# Newbattle Abbey College
# Carbon Management Programme
# *for smaller organisations*

## Carbon Management Plan (CMP)

***Date: 27 May 2011***

***Version number: 1.0***

***Owner: John McFarlane (Project Leader)***

***Approval route: Ann Southwood (Project Sponsor)***

***Approval status: Approved***

# Contents

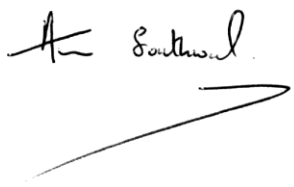
# Foreword from Ann Southwood, Principal

Newbattle Abbey College, as Scotland's national adult education residential college, recognises that energy conservation and carbon management are increasingly important global issues. For this reason the college has signed the Universities and Colleges Climate Commitment for Scotland (UCCCfS).

Newbattle Abbey is committed to reducing carbon emissions and developing a practical, workable Carbon Management Programme. This includes a Carbon Management Plan (CMP) which sets the college challenging targets for managing and reducing the college's energy consumption and carbon emissions.

I am confident that the proposed projects aimed at delivering the challenging reductions are achievable and that the process will drive behavioural changes that will allow the college to meet our goals.

Given the clear drivers for the requirement to change in the way we consume natural resources, and the increased public awareness of climate change, we appreciate that it is critical that the college has a robust plan for managing and reducing our carbon emissions. Our CMP maps out the steps on a long term project aimed at achieving our goals.



## Foreword from the Carbon Trust

Cutting carbon emissions as part of the fight against climate change should be a key priority for local authorities - it's all about getting your own house in order and leading by example. The UK government has identified the public sector as key to delivering carbon reduction across the UK inline with its Kyoto commitments and the Public Sector Carbon Management programme is designed in response to this. It assists organisations in saving money on energy and putting it to good use in other areas, whilst making a positive contribution to the environment by lowering their carbon emissions.

Newbattle Abbey College was selected in 2010, amidst strong competition, to take part in this ambitious programme. Newbattle Abbey College partnered with the Carbon Trust on this programme in order to realise vast carbon and cost savings. This Carbon Management Plan commits the organisation to a target of reducing $CO_2$ by 20% by 2015-2016 and underpins potential financial savings to the organisation of around £85 000.

There are those that can and those that do. Public sector organisations can contribute significantly to reducing $CO_2$ emissions. The Carbon Trust is very proud to support Newbattle Abbey College in their ongoing implementation of carbon management.

Richard Rugg
Head of Public Sector, Carbon Trust

CARBON TRUST

# Management Summary

Climate change is a high profile topic and this document sets out the college's 5 year plan for the reduction in $CO_2$ emissions as a result of the initiatives highlighted within the CMP.

Newbattle Abbey College recognises the requirement to reduce energy consumption and subsequent $CO_2$ emissions. The impact of the continued and increasing use of fossil fuels on our environment and the impact of global warming is the greatest environmental challenge the world is facing today. The effect of the continued release of carbon dioxide and other greenhouse gases into the atmosphere are well understood and recognised as the main human influence on global weather systems.

The Kyoto protocol in 1998 set the United Kingdom legally binding targets to cut carbon emissions by 12.5% below 1990 levels by 2008-2012. In addition the Scottish Climate Change Bill sets some of the most challenging targets for $CO_2$ emissions reductions anywhere in the world. Scottish Ministers have set an interim target of a reduction of 42% by 2020, and an 80% reduction target by 2050. Other legislative drivers such as the European Directive for Energy Performance in Buildings and the CRC Scheme simply mean that not addressing the issue of $CO_2$ omissions is not an option.

In addition, fossil fuels are a finite resource and the increased global demand and security of fossil based energy supplies into the future is a real issue. Most industry analysts have predicted that energy prices will continue to rise in the future and as a consequence there will be an increased financial burden to the college.

The CMP details the environmental and financial benefits to the college of effectively managing and reducing our $CO_2$ emissions on our journey to achieving a 20% reduction in our carbons emissions against our 2010 baseline year figures.

The financial benefits alone of implementing the CMP over the 5 year period will be £85 185 and a subsequent emissions reduction of 406 tonnes of $CO_2$.

The implementation and subsequent management of the CMP will be administered by the college carbon management group.

**Scope of Emissions for the Carbon Management Plan**

- Electricity Consumption
- Heating Oil Consumption

**Carbon Emissions Baseline**

Newbattle Abbey College has taken the baseline year for forecasting and predicting its carbon emissions to be the calendar year 2010. Table 1 below indicates the baseline $CO_2$ emissions and cost for the year 2010.

**Table 1 - Summary Table of Emissions and Costs for Baseline Year 2010**

## Baseline Outputs (for CMP)

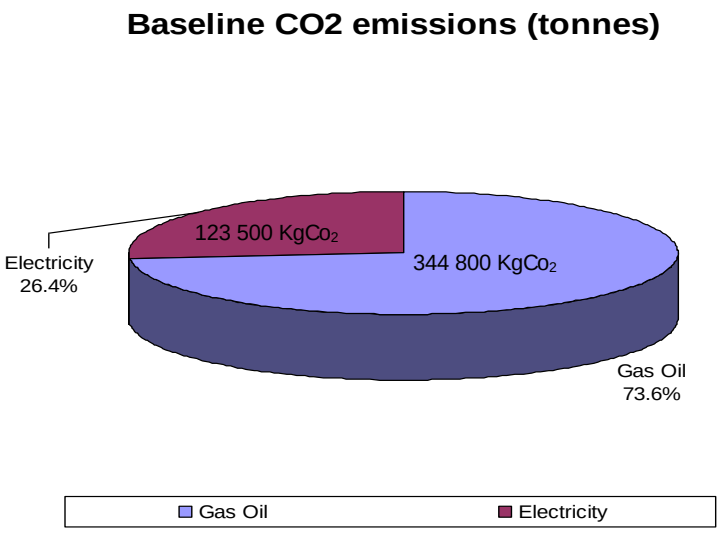
| | Building Total | Building (Gas Oil) | Building (Electricity) |
|---|---|---|---|
| **Baseline $CO_2$ emissions (tonnes)** | 468.2 | 344.7 | 123.5 |
| **Baseline Cost (£)** | £ 82 897 | £ 60 237 | £ 22 660 |

**Table 2 – Summary Table of Emission and Costs 2011-2016**

| Base Year | Emissions (Tonnes/$CO_2$) | £ Financial |
|---|---|---|
| 2010 | 468.2 | £82 897 |

| | BaU Projections | | Reduced Emissions Targets | | Value at Stake | |
|---|---|---|---|---|---|---|
| **Year** | **Tonnes/$CO_2$** | **£** | **Tonnes/$CO_2$** | **£** | **Tonnes/$CO_2$** | **£** |
| 2011 | 471.6 | £89 860 | 451.2 | £86 580 | 20.4 | £3281 |
| 2012 | 474.9 | £97 408 | 434.7 | £90 426 | 40.2 | £6982 |
| 2013 | 478.2 | £105 591 | 418.8 | £94 443 | 59.4 | £11 148 |
| 2014 | 481.6 | £114 460 | 403.5 | £98 639 | 78.0 | £15 821 |
| 2015 | 484.9 | £124 075 | 388.8 | £103 021 | 96.1 | £21 054 |
| 2016 | 488.2 | £134 497 | 374.6 | £107 598 | 113.7 | £26 899 |

**Figure 1 – Summary of Baseline Emissions for Baseline Year 2010**




The value at stake is the difference in emissions or costs between the BaU scenario and the reduced emissions scenario based on the CMP targets. This is the potential value that could result from the carbon reduction measures based on the 20% reduction in $CO_2$ emissions over the period of the CMP. Table's 3 and 4 below show the total value at stake and the cumulative value at stake for carbon emissions and financial savings.

**Table 3 - $CO_2$ Emissions Value at Stake**

| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|
| Total Value at Stake (Tonnes of $CO_2$) | 20.4 | 40.2 | 59.3 | 78.0 | 96.1 | 113.7 |
| Cumulative Value at Stake (Tonnes of $CO_2$) | 20.4 | 60.6 | 119.9 | 197.9 | 294.0 | 407.7 |

**Table 4 Financial Value at Stake**

| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|
| Total Value at Stake (Financial) | £3 281 | £6 982 | £11 148 | £15 821 | £21 054 | £26 899 |
| Cumulative Value at Stake (Financial) | £3 281 | £10 263 | £ 21 411 | £37 232 | £58 286 | £85 185 |

# 1 Introduction

Newbattle Abbey College is committed going forward to create a culture that puts sustainability at the centre of our operations while at the same time reducing carbon emissions and working towards generating a positive impact on the environment. The College is acutely aware of our obligations as a socially responsible corporate citizen. In addition there will be an ongoing financial burden to the college should the existing energy consumption trends continue into the future.

Newbattle Abbey College joined the programme in November 2010 and working in partnership with the Carbon Trust committed to producing a practical and workable CMP.

The purpose of the CMP is to identify our current energy consumption trends and how we can positively impact current behaviours and operating practices to reduce our carbon emissions going forward. The CMP focuses on the main activities within the college which are responsible for the vast majority of our carbon emissions, namely electrical usage and heating oil consumption.

The college's vision aims to reduce our $CO_2$ emissions by 20% by 2015-2016 from our baseline year of 2010. The challenging reductions targets will be reliant on resources, both financial and staff being made available.

**The development of the Carbon Management Plan involves five main steps:**

| | |
|---|---|
| **Step 1** | **Mobilise the Organisation**<br>Build the team, identify stakeholders, communicate the process internally, and define the project plan |
| **Step 2** | **Set Baseline, Forecast and Targets**<br>Compile the emissions baseline for the plan and define the plan's goals |
| **Step 3** | **Identity and quantify options**<br>Compile options list, prioritise options and assess costs and benefits |
| **Step 4** | **Finalise strategy and implementation plan**<br>Complete the strategy and deliver a cost effective options for reducing carbon emissions |
| **Step 5** | **Implementation**<br>Launch the CMP complete with budgets, defined targets, and success criteria |

# 2 Carbon Management Strategy

## 2.1 Context and Drivers for Carbon Change

### Climate Change (Scotland) Act 2009

The UK and Scottish Governments have fully recognised the requirement for fundamental action to address the issues of climate change and as a consequence have developed the UK Climate Change Programme.

The Climate Change (Scotland Act) 2009 has set very challenging emissions reduction targets for Scotland as a nation of 42% by 2020 and 80% by 2050 from 1990 levels. The Act which comes into force on 1 January 2011 requires public bodies to contribute to the delivery of the emissions reductions target.

### Carbon Reduction Commitment

The Carbon Reduction Commitment (CRC) is a mandatory emissions control scheme for organisations whose electricity consumption in excess of 6 000 000 KWh a year and was introduced as part of the Climate Change Bill. As the college electricity consumption at present is only 226 000 KWh and the site total energy consumption is only 1 420 000 KWh, we currently do not fall in scope. It is nonetheless an important driver in the formulation of an effective Carbon Management Plan.

### Energy Performance Certificates

The Energy Performance of Building Directive came into force in April 2008 and was introduced in an attempt to reduce $CO_2$ emissions from buildings. The directive resulted in the introduction of certified schemes to evaluate the energy efficiency of existing and new buildings. Energy Performance Certificate's provide potential buyers and tenants with useful information on the energy performance of a building. The Energy Performance Certificates also encourage incumbent occupiers of buildings to address potential shortfalls in building energy efficiency.

### Resource Depletion

Fossil fuels are a finite resource and the availability and cost of carbon based energy products such as oil, gas and coal in the future is of major concern. The need to move away from carbon based products for energy generation and to reduce the energy we consume has never been greater.

## 2.2 Our Low Carbon Vision

**Newbattle Abbey College will actively contribute to the vision of a low carbon, sustainable environment. This will be achieved by managing and reducing our consumption of natural resources and integrating the fundamentals of sustainability with our corporate strategies. On our journey we will engage with all key stakeholders to ensure our vision is real for everyone.**

**Strategic Themes**

Newbattle Abbey College recognises its legislative and moral duty as a socially responsible institution to play an active role in the reducing our consumption of all natural resources. Our vision is to occupy and operate our buildings in the most efficient and sustainable manner possible. On our journey we will engage with all key stakeholders including staff, students, suppliers, contractors and conference delegates to ensure our vision is real for everyone.

In pursuit of our low carbon vision Newbattle Abbey College Carbon Management Plan will focus on a number of strategic outcomes which include:

- To ensure that as far as practical buildings are insulated as efficiently as possible.
- To ensure that existing plant and building services are operated and maintained to ensure they are working at optimum efficiency.
- To ensure that carbon management and sustainability are an inherent part of the culture at the college and actively engaging all key stakeholders to achieve the vision.
- To secure the funding necessary to implement our low carbon vision.
- To ensure that energy efficiency and sustainability are key considerations in the procurement process.

**2.4 Targets and objectives**

**The primary objective of the Newbattle Abbey Carbon Management Plan is to:**

- **Reduce the College's carbon emissions by 20% by 2015-2016 against the baseline figures for 2010.**
- **Create a culture where carbon management and sustainability are embedded in the college ethos.**

# 3 Emissions Baseline and Projections

## 3.1 Scope

The Newbattle Abbey College Carbon Management Plan baseline figures are focused on the College's energy consumption as this accounts for the vast majority of $CO_2$ emissions.

The Newbattle Abbey College carbon management plan will address the following:

- main college electricity consumption
- main college heating
- main college domestic hot water generation

The Carbon Management Plan excludes:

- water used in buildings
- waste generated in buildings
- business travel
- employee commuting

## 3.2 Baseline

The baseline emissions for Newbattle Abbey College represents the calendar year 1st January 2010 – 31st December 2010 and are based on figures provided by our utilities providers and suppliers.

### 3.2.1 Table - Conversion Factors

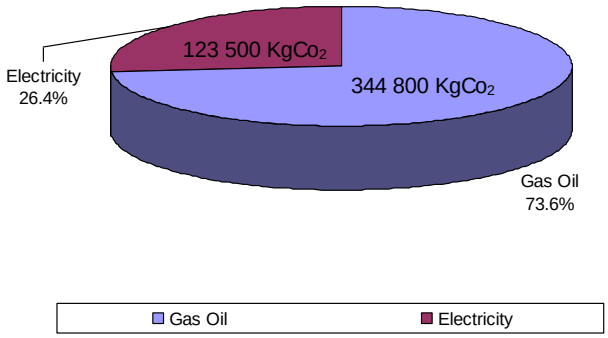
| Base Energy Source | Conversion Factors | Units |
|---|---|---|
| **Electricity (grid)** | 0.547 | Kg $CO_2$/kWh |
| **Gas oil** | 0.277 | Kg $CO_2$/kWh |

Table 3.2.2 Baseline Year Emissions

**Baseline Outputs (for CMP)**

| | Building Total | Building (Gas Oil) | Building (Electricity) |
|---|---|---|---|
| **Baseline $CO_2$ emissions (tonnes)** | 468 | 344.783 | 123.504 |
| **Baseline Cost (£)** | £ 82,897 | £ 60,237 | £ 22,660 |

**Baseline CO2 emissions (tonnes)**




## 3.3 Projections and Value at Stake

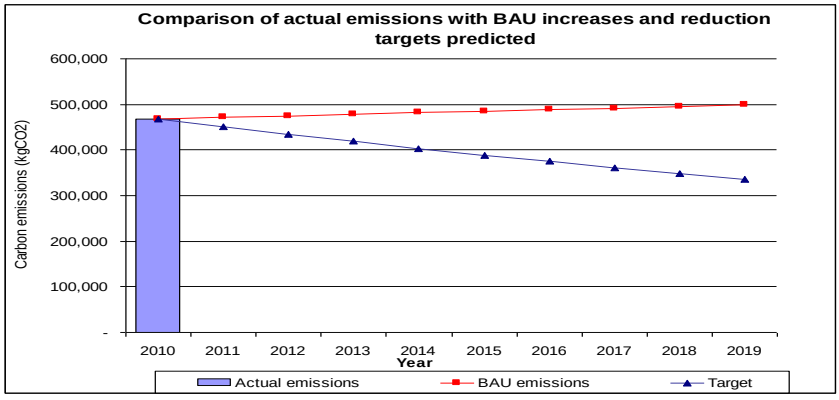
Assuming 2010 as the baseline year, it is possible to determine the business as usual (BaU) carbon emissions and ongoing financial burden to the college over the next 5 year period if no action is taken to address our current energy consumption.

The BaU forecasts assume energy consumption to increase by 0.7% per annum and energy costs to increase at 8.4% per annum (Source: Department for Business, Enterprise and Regulatory Reform) formerly the Department of Trade and Industry.

Comparison of actual emissions with BaU forecasts show $CO_2$ emissions will rise to 488.3 tonnes of $CO_2$ if no action is taken to reduce our carbon emissions.

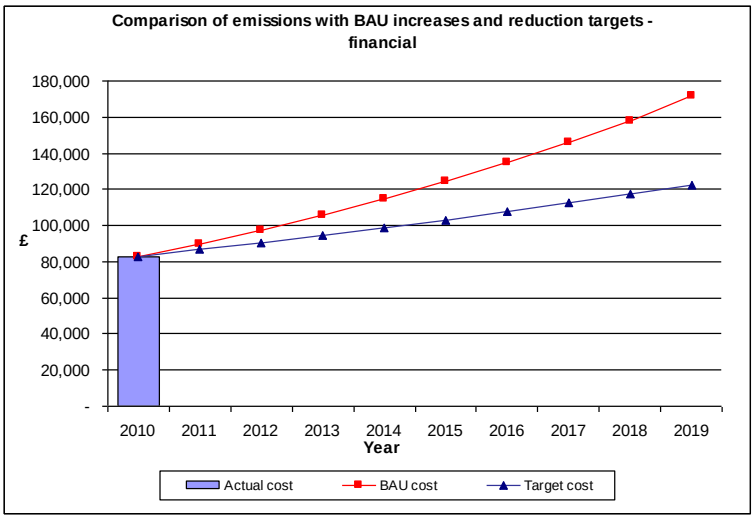
**Value at Stake BaU Scenario - Emissions**

The Value at Stake assumes an annual increase in energy consumption of 0.7% annum. If the BaU scenario was allowed to continue $CO_2$ emissions will increase from 468 tonnes in 2010 to 488 tonnes in 2016. If the college can deliver the $CO_2$ reduction forecast the total carbon savings over the period will be 407.6 tonnes of $CO_2$. It should be noted that the $CO_2$ savings over the period 2011-2016 have been averaged out over the term of the CMP.



## Value at Stake BAU Scenario - Financial

The Value at Stake BaU scenario assumes an annual increase in energy costs of 8.4% per annum. If the BaU scenario was allowed to continue energy costs will increase from £82 897 in 2010 to £134 497 in 2016. If the college can deliver on the $CO_2$ reduction forecast the total financial savings over the period will be £85 185. It should be noted that the financial savings over the period 2011-2016 have been averaged out over the term of the CMP.



# 4 Carbon Management Projects

## 4.1 Existing Projects/Funded Projects

Newbattle Abbey College currently have limited initiatives aimed at reducing carbon emissions primarily due to funding restrictions. The main focus has been to replace traditional lighting with low energy alternatives were possible. Manual monitoring of ambient space temperatures within the college building and student residence are also in place aimed at reducing gas oil consumption.

To supplement the above basic energy saving initiatives, awareness campaigns have been on going in the college, although it is recognised that historically this has been on an ad hoc basis.

The college commissioned the Energy Saving Trust in 2008 to conduct an Energy Efficiency Audit. The audit was completed by an independent energy consultant and provided valuable information on the main areas that could be explored as possible future projects aimed at reducing energy consumption and carbon emissions. The subsequent report from the Energy Saving Trust has provided useful information to assist in the formulation of the Carbon Management Plan.

## 4.2 Planned Projects

## Carbon Management Project Register

| Ref | Project | Lead | Cost | | Annual Saving | | Pay back | % of Target | Year |
|---|---|---|---|---|---|---|---|---|---|
| | | | Capital | Revenue | Fin | $CO_2$ | | | |
| NAC-01 | Introduction of Wake On Lan Technology | ICT/ Facilities | £1000 | | £863 | 4.707 | 12 Months | 4.98 | 2011-12 |
| NAC-02 | Draught Proofing of Windows | Facilities | | £16 500 | £4517 | 25.9 | 36 Months | 27.41 | 2012-13 |
| NAC-03 | Additional Loft Insulation | Facilities | | £6000 | £725 | 4.155 | 98 Months | 4.39 | 2012-13 |
| NAC-04 | Replace Inefficient Lighting | Facilities | £11 000 | | £1040 | 5.684 | 126 Months | 6.01 | 2013-14 |
| NAC-05 | Replace Boiler Plant and Associated Calorifiers and Pumps | Facilities | £200 000 | | £5218 | 29.834 | 456 Months | 31.48 | 2013-14 |
| NAC-06 | Staff, Student and Conference Guest Increased Awareness Campaign | Facilities /Admin Support | £0 | £0 | £453 | 2.473 | 0 Months | 2.61 | 2011 |
| NAC-07 | Effective Management of Building Environmental Controls | Facilities | £0 | £0 | £1432 | 8.141 | 0 Months | 8.6 | 2011 |
| NAC-08 | Installation of Voltage Optimisation | Facilities | £15 000 | | £2493 | 13.598 | 72 Months | 14.39 | 2012-13 |

# 5 Implementation

## 5.1 Finance

The benefits to the college following implementation of the Carbon Management Plan can be classified into financial and environmental. Given the funding pressures facing all higher education facilities, coupled with the need for the college to improve our environmental credentials, the need to address carbon emissions has never been greater.

### 5.1.1 Benefits/Savings – Quantified and un-quantified

**Quantified Benefits:**

| Year | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|
| **Annual Cost Saving** | £3 281 | £6 982 | £11 148 | £15 821 | £21 054 | £26 898 |
| **Annual CO2 Saving** | 20.4 | 40.2 | 59.3 | 78.0 | 96.1 | 113.7 |
| **% of Target Achieved** | 4.98 | 49.03 | 14.39 | 31.60 | 0.0 | 0.0 |

**Un-quantified Benefits**

- Enhanced reputation of Newbattle Abbey College within the wider community and higher education sector.
- Increased partnership working with external bodies.
- Improved staff and student awareness on how and why the college are tackling our $CO_2$ emissions and how this is being delivered and managed.
- Embed a sustainability culture within the college which year on year will contribute to both $CO_2$ emission reductions and reduced operational costs.

### 5.1.2 - Financial Cost and Sources of Funding

| | 2011/2012 | 2012/2013 | 2013/2014 | 2014/2015 | 2015/2016 |
|---|---|---|---|---|---|
| **Annual costs:** | **£1000.00** | **£33 500** | **£15 000** | **£200 000** | |
| **Total annual capital cost** | **£1000.00** | **£17 000** | **£15 000** | **£150 000** | |
| **Total annual revenue cost** | | **£16 500** | **£0.00** | **£75 000** | |
| **Total costs** | **£1000.00** | **£33 500** | **£15 000** | **£200 000** | |
| **Committed funding:** | **£1000.00** | **£0.00** | **£0.00** | **£0.00** | |
| **Committed annual capital** | **£1000.00** | **£0.00** | **£0.00** | **£0.00** | |
| **Committed annual revenue** | | **£0.00** | **£0.00** | **£0.00** | |
| **Total funded** | **£1000.00** | **£0.00** | **£0.00** | **£0.00** | |
| **Unallocated funding:** | | **£33 500** | **£15 000** | **£200 000** | |
| **Unallocated annual capital** | | **£17 000** | **£15 000** | **£150 000** | |
| **Unallocated annual revenue** | | **£16 500** | **£15 000** | **£50 000** | |
| **Total unfunded** | | **£33 500** | **£15 000** | **£200 000** | |

The college have made the assumption that funding will be secured prior to the individual project start dates and sources of funding will be progressed via external and internal sources. The Senior Management Team will provide a business case to the Board Of Trustees to identify funding options internally to support the implementation of the of individual projects aimed at reducing carbon emissions.

External funding opportunities will be identified including Salix with the option to apply for either interest free loans or match funding.

Individual projects which require zero funding to implement will be progressed this year and early next year.

It may also be possible to reinvest savings from $CO_2$ reduction initiatives into as yet un-quantified projects aimed at reducing energy consumption and removing operational costs to the college.

## 5.2 Governance for Implementation

## 5.2.1 Embedding Carbon Management

The CMP is the key strategic document the college will utilise to embed the sustainability culture within our organisation. The team which contributed to and formulated the CMP will be supplemented in the future to form a “Green Team” and will include representatives from the next wave of students to the college.

A representative from the Senior Management Team will be an active participant in the college Green Team. The benefits of having a member of the SMT will ensure the necessary resources are available to facilitate the changes that will embed the sustainability culture within the college.

The Facilities and Estates Manager will work with other colleges and external organisations to ensure new technology and best practice aimed at reducing energy consumption and improving sustainability are available for consideration.

#### 5.2.2 Data Management – measuring the difference, measuring the benefit.

Going forward, monthly recording of electricity and fuel oil consumption will be essential to ensure accurate consumption figures are available. The data will be utilised to determine the efficacy of the projects that will be implemented. The data collated will ensure the practical initiatives aimed at reducing our $CO_2$ emissions are working effectively and will highlight consumption figures out with the norm.

Additional sub metering will be considered in the future to improve the quality of data available and allow informed decisions to be taken in relation to additional projects. It is important that the tangible benefits in terms of $CO_2$ reductions and financial benefits are reported to the wider college. This approach will improve engagement levels in relation to sustainability and demonstrate the importance and benefits of the CMP.

The data will be collated and managed by the Facilities Department working with the Administration Team.

### 5.3 Resource Commitment

#### 5.3.1 Implementing the Initiatives

The CMP will be managed at an operational level by the Facilities and Estates Manager and progress against target will be reported to the Senior Management Team on a 6 monthly basis.

The Project Sponsor will provide an overarching role to ensure that adequate resources are made available in terms of time, people and finance to ensure the deliverables of the CMP are achieved.

The Green Team will meet formally on a monthly basis and this will provide a platform for individual project managers who have ownership for specific projects to provide progress reports to the Project Manager.

## 5.3.2 Maintaining Quality over Time

The CMP will be a dynamic document and will be refined and added to over time to ensure that new initiatives and projects can be evaluated, prioritised and resourced.

The Project Manager and Green Team will be the principle conduits for new projects to be progressed to the Senior Management Team for approval. Ideas and initiatives aimed at improving sustainability which do not require formal project approval will be agreed and implemented by the Green Team.

### 5.3.3 The Carbon Management Team – Delivering the Projects

The table below indicates the make up of the team who will deliver the CMP.

| Contact | Position Within the Organisation | Role |
|---|---|---|
| Ann Southwood | College Principal | Project Sponsor |
| John McFarlane | Facilities and Estates Manager | Project Manager |
| Ian Gates | Tutor/ICT Co-ordinator | Project Leader |
| Jackie Kane | Administration Supervisor | Project Leader |
| David Jack | Facilities | Project Leader |

### 5.3.4 Succession Planning For key Roles

Responsibilities linked with the management, governance and delivery of the CMP will be position specific rather than linked to any individual. This approach will provide continuity and resilience should anyone leave their post.

## 5.4 Implementation Plan

The implementation of the CMP will commence once the plan has formal sponsor sign off. The initial projects will be started in the financial year 2011-2012 and all projects will be completed by 2015-2016 subject to full funding being in place.

Resources in terms of people and time have already been agreed and are in place. Revenue streams to implement the larger capital projects in the coming years will be progressed and the Senior Management Team will ultimately decide which projects can be funded.

# Appendix A: Definition of Projects

| | |
|---|---|
| **Project:**<br>**Reference:** | ***Introduce Wake on LAN***<br>*NAC – 001.* |
| **Owner (person)** | *John McFarlane/Ian Gates.* |
| **Department** | *Facilities/ICT.* |
| **Description** | *This project involves the introduction of a wake on lan technology to reduce the time PC's are operating while not being used overnight, weekends and holiday periods.* |
| **Benefits** | Financial savings: £ £863.00.<br>Payback period: 1 year.<br>$CO_2$ Emissions reduction: 4.707 tonnes of $CO_2$.<br>4.98% of target. |
| **Funding** | Project cost: £1000.00.<br>Operational costs: The annual maintenance costs will be negligible.<br>Source of funding: Internal.<br>The SMT will evaluate and agree the funding for the year 2011-2012. |
| **Resources** | Delivered with existing in house resources supplemented with external specialists as necessary. |
| **Ensuring Success** | The projects success relies upon funding being made available to invest in the necessary software to implement the changes and specifying the correct software.<br>Principal risks: Securing funding to implement the changes due to the current and anticipated future public spending cuts. |
| **Measuring Success** | Success will be measured by monitoring monthly meter readings and electricity bills and the subsequent reduction in energy consumption and charges following the implementation of the wake on lan technology. |
| **Timing** | • *Start Date: 01/09/2011.*<br>• *Completion Date: 01/12/2011.* |
| **Notes** | *The project costs and projected financial savings both exclude vat.* |

| | |
|---|---|
| **Project:**<br>**Reference:** | ***Draught proofing of windows within the main college building***<br>*NAC – 002.* |
| **Owner (person)** | *John McFarlane.* |
| **Department** | *Facilities and Estates.* |
| **Description** | *This project involves the draft proofing of traditional sash windows within the main college building.* |
| **Benefits** | Financial savings: £4517.00.<br>Payback period: 3 years 6 months.<br>$CO_2$ Emissions reduction: 25.9 tonnes of $CO_2$.<br>27.41% of target. |
| **Funding** | Project cost: £16 500.<br>Operational costs: Ongoing Maintenance costs will be negligible.<br>Source of funding: Internal.<br>The SMT will evaluate and agree funding for the year 2012/2013. |
| **Resources** | Facilities will lead the project and this will be supplemented by external contractors to deliver the work package. |
| **Ensuring Success** | The projects success relies upon funding being made available to invest in the necessary remedial works to the college windows.<br>Principal risks: Securing funding to implement the changes due to the current and anticipated future public spending cuts. |
| **Measuring Success** | Success will be measured by monitoring weekly meter readings and the subsequent reduction in oil consumption and charges following the implementation of the project. |
| **Timing** | • *Start date: 01/09/2012.*<br>• *Completion date: 31/12/2012.* |
| **Notes** | *The project costs and projected financial savings both exclude vat.* |

| | |
|---|---|
| **Project:**<br>**Reference:** | ***Installation Of Loft Insulation***<br>*NAC – 003.* |
| **Owner (person)** | *John McFarlane.* |
| **Department** | *Facilities and Estates.* |
| **Description** | *This project involves the assessment of existing insulation within the college building and residential block roof voids and replacement or addition to provide 250mm minimum of glass wool.* |
| **Benefits** | Financial savings: £ 725.00.<br>Payback period: 8 years 2 months.<br>$CO_2$ Emissions reduction: 4.155 tonnes of $CO_2$.<br>4.39% of target. |
| **Funding** | Project cost: £6000.00.<br>Operational costs: The annual maintenance costs will be zero.<br>Source of funding: Internal.<br>The SMT will evaluate and agree funding for the year 2012-2013. |
| **Resources** | Delivered with existing in house resources supplemented with external specialist as necessary. |
| **Ensuring Success** | The projects success relies upon funding being made available to invest in the necessary insulation upgrade.<br>Principal risks: Securing funding to implement the changes due to the current and anticipated future public spending cuts. |
| **Measuring Success** | Success will be measured by monitoring weekly meter readings and the subsequent reduction in oil consumption and charges following the implementation of the project. |
| **Timing** | • *Start date: 01/09/2012.*<br>• *Completion date: 01/12/2012.* |
| **Notes** | *The project costs and projected financial savings both exclude vat.* |

| | |
|---|---|
| **Project:**<br>**Reference:** | ***Replace Inefficient Lighting***<br>*NAC – 004.* |
| **Owner (person)** | *John McFarlane* |
| **Department** | *Facilities and Estates.* |
| **Description** | *This project involves the upgrading/replacement of existing luminaries with modern energy efficient lighting and controls.* |
| **Benefits** | Financial savings: £1040.00.<br>Payback period: 10 years 6 months.<br>$CO_2$ Emissions reduction: 5.684 tonnes of $CO_2$.<br>6.01 % of target. |
| **Funding** | Project cost: £11 000.00.<br>Operational costs: Ongoing maintenance costs will reduce due the extended lamp life of the replacement luminaries.<br>Source of funding: Internal.<br>The SMT will evaluate and agree the funding for the year 2012-2013 |
| **Resources** | Facilities will lead the project and this will be supplemented by external contractors to deliver the work package. |
| **Ensuring Success** | The projects success relies upon funds being made available to implement the changes.<br>Principal risks: Securing funding to implement he changes due to the current and future public service cuts. |
| **Measuring Success** | Success will be measured by monitoring monthly meter readings and electricity bills and the subsequent reduction in energy consumption and charges following the implementation of the lighting changes. |
| **Timing** | • *Start date: 01/09/2012.*<br>• *Completion date: 01/01/2013* |
| **Notes** | *The project costs and projected financial savings both exclude vat.* |

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| **Project:**<br>**Reference:** | ***Replace existing boilers, calorifiers and heating pumps with more efficient models including inverter drives.***<br>*NAC – 005.* |
| **Owner (person)** | *John McFarlane.* |
| **Department** | *Facilities and Estates.* |
| **Description** | *This project involves the upgrading of the exiting oil fired boiler plant with a modern more energy efficient alternative. The existing boilers are 16-17 years old and reaching the end of their useful life.* |
| **Benefits** | Financial savings: £ 5218.00.<br>Payback period: 38 years.<br>$CO_2$ Emissions reduction: 29.834 tonnes of $CO_2$.<br>31.48% of target. |
| **Funding** | Project cost: £200 000.<br>Operational costs: Annual maintenance costs will reduce due to the reliability of new heating plant.<br>Source of funding: Internal.<br>The SMT will evaluate and agree funding for the year 2013/2014. |
| **Resources** | Facilities will lead the project and this will be supplemented by external contractors who will deliver the work package. |
| **Ensuring Success** | The projects success relies upon funds being made available to invest in new boiler and ancillary plant.<br>Principal risks: Securing funding to implement the changes due to the current and anticipated future public spending cuts. |
| **Measuring Success** | Success will be measured by monitoring weekly fuel consumption following the completion of the project and the subsequent reduction in oil consumption and charges. Additional metering can be installed as part of the refurbishment to more accurately record fuel consumption. |
| **Timing** | • *Start date: 01/09/2013.*<br>• *Completion date: 01/08/2014.* |
| **Notes** | *Temporary heating plant will require to be made available to maintain heating and domestic hot water during the duration of the works. Detailed design and preliminary works will be carried out during the heating season with the main work being completed during the summer months.*<br><br>*Consulting engineers will be appointed to carry out detailed design in preparation for going to tender.*<br><br>*The project costs and projected financial savings both exclude vat.* |

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| **Project:**<br>**Reference:** | ***Student, Staff and Conference Guest Energy Awareness***<br>*NAC – 006.* |
| **Owner (person)** | *John McFarlane.* |
| **Department** | *Administration Support* |
| **Description** | *This project involves the promotion and increased awareness of energy efficiency initiatives that can be directly impacted by staff, students and guests.* |
| **Benefits** | Financial savings: £ 453:00.<br>Payback period: 0 years.<br>$CO_2$ Emissions reduction: 2.473 tonnes of $CO_2$.<br>2.61 % of target. |
| **Funding** | Project cost: £0.00.<br>Operational Costs: £0.00.<br>Source Of Funding: Not Applicable. |
| **Resources** | Delivered with existing resources. |
| **Ensuring Success** | The principal factor to ensure initial and on going success is the ability to ensure the simple key messages are constantly communicated and re-enforced. |
| **Measuring Success** | Success will be measured by monitoring monthly meter readings and electricity bills and the subsequent reduction in energy charges following the implementation of the awareness initiatives. |
| **Timing** | • *Start date: 01/09/2011.*<br>• *Completion date: Ongoing.* |
| **Notes** | *The projected financial savings exclude vat.* |

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| **Project:**<br>**Reference:** | ***Effective Management of Building Environmental Controls***<br>*NAC – 007.* |
| **Owner (person)** | *David Jack.* |
| **Department** | *Facilities and Estates.* |
| **Description** | *This project involves the introduction of an initiative to minimise the on time of heating and hot water plant and associated pumps. A review will also be carried out to adjust the existing heating optimisation and frost protection settings. Historically central heating and hot water plant was time programmed between set periods for 365 days a year.* |
| **Benefits** | Financial savings: £1432.00.<br>Payback period: 0 years.<br>$CO_2$ Emissions reduction: 8.141 tonnes of $CO_2$.<br>8.6% of target. |
| **Funding** | Project cost: £0.00.<br>Operational Costs: £0.00.<br>Source Of Funding: Not Applicable. |
| **Resources** | Delivered with existing resources. |
| **Ensuring Success** | Cooperation from all members of staff and students in following the recommendations and proposals to reduce the core operating times of central plant. |
| **Measuring Success** | Success will be measured by the ongoing monitoring of electricity and heating fuel consumption and the subsequent reduction in energy charges. |
| **Timing** | • *Start date: 01/09/2011*<br>• *Completion date - Not Applicable.* |
| **Notes** | *The projected financial savings exclude vat.* |

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| **Project:**<br>**Reference:** | ***Installation of Voltage Optimisation To Main LV Electrical Supplies.***<br>*NAC – 008.* |
| **Owner (person)** | *John McFarlane.* |
| **Department** | *Facilities and Estates.* |
| **Description** | *This project involves the installation of two Power Perfector Voltage Optimisation units on the college main incoming electrical supplies.* |
| **Benefits** | Financial savings: £ 2493:00.<br>Payback period: 6 years.<br>$CO_2$ Emissions reduction: 13.598 tonnes of $CO_2$.<br>14.39 % of target. |
| **Funding** | Project cost: £15 000.<br>Operational costs: The annual maintenance costs will be negligible.<br>Source of funding: The source of funding is still to be confirmed and will be allowed for in the 2012-2013 budget year from either internal, external or a combination of funding options. |
| **Resources** | Facilities will lead the project and this will be supplemented by external contractors to deliver the work package |
| **Ensuring Success** | The projects success relies upon funding being made available to invest in the necessary hardware.<br>Principal risks: Securing funding to implement the changes due to the current and anticipated future public spending cuts. |
| **Measuring Success** | Success will be measured by monitoring monthly meter readings and electricity bills and the subsequent reduction in energy consumption and charges following the installation of the voltage optimisation equipment. |
| **Timing** | • *Start date: 01/08/2012*<br>• *Completion date: 31/12/2012.* |
| **Notes** | *The costs of implementing the above changes may vary due to increase in equipment prices from OEM's. The project costs and projected financial savings both exclude vat.* |