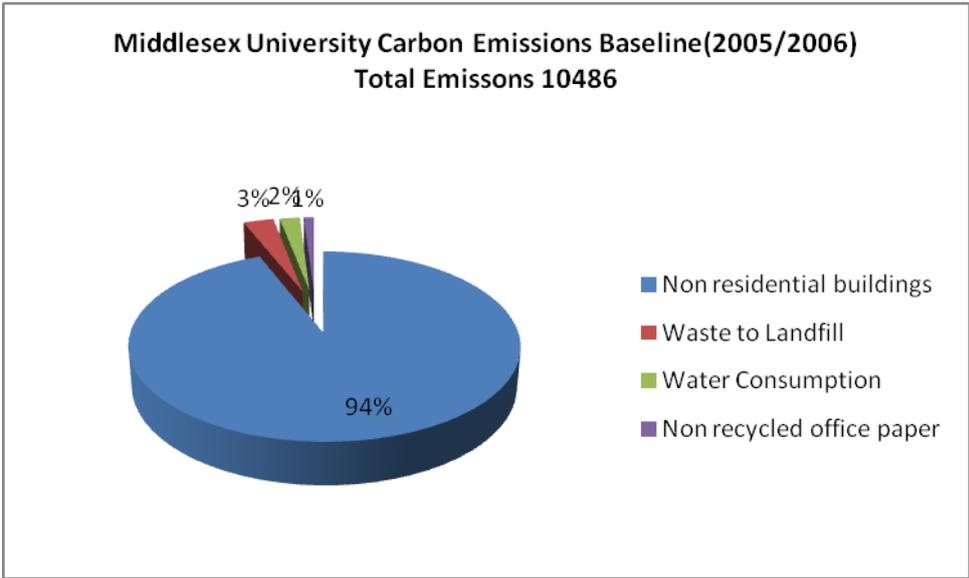
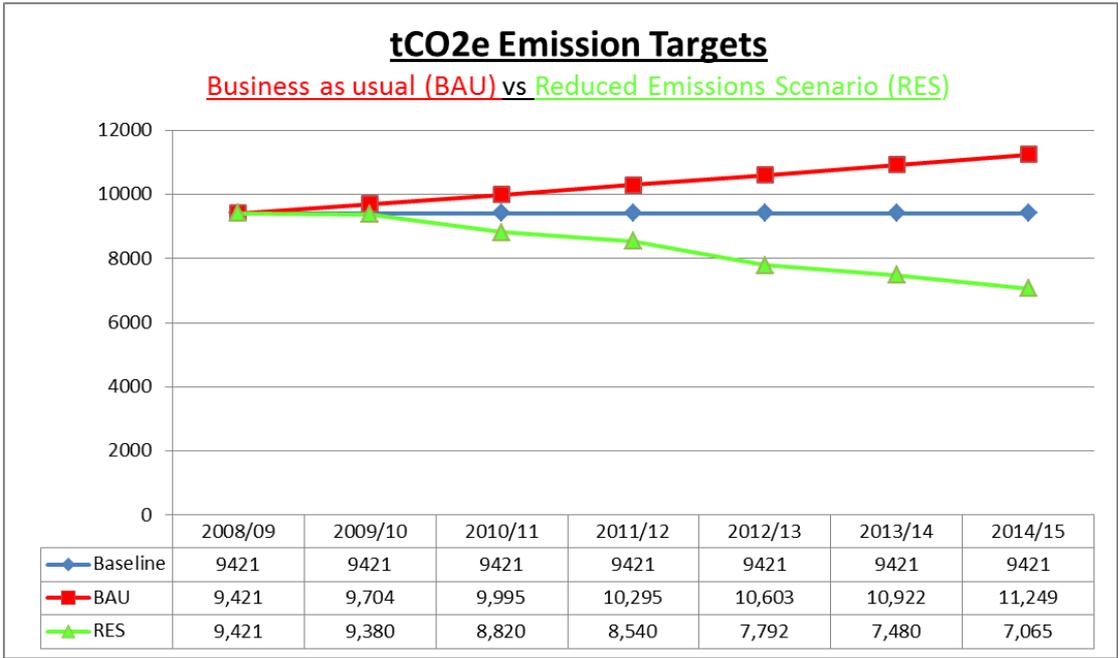


Figure 1: Baseline emissions by sector (2005/06)

Emissions from non-Residential buildings include emissions from electricity and gas. The conversion factors applied to each fuel type are those published in the HECM baseline tool.

### 3.3 Projections and Value at Stake

Figure 2 below shows an estimated projection of emissions over the life of the programme. The business as usual scenario is based on the estimated emissions increases which would occur without additional carbon management investment and actions and is conservatively estimated at approximately 3% per annum.



## 4 Carbon Management Projects

### 4.1 Existing Projects

The University does not have a long history of energy management across the Estate but past actions include:

#### Energy Management in Buildings:

- A Building Management Systems (BMS) is in place in many buildings to control Heating, Ventilation and Air Conditioning (HVAC) plant. The TREND system is continually added to when the opportunity arises. Much investment has been done over the last year to install many pulse meters to be able to more accurately examine and compare where energy is used most.

The University has had an Energy Policy in place since 2007. This policy is now integrated with the University Sustainability Policy and is managed through Eco-campus environmental management system to ensure it reflects the needs that the University is faced with in terms of Carbon Management.

- Spend to save

The University has made funds available for spend to save projects which deliver payback within seven years. Past projects include:

- Voltage optimisation in College and Williams building
  - Lighting upgrades and motion sensors
  - Thermal upgrades of building fabric
  - Sub-metering program across Hendon campus
- 
- Environmental Services Technical Surveyor
- A new post of Technical Surveyor was created in EFMS in 2009, providing support to the existing Energy Manager. Due to increasing legislation and the requirement for sufficient resource to manage the investment programme the team may be further expanded to successfully deliver this plan.
- Hatchcroft and The Grove - BREEAM excellent

All new university buildings must achieve the BREEAM 'very good' standard as a minimum.

### Staff Travel Plan

- The University Travel Plan 2008 contains a range of objectives and targets aimed at increasing the number of journeys made by staff and students to and from the University by sustainable methods of transport. Actions coming out of the travel planning process have included discounted public transport passes for staff and improved cycle facilities, charging for parking on campus, all intended to discourage the use of the car for individuals.

### Sustainable Procurement Policy

- Purchasing services developed a Sustainable Procurement Policy in 2006. Tender questionnaires for university supplies and services now include some questions to evaluate environmental impacts and given a sufficient weighting in the process.

### Waste:

Following a review of the manner in which waste was managed at the University in 2009 a three phased approach was adopted to ensure that the waste produced by the University was dealt with in the most appropriate way. The three phased approach initially saw the adoption by the University of a Waste management policy, this was followed shortly thereafter by the publishing of a waste strategy. The waste strategy outlined six core objectives namely:

- To reduce waste sent to landfill by 80% by 2015.
- To achieve zero waste to landfill by 2018
- To meet and exceed, where practicable, any legislative targets imposed on the University
- To achieve a minimum 10% reduction in waste produced by the University by 2015.
- To strive for maximum benefit from waste by encouraging reuse of waste products, over recycling of resources and recovery of energy
- To embed good waste management practices into the culture of the University.

A Waste management plan was then devised based on the strategy. This plan was implemented in October 2010, with a change in the main waste contractor and the establishment of a purpose built waste compound on the Hendon campus, comprising storage facilities and two fixed waste compactors (£100K expenditure over 5 years). This was followed shortly thereafter in Feb 2011, with the introduction of the “bin less offices”. Resulting in the removal of desk based waste bins and their replacement with newly acquired “waste stations” (£60K expenditure over 5 years) across all buildings.

Although still not fully realised, the new waste initiative has already resulted in a dramatic 70% increase in recycling rates across the estate, in the first 9 months of its implementation.

### Eco-campus Environmental Management System

The purpose of an EMS is legal compliance and continual environmental improvement. It will support the University in its carbon reduction target by providing a framework where environmental impacts can be monitored and audited annually to ensure objectives and targets are being met.

Currently Middlesex has achieved Bronze status in August 2011 and aims for Silver by and Gold by the end of 2012.

### Estate Rationalization

Middlesex has undertaken rationalisation of its estate to get more with less. The University's campus was originally made up of almost eleven different sites some very small and over the years this has been consolidated into two substantial sites: the main campus at Hendon began in 1930, and a country estate at Trent Park. Much of the property at all the sites was built in the 60's and very inefficient and was coming to the point when a decision had to be made to either commit large sums on refurbishing old difficult buildings or whether to sell some sites and reinvest the proceeds into modern buildings.

## **4.2 Planned / Funded Projects**

### Spend to Save Projects

The following projects have been approved by the Executive for completion in 2011/12:

- Combined heat and power plant in College Building.
- Voltage optimisation in Sheppard Library, Hatchcroft and the Town Hall.
- Lighting motion sensors and lamp upgrades in Ravensfield and Town Hall.
- Boiler replacement for more energy efficient plant.

In addition to this Middlesex has applied for funding from HEFCE through the Green Revolving Fund to replace the curtain wall of Williams Building with higher thermal value to reduce heat loss and improve thermal efficiency of the building.

## **4.3 Medium to Long Term Projects**

The following table summarises the emissions reduction opportunities that have been identified but the list will be added and continually update.

No	Emission Reduction Opportunity	Action	Completion Date
1	<b>Strategic change</b>	Close Enfield Campus and sell and reinvest proceeds into new building at main Hendon Campus. Realise a minimum reduction in area of 900m2 GIA. 2008/2009	2009 Completed
		Close Cat Hill Campus and sell and reinvest proceeds into new building at main Hendon Campus. Realise a minimum reduction in area of 13000m2 GIA in 2008/2009	2011 Completed
		Close Trent Park campus and sell and reinvest proceeds into new building at main Hendon Campus. Realise a minimum reduction in area of 13357m2 GIA in 2008/2009	Completed July 2013
2	<b>Engaging Staff and Students</b>	Introduce MDX energy and environmental ideas to staff and student inductions	Ongoing
		Energy/Sustainability training for staff.	Ongoing
		Develop Environmental website and include a facility for users to forward comments and suggestions).	2009 Completed (now needs updating)
		Develop a range of University specific publicity materials such as posters and stickers.	2010 Completed (now needs updating)
		Set up an environmental forum comprising staff and students	Ongoing
		Regularly publish an Environmental and energy report	Ongoing
3	<b>Building Management Systems (BMS) Optimisation</b>	Upgrade BMS controllers to enable intelligent support and maintenance provision.	2010 Completed (now entering second phase)
		Review and adjust temperature settings	Ongoing
		Identify and remove heating / cooling conflicts	Ongoing
		Survey building use and requirements and realign automatic time control operations with opening hours	2014
		Install new controls and additional BMS controls where recommended	Ongoing
		Arrange BMS training for EFMS staff.	2011 - Completed
		Provide access to system via the internet	2010 Completed

4	<b>Metering and Sub Metering Upgrade</b>	Review use of current system and utilise direct data import facility	2011 Completed
		Install additional electric sub metering across all buildings and separate gas meters to individual buildings	2010/11 Under review 2014
		Include heat metering in any boiler replacement programme.	Ongoing
		Assess overnight baseload	Ongoing
		Identify load shape and apply saving opportunities to the buildings	
		Improve 'visibility' of metering to building users	Under review 2014
<b>No.</b>	<b>Emission Reduction Opportunity</b>	<b>Action</b>	<b>Completion Date</b>
5	<b>Improve efficiency of computing facilities</b>	Replacement programme of servers which will improve efficiency and reduction of cooling as required.	Ongoing
		Assess overnight load from servers to look for efficiency savings	2012 – Completed as Servers now outsourced, But now need to review again
		Encourage staff to shutdown unused PC's at night	2010 Completed as now automatic
6	<b>Improve Efficiency of Lighting</b>	Complete building lighting surveys to identify opportunities for improvement	Ongoing
		Improve lighting controls, presence detection to corridors, stairwells and classrooms and introduce a programme of replacement and upgrades	Ongoing, Significant lighting projects completed 2014
		Upgrade fluorescent lighting to high frequency with appropriate controls	As above

			Completed
7	<b>Building Fabric and Heating Improvements</b>	Survey buildings for cavity wall and ceiling insulation and roof insulation	2012 – Cyril Sweett survey completed. College requires loft insulation
		Upgrade insulation in walls and ceilings as appropriate when undertaking works	Ongoing
		Undertake surveys for installing draught proofing to windows and doors as necessary. Replace doors where necessary to improve conditions	Ongoing
		Improve metering and zoning of heating systems	Ongoing
		Adjust heating systems to remove cold spots and then organise a programme to remove temporary electric heaters	2011 (Temporary heaters removed) Serious issues with Fenella & Williams
		Install Thermostatic Radiator Valves (TRV's) over a period to all areas	2012 - ongoing
8	<b>Plant Room equipment Insulation Improvement</b>	Survey plant areas and identify insulation requirements	Ongoing
		Repair or upgrade insulation on ductwork	Ongoing
9	<b>Water conservation</b>	Replace existing urinals with waterfree urinals.	2013 ongoing
		Include waterfree urinals in all new buildings	Ongoing
		Complete IR water tap control units as required	Ongoing
		Complete push spring return taps as required when replacing taps	Ongoing
10	<b>Review</b>	Carry out further feasibility work on CHP and introduce to five	2012 – not

	<b>Energy Supply Options</b>	largest building at Hendon	complete needs complete review/feasibility study
		Introduce voltage reduction equipment at Hendon	2012 Completed
11	<b>Develop &amp; Implement Communications Strategy</b>	Provide feedback on energy performance of the work done by EFMS to all schools	Ongoing
		Influence schools/services to consider energy efficiency in purchasing decisions	2009 – Flexible framework level 3 completed
		Provide a means of displaying energy and environmental information at key strategic locations in Hendon and Trent Park	2009 – completed now needs review
		Promote and improve use of recycling facilities	Ongoing
		Produce Annual Environmental Report for University	Annually
		Engage marketing in promotion of carbon management e.g. in student prospectus.	Ongoing
12	<b>Embed into Strategy &amp; Policy</b>	Include environmental considerations in Estate Plan	2009 Completed
		Make 'excellent' the minimum BREEAM rating for new builds	2008 Achieved
		Embed carbon management into school/service business plans	2014 Review
13	<b>Reduce Emissions From Transport</b>	Assess the use of alternative fuelled vehicles in the University's fleet when vehicle replacement is due	2014 – EV charging points installed & EV vehicles in use
		Introduce measures to meet targets in the University Travel Plan	2010 Completed
		Review cycle facilities provision for secure parking and showers/ changing areas	2012 Completed
		Begin the process of assessing scope three emissions for staff and student travel	2014 Completed

14	<b>Reduce Waste</b>	Increase recycling rates of a range of materials including glass, paper, cardboard, cans, and food waste when new waste contract is introduced	Ongoing  New Waste contract in place and additional recovery streams introduced. Recycling rates increased new campaign roll out in action
15	<b>On Site Generation</b>	<p>Review feasibility of on site generation through good quality CHP, Solar PV and Solar Thermal</p> <p>Implement feasible projects in 2012 through to 2014</p> <p>150kWe Gas CHP plant installed in Grove providing 733,000 kWh of heat and 482,000 kWh of electricity</p> <p>Solar Thermal (hot water) installed on Sheppard and Grove</p> <p>Solar PV installed on Williams, Sheppard, College and Hathcroft – 91kWp of energy providing 78,000 kwh of electricity.</p>	Completed  See left

## 5 Carbon Management Plan financing

### 5.1 Assumptions

Budgets from the Government via HEFCE are allocated annually making it difficult to commit funding years in advance. HEFCE announced funding cuts to institutions in 2011 and with increased student fees and uncertainty in student numbers the exact amount that can be dedicated to carbon management will need to be set annually. That said the University has committed funding specifically for spend to save projects each year and the below table in section 5.2 reflects this.

The University recognises that with rising fuel costs and the new carbon tax under the CRC it is essential to decrease reliance on fossil fuels. For these reasons funding has been committed each year to reducing carbon emissions.

## 5.2 Costs and Savings

To meet the target savings a significant investment programme is required. Investment will include capital investment in technical measures to achieve emissions reductions (lighting controls, insulation etc.), and additional investment in staff to assist with staff and student engagement.

<b>Total Estimated Capital Expenditure (£K)</b>								<b>£500K</b>
<b>Total Annual Cost Savings</b>								
<b>Year</b>	<b>08/09 savings</b>	<b>09/10 savings</b>	<b>10/11 savings</b>	<b>11/12 savings</b>	<b>12/13 savings</b>	<b>13/14 savings</b>	<b>14/15 savings</b>	<b>7 year Total</b>
<i>Annual Savings (£K)</i>	<b>0</b>	<b>0</b>	<b>50</b>	<b>50</b>	<b>100</b>	<b>200</b>	<b>100</b>	<b>500</b>
<b>Total Annual Carbon Reductions (tCO<sub>2</sub>e)</b>								
<b>Year</b>	<b>08/09 savings</b>	<b>09/10 savings</b>	<b>10/11 savings</b>	<b>11/12 savings</b>	<b>12/13 savings</b>	<b>13/14 savings</b>	<b>14/15 savings</b>	<b>7 year Total</b>
<i>Carbon Reduction (tCO<sub>2</sub>e)</i>	<b>0</b>	<b>41</b>	<b>560</b>	<b>280</b>	<b>748</b>	<b>312</b>	<b>415</b>	<b>2356</b>

The savings in this table take into account increasing fuel prices, disposal of campuses and energy efficiency projects and measures. It does not include additional costs such as CRC.

## 5.3 Sources of Funding

Funding is provided by the University via a 'spend to save' budget allocated each year. Funding through HEFCE Green Revolving Fund is also applied for each year. Some additional funds may be allocated through Long-term maintenance program set annually such as boiler upgrades.

## 6 Actions to Embed Carbon Management in your Organisation

### 6.1 Responsibility

Name and position in the University	Interest / issue
Professor Michael Driscoll	Reputation and performance of the University.
Vice Chancellor	Strategic direction of the University.
Melvyn Keen Deputy Chief Executive	Strategic implications of CM
Andrew Dickie Director of Estates and Facilities	Efficiency of services - delivering best value.  Reducing costs.  Delivering carbon management through estate projects and activities including services to schools and services'
Mark Norman Environmental Manager	Energy efficiency. Reducing energy costs. Raising energy awareness. Responsible for success of HECM.
Shawn Woods Environmental Services Technical surveyor	Responsible for meter monitoring and bill payments
Student Union	Engage students in carbon related awareness raising through People and Planet Society
Jamie Smith Head of Facilities and Space Management	Waste. Efficient space usage
Lorraine Sexton Waste Manager, EFMS	Waste and recycling. Assist with baseline data. Bring forward actions for Carbon Management programme.
Sam Jackson Procurement manager	Project Team member HECM.  Travel planning. Assist with baseline data re. vehicles/transport. Bring forward actions for Carbon Management programme.
Nikki Littlefield	Travel and Transport

## **6.2 Data Management**

Middlesex University has monitored its energy use and has a historical database of consumption from 2005. In 2011 the University installed TEAM Sigma energy software to better manage, monitor and target its energy use and streamline energy billing. The system includes a carbon module designed for compliance with Government CRC reporting.

## **6.3 Communication and Training**

Green Impact staff engagement program is launching its first year in 2011/12 to promote staff to engage in environmentally friendly behaviours through completion of activities and tasks in an online workbook. Teams of staff across different departments will work together in areas such as recycling, energy use and procurement to support the Carbon Management Plan and flag up issues to improve environmental performance.

## **6.4 Annual Progress Review**

Environmental issues are discussed at the University through two linked committees:

- Environmental Forum: Quarterly meetings with cross-section of staff in the University to communicate current environmental initiatives and discuss issues across the campus.
- Corporate Social Responsibility Committee: This is chaired by the Executive representing CSR at the University and its role is to review and approve environmental policy and strategy work related to the environment on campus.

The Carbon Management Plan will be reviewed annually and approved by the Executive via the CSR committee.