

National Records of Scotland Carbon Management Programme *for smaller organisations*

Carbon Management Plan (CMP)



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Foreword from the Registrar General and Keeper of the Records of Scotland

If we reduce our carbon emissions we can help reduce the effects of climate change on our planet. As we become more aware of the environmental impact of our actions and of rising energy costs, we can see that environmental and energy management has to have a high priority.

The Scottish Government has set ambitious targets to reduce carbon emissions by 42 per cent by 2020. National Records of Scotland (NRS), like all public bodies in Scotland, has a duty under the Climate Change (Scotland) Act 2009 to help achieve these targets. We are committed to doing so by improving energy efficiency across our properties and by adopting more sustainable working practices.

This Plan, developed with the Carbon Trust, defines the steps we will take to reduce our emissions over the next five years and demonstrates the NRS commitment to limit our carbon footprint.



George MacKenzie
Registrar General and Keeper of the Records of Scotland

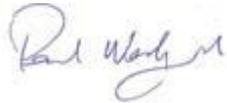
Foreword from the Carbon Trust

Cutting carbon emissions as part of the fight against climate change should be a key priority for all public bodies - it's all about getting your own house in order and leading by example. The Scottish and UK Governments have identified the public sector as key to delivering carbon reduction across Scotland and the UK in line with world-leading Scottish and UK Climate Change legislation.

The Carbon Trust's 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.

National Records of Scotland was selected to take part in this ambitious programme. National Records of Scotland partnered with the Carbon Trust in order to realise substantial carbon and cost savings. This Carbon Management Plan commits the organisation to a target of reducing CO₂ by 20% by 2015-16 financial year and underpins potential financial savings to the organisation of over £300,000 per annum in this same timescale.

There are those that can and those that do. Public bodies can contribute significantly to reducing CO₂ emissions. The Carbon Trust is proud to support National Records of Scotland in the on-going implementation of its carbon management.



Paul Wedgwood
Manager, Carbon Trust in Scotland

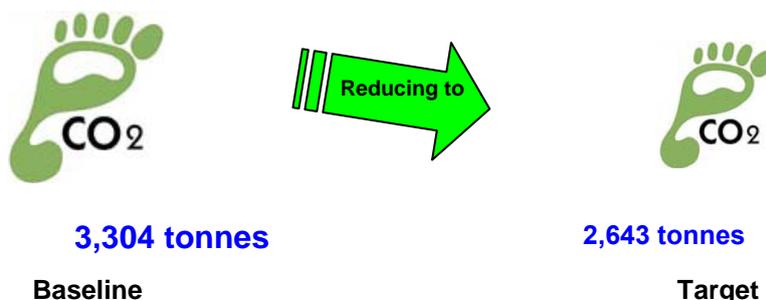
Warren McIntyre
Low Carbon Collaborations Manager

Management Summary

National Records of Scotland (NRS) recognises that climate change will have a far reaching impact on the environment and the economy. NRS is committed to playing its part in the challenge of contributing to the targets set in the Climate Change Scotland Act 2009 and the commitments under the CRC Energy Efficiency Scheme in reducing our carbon emissions over time.

The NRS Carbon Management Plan is the document which defines the steps our organisation will take to contribute to the achievement of these outcomes. This plan sets out key activities and projects that will enable us to reduce our carbon emissions and meet the targets we have set for the next five years. It captures our baseline carbon emissions in the starting year for this plan of 2010-11 and includes energy efficiency projects over the life of this plan which are both technical and behavioural and following implementation will collectively work towards us achieving our carbon emissions reduction target of 20% by 2015-16 financial year.

The baseline emissions for NRS for 2010-11 and the target emissions by 2015-16 financial year are:



We are committed to delivering the 20% reduction in our CO₂ emissions by 2015-16 financial year. In order to achieve this we need to reduce our overall emissions from the energy we use, our business travel and the waste we produce. The energy we use will be our main focus as this makes up a 97% of our carbon output.

The NRS estate includes 7 properties and 3 of these are historical listed buildings. These historical buildings, together with a modern purpose built conservation storage building, house the archival records of Scotland. NRS is entrusted with the care, conservation and preservation of these archival records for future generations. This means the archival records must be stored in appropriate environmental conditions to ensure these records do not deteriorate further over time.

Improving energy efficiency in our historical buildings is in itself a challenge but there is the added complexity of ensuring we appropriately manage the environmental conditions within these buildings for the care conservation and preservation of the archival records.

In order to implement this Carbon Management Plan we need to invest in those activities that will that achieve the right balance of best contributing to reducing our emissions over time whilst not compromising the preservation and conservation of the archival records and the historical buildings. Appendix A details projects in terms of investment required, actions/work to be undertaken, anticipated carbon reductions and financial savings.

If we did not invest in energy consumption reduction measures now in order to realise savings in future years then the likely spend on utilities is detailed in the figure below:

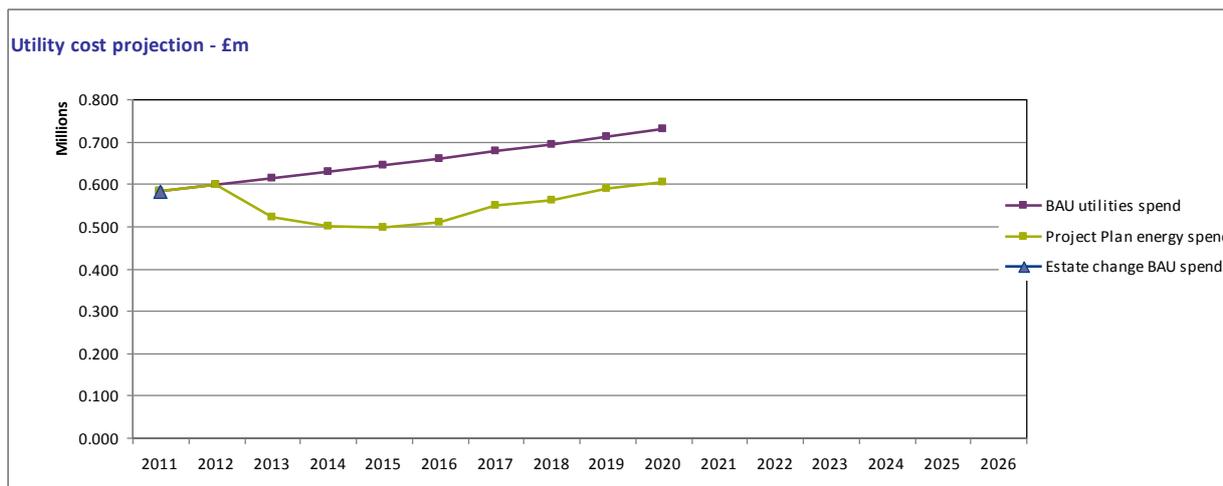


Fig. 1. Shows the Business as Usual (BAU) spend on utilities if no action is taken to reduce utilities consumption and reduced spend on energy if projects in Carbon Management are implemented and deliver the anticipated carbon savings. (NB: Estate change BAU spend does not apply as there are no major changes planned to the properties within the NRS Estate)

This Carbon Management Plan has been developed by the Carbon Management Project Leader with input from our Sustainability Committee, Estates Team and Facilities Management Contractor. This work has been supported by the Carbon Trust and Carbon Trust appointed Energy Saving Consultants who conducted energy surveys in our four largest buildings.

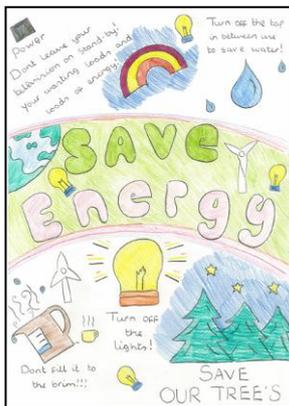
It is clear that this Carbon Management Plan will need to be continually reviewed, updated and added to on an ongoing basis to ensure we continue to reduce our carbon emissions over time. Once the projects in the early years have been implemented there will be a need to search out new projects in more challenging or higher investment areas.

1 Introduction

The National Records of Scotland (NRS) is a new Government Department formed from an amalgamation of the General Register Office for Scotland (GROS) and the National Archives of Scotland (NAS) in April 2011. In the 6 years prior to the amalgamation GROS and NAS had collaborated on a number of mutually beneficial projects. Recognising the need to reduce our environmental impacts in September 2006 GROS and NAS each made a commitment to incorporate sustainability into our everyday activities to benefit society, the economy and the environment when we first initiated the Sustainable Development and Environmental Policies.

Although GROS and NAS had individual Sustainable Development and Environmental Policy documents, both organisations worked jointly on sustainability initiatives and set up a joint Environmental Guardians Group. One of the initiatives, of the Environmental Guardians Group, to promote energy efficiency included an eco poster competition with local schools to promote simple measures for improving the environment such as turning off unnecessary lights, computers and other equipment when not in use. In June 2007 GROS and NAS jointly achieved Energy Efficiency accreditation with the Carbon Trust.

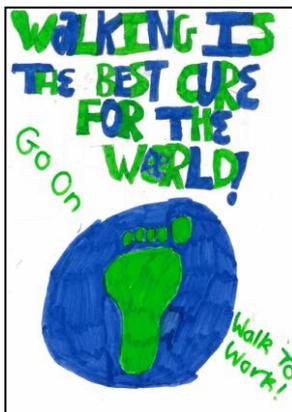
**General Register Office for Scotland and National Archives of Scotland
Eco Poster Competition 2007 held for Edinburgh Schools
to make our staff more environmentally aware**



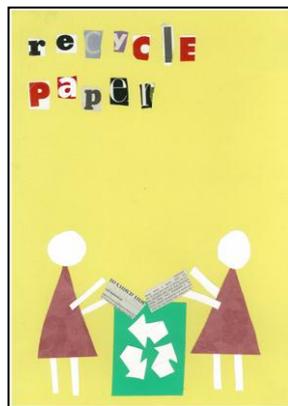
Caley and Sophie -P7 Carricknowe Primary School



Kim MacDonell - P7 Fox Covert Primary School



India Dodd - P6 Lorne Primary School



Tiegan McGraw - P4/5 Craigroyston Primary School



Sean McNeil - Prospect Bank Primary School

In 2008 GROS procured a solution to migrate the current IT systems to a virtualised environment with a centralised storage infrastructure. The aim was to reduce the carbon footprint through having fewer servers but with power efficient systems to significantly reduce the amount of electricity used for both power and server room cooling.

In a waste awareness initiative during 2009 GROS introduced a separate local initiative to recycle batteries and glass and purchased a number of recycle bins for tins and plastics to encourage staff to recycle more. GROS also expanded the waste management contract to include the recycling of plastics and tins and asked the waste disposal contractor to monitor and report on the amount of recyclable and general waste produced. A special exercise was then conducted to optimise the space within our storage facility so the total waste produced significantly increased in that year to 98.58 tons. However, 72.53 tons (73.6% of the total waste) was sent for recycling. In order to reduce the amount of general waste produced, and encourage recycling, by December 2010 NAS had joined the waste management contract.

In 2010 GROS introduced energy efficient airblade hand dryers in the toilets in order to further reduce the amount of waste sent to landfill and following the merger in 2011 this was rolled out across the whole of the new NRS estate.

In February 2010 we invited a Carbon Trust Advisor to hold environmental awareness seminars for GROS and NAS staff, in Ladywell House and General Register House, to promote an understanding of the issues we are facing and what more can practically be done to reduce our environmental footprint. Around 50 staff attended the seminars.

Following a competitive tendering process during 2009 in January 2010 GROS awarded a new Facilities Management (FM) contract for GROS and NAS buildings which had formal energy efficiency monitoring, management and reporting requirements on the FM Contractor together with associated service levels. With the assistance from the FM Contractor under the terms of the contract we began reviewing energy efficiency initiatives. In June 2010 we decided we were not in a position to re-apply for energy efficiency accreditation as the award criteria had significantly changed making it more difficult to achieve and we were in the transitional period of implementing the new FM contract. Instead we decided to focus on joining the Carbon Management Programme in 2011.

Prior to joining the Carbon Management Programme with the Carbon Trust in September 2011 NRS had, as part of the existing Sustainable Development and Environmental Policy commitment, aimed to reduce carbon output for 2011-12 by 3%, and had already started work on some projects with an energy efficiency focus, in order to play its part in rising to the challenge of reducing its environmental impact.

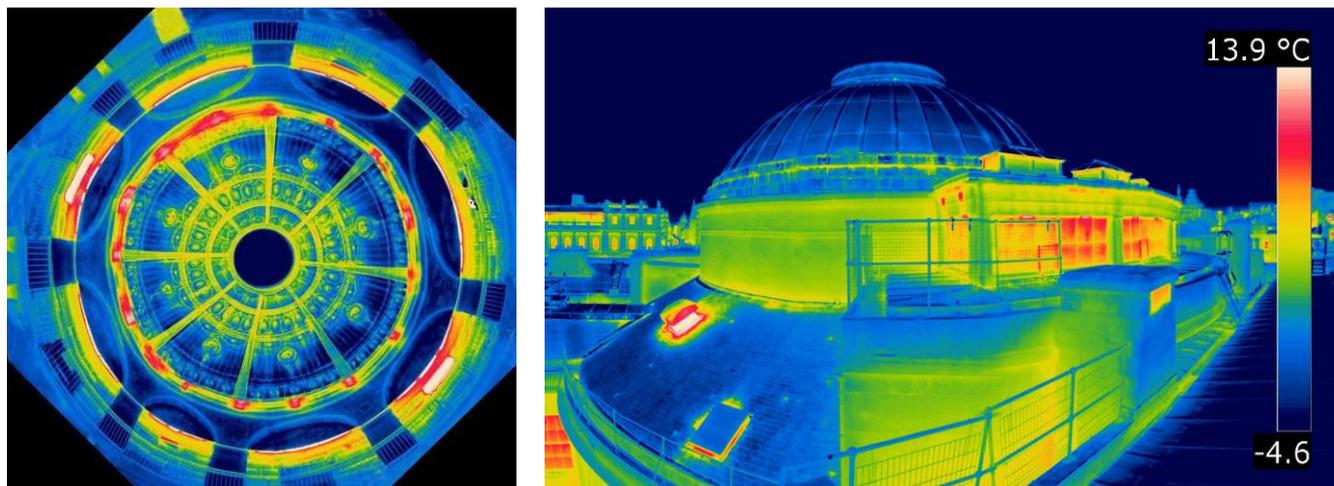
The NRS estate includes 7 properties and 3 of these are historical listed buildings. Improving energy efficiency within these properties poses real challenges with the regulations for maintenance/ refurbishment works associated with the conservation of historical listed buildings. Also, these historical buildings, together with a modern purpose built conservation storage building, house the archival records of Scotland.

NRS is entrusted with the care, conservation and preservation of these archival records for the future. This means the archival records must be stored in appropriate environmental conditions to ensure these records do not deteriorate further over time. The energy usage to heat, dehumidify and cool the archival storage areas, in line with British Standards, is a significant contributor to our overall carbon emissions, but NRS has the responsibility of providing the best care, conservation and preservation for these records in order to safeguard them for the benefit of future generations.

Improving energy efficiency in our historical buildings is in itself a challenge but there is the added complexity of ensuring we appropriately manage the environmental conditions within these buildings for the care conservation and preservation of the archival records.

The projects included in this plan and any future energy efficiency projects proposed will have sustainability benefits whilst meeting our conservation and preservation requirements. Our Estates and Conservation Teams are working closely together to better understand the requirements for the long term preservation of the archival records and the management of the environment which is essential to preserve and safeguard these records, for future generations, sustainably. To this end, during the preparation of this Carbon Management Plan, Historic Scotland Conservation Group have been working with our Conservation Team to provide us with Thermography reports, containing thermal images, of our storage buildings to help us identify areas of heat loss.

Fig. 2. Thermal images to identify heat loss inside and outside General Register House Dome:



Joining the Carbon Management Programme provided further understanding of current performance, the consequences of 'doing nothing' (increased emissions and costs), and a focus for future activities by developing a plan through:

- Identifying the carbon baseline year for the organisation and setting a target for reducing carbon emissions over a five year period;
- Identifying future carbon reduction projects and quantifying savings;
- Preparing the actual Carbon Management Plan; and
- Implementation of the Plan backed up by proactive monitoring, reporting and reviewing.

This NRS Carbon Management Plan will continue to build upon the progress made by GROS and NAS prior to the merger with a particular focus on reducing energy consumption and our carbon emissions. Although many of the projects included in this plan are dependent upon future financial resources being available we believe this plan represents a commitment from our organisation to proactively contribute to the Scottish Government's Climate Change Targets.

2 Carbon Management Strategy

2.1 Context and drivers for Carbon Management

It has long been recognised that energy efficiency can play a major part in the drive to reduce the effects of climate change which is affecting our planet. Environmental concern together with rising energy costs and concerns over future energy supplies globally have, in recent years, raised the profile of environmental and energy management to a level never seen before.



The UK Government placed an emphasis on organisations, in particular public sector organisations, to set a leading example on Climate Change. Action by organisations is critical to the achievement of the Government's climate change objectives, such as the long term goal to reduce CO₂ emissions by 80% by 2050 in the draft Climate Change Act (2008).

The Climate Change (Scotland) Act 2009 has set ambitious targets to reduce greenhouse gas emissions by 42 per cent by 2020. All public bodies have a duty under the Act to contribute to reducing gas emissions. However, as it was recognised that the public sector as a whole was not yet reducing emissions at a sufficient pace to both set a good example and influence others an Energy Efficiency Action Plan was published in October 2010 detailing their approach to energy efficiency with a particular focus on reducing energy consumption.

This was followed by the Public Bodies Climate Change Duties, effective from January 2011, which provides guidance for public sector organisations on reducing their organisation's emissions and the emissions of others, where possible, through their wider influence in order to contribute to emissions reduction targets to comply with the duties under the Act.

The Climate Change Scotland Act (2009) has created a number of legislative drivers:

- **Energy Performance Certificates:** From January 2009 there is a legal requirement for all public sector buildings with a total useful floor area of over 1,000m², to show an Energy Performance Certificate in a prominent place, clearly visible to the public.
- **Carbon Reduction Commitment – Energy Efficiency Scheme** is a mandatory “cap & trade” emissions trading scheme for organisations whose total electricity consumption is greater than 6,000MWh or approximately £500k. A Carbon Tax whereby participating organisations will be required to purchase allowances sold by the Government for every tonne of CO₂ emitted in their total energy consumption. If an organisation falls within the CRC scheme **all** electricity and fuel emissions are covered. NRS is registered on and falls within this scheme. Formal monitoring and reporting of energy consumption under this scheme began in 2010-11 and the allowances are required to be purchased from April 2012.

NRS recognises that measures to increase energy efficiency will reduce energy costs, which is particularly important for the future given the predicted increases in energy prices. Energy and fuel costs have seen a dramatic rise in recent years, with energy prices increasing by well over 50% since 2004. This trend is not expected to change and we must accept that the price we pay for our energy will continue to increase in the coming years.

What this means for National Records of Scotland

The National Records of Scotland (NRS) was formed from an amalgamation of the General Register Office for Scotland (GROS) and the National Archives of Scotland (NAS) in April 2011. NRS is a Non Ministerial Department of The Scottish Government and is part of the devolved Scottish Administration set up by the Scotland Act 1998.

The Department's functions, stemming in the main from the Registrar General's and Keeper of the Records statutory responsibilities, are as follows:

- To select, preserve and make available the national archives of Scotland in whatever medium;
- to administer civil registration of vital events - births and deaths, plus marriages, divorces and adoptions - and the statutes relating to the formalities of marriage and the conduct of civil marriage;
- to make arrangements for the taking of periodic censuses of Scotland's population, and to prepare and publish demographic and other statistics;
- to make available public records about individuals to customers (for example, genealogists);
- to promote the growth and maintenance of proper record and archive provision and to lead the development of records management and archival practice in Scotland;
- to maintain for The Scottish Government the National Health Service Central Register (NHSCR) of patients.

One of the fundamental aims of NRS is to contribute to the effective administration of Scotland by recording individual registration information and statistical aggregates for the population and by making them available in accordance with its statutory and other functions.

Prior to joining the Carbon management Programme with the Carbon Trust in September 2011 NRS had, as part of the existing Sustainable Development and Environmental Policy commitment, already aimed to reduce carbon output for 2011-12 by 3% in order to play its part in rising to the challenge of reducing its environmental impact.

2.2 Our low carbon vision

NRS will actively promote and contribute to the Scottish Governments Greener Strategic Objective of “improving Scotland’s natural and built environment and the sustainable use and enjoyment of it” by rising to the challenge of making continuous improvements in our environmental performance as we progress towards becoming a lower carbon and energy efficient organisation.

2.3 Strategic themes

This NRS Carbon Management Plan has a number of key themes which include:

- Reducing our consumption of energy and other resources to lower the level of greenhouse gas emissions and meet annual targets;
- Focus required maintenance and upgrading within our buildings and ICT towards reducing energy consumption to improve both energy and financial efficiency of our business operations;
- To embed the Business Travel Guidance and Policy to help staff to make well informed decisions about travel options, encourage travelling in an environmentally friendly way and, wherever possible, using alternatives to business travel to reduce our emissions;
- Reducing the amount of waste we produce by re-using and recycling products and materials;
- Building sustainable procurement into our culture in order to take proper account of sustainability in our procurement activities;
- Increase staff awareness in the importance of energy efficiency and reducing resource consumption and involve them in the commitment to sustainability in order to encourage a behavioural change towards a low carbon organisation.

2.4 Targets and objectives

NRS is a new organisation and we joined the Carbon Management Programme to work with the Carbon Trust to:

- Identify and target areas where a range of carbon reduction projects can be developed;
- Develop, implement and manage an overall Carbon Management plan to deliver both reductions in our carbon output and cost savings in the short and long term;
- Strengthen our Sustainable Development and Environmental Policy commitment: and
- Set more stretching and focused targets for improvement over the longer term, in order to increase the pace of change, manage, and meet the challenges of the Carbon Reduction Commitment.

National Records of Scotland will reduce CO₂ emissions from our operations by 20% of the 2010-11 levels by the end of 2015-16 financial year

In order to meet the carbon reduction challenge and achieve this target NRS will, over a five year period, implement the projects which have been identified with the potential to best deliver CO₂ emissions and financial savings against the 2010-11 baseline.

3 Emissions Baseline and Projections

3.1 Scope

The scope of the NRS Carbon Management Programme is to focus on those emissions related to the:

- energy usage of our buildings and operations;
- business travel required to deliver our functions;
- the water we use in our business operations; and
- the waste we send to landfill.

Investing our resources in the areas which deliver the significant carbon and financial savings.

Energy usage of our buildings and operations represents the largest energy usage and carbon emissions. By concentrating efforts on improving the energy efficiency of our buildings and operations through the implementation of focused carbon reduction projects, in conjunction with the regular maintenance works, we can improve the overall performance of the estate and our carbon footprint.

3.2 Baseline

The baseline year chosen for this Carbon Management Programme is financial year 2010-11 as this is the last and most complete year of data available for GROS and NAS prior to the merger to form NRS.

The baseline emissions for NRS for 2010-11 are:



In order to establish our baseline emissions figures we have used the information available from both GROS and NAS in the year prior to the merger. Because of disparities in data recording and information management within the individual organisations in some cases it has not been possible to obtain accurate figures for some of the waste, water and business travel for the new organisation NRS.

Stationary Sources (electricity and gas) have been taken from actual meter readings by our energy contractor and FM contractor, which towards the end of the year was monitored daily. The waste sent to landfill and recyclable waste is weighed by contractor and reported each month in tonnes. For GROS it is actual data which has been used. NAS was only with this waste contractor in the 3 months prior to the merger, and we were unable to obtain relevant data from the previous contractor, so the full year has been estimated from the 3 months actual data.

With the exception of Cairnsmore House water usage is based on the meter readings taken from the water provider. The water usage for Cairnsmore House is not known as it is included in their rent. The staff were based in Ladywell House prior to the relocation to Cairnsmore House and they represented 10% of the total Ladywell House staff so it has been estimated at 10% of the meter readings for Ladywell House water usage. Also, please note that at the time of writing we have identified a potential problem with the meter readings/usage and the amounts being billed for General Register House and Thomas Thomson House which we have raised with the water provider. Consequently, we believe water usage is underestimated.

Business travel for air and rail is based on actual passenger mileage details provided by the business travel contractor and then converted into kilometres. Fleet travel was compiled from mileage logs for each fleet vehicle. As we only had details of the number of journeys taken for hire cars, taxis and bus

journeys an estimated number of kilometres per journey has been used based on an average journey distance.

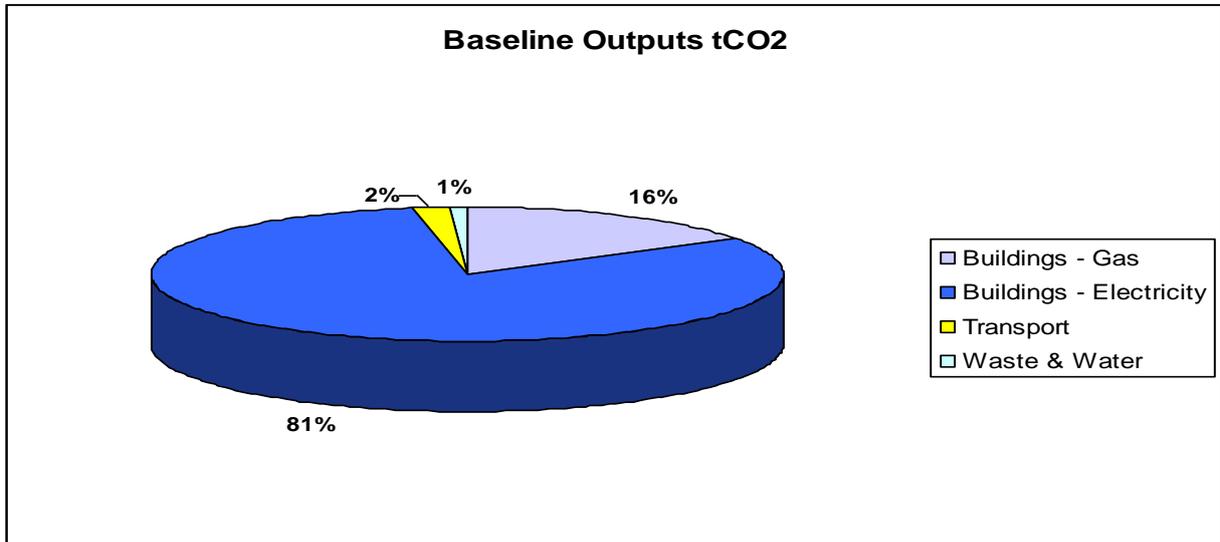


Fig. 3. Summary of emissions for baseline year 2010-11 in tonnes CO₂

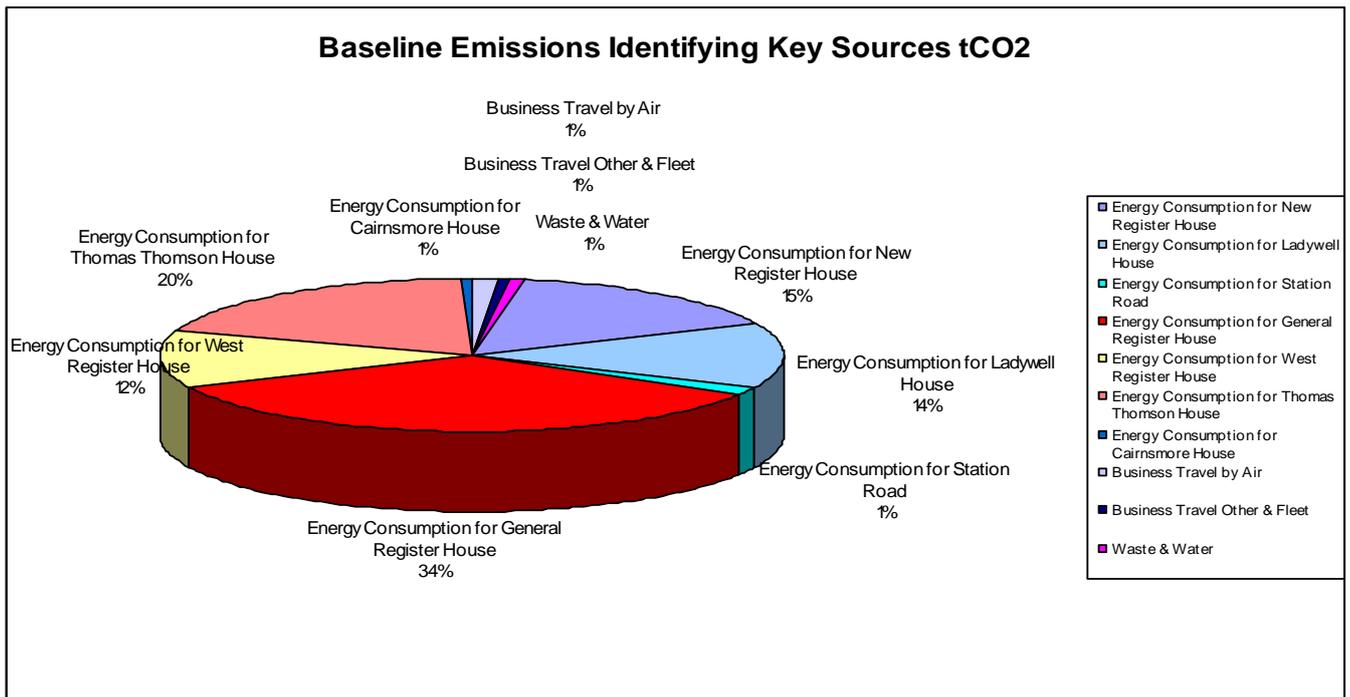


Fig. 4. Summary of Baseline Emissions Identifying Key Sources in tonnes CO₂ by building and separately identifying business travel by air from the other business travel

	Total	Buildings	Transport	Waste and Water
2010-11				
Baseline CO₂ emissions (tonnes)	3,304	3,211	67	26
Baseline Cost (£)	£674,557	£583,577	£90,980	£ -

Fig. 5. Summary table of CO₂ emissions in tonnes for baseline year 2010-11

Table 1 – National Records of Scotland Energy Usage by site

All figures are based on 2010-11 Energy Use Data

New Register House



Construction began in 1857, to designs by Robert Matheson, for this listed Category 'A' building of special architectural and historic interest within the Edinburgh New Town Conservation Area and World Heritage Site.

The building is a record store with some office space and is open to the public 5 days a week for Genealogical research within the ScotlandsPeople search rooms and the Dome is open for Exhibitions and for hire by companies or individuals. A café is located at the rear of the building for use by visitors to the Scotlandspeople Centre (New Register House and General Register House buildings)

Electricity: 705,212 kwh
Gas: 678,295 kwh
Total energy cost: £95,430
CO₂ emissions: 510,136 kg CO₂ /yr
15.9 % of total NRS CO₂ emissions for buildings

General Register House



General Register House is a listed Category 'A' building of special architectural and historic interest within the Edinburgh New Town Conservation Area and World Heritage Site. It is Robert Adam's best-known public building and was built to house and provide access to Scotland's national archives. Construction began in 1774 and the back dome, designed by the architect Robert Matheson, was added in 1869.

The building is a record store with some office space and is open to the public 5 days a week for genealogical research and for legal and historical research into the national archives. A shop is located at the main entrance to the building.

Electricity: 2,091,296 kwh
Gas: 0
Total energy cost: £194,491
CO₂ emissions: 1,140,216 kg CO₂ /yr
35.5 % of total NRS CO₂ emissions for buildings

Thomas Thomson House



Thomas Thomson House is located within the Sighthill Industrial Estate in Edinburgh. It is a purpose built archive storage building and has provided archival storage since 1994. It also houses the NRS Conservation Unit and provides some office space.

Electricity: 824,371 kwh
Gas: 1,060,573 kwh
Total energy cost: £123,332
CO₂ emissions: 645,913 kg CO₂ /yr
20.1 % of total NRS CO₂ emissions for buildings

Ladywell House



Ladywell House was constructed in the late 1960's and is a typical concrete framed building. It is located within the residential suburbs of Corstorphine Edinburgh. The building was constructed in 4 phases which vary in height from two to five storeys. It is office accommodation which has been modernised over the years. The approx floor area is 4,877sqm (52,500sqft). NRS currently has tenants renting floor space within this building - a Medical Centre, Dti Insolvency Services and Children's Hearings Scotland.

Electricity: 622,629 kwh
Gas: 632,712 kwh
Total energy cost: £85,744
CO₂ emissions: 456,667 kg CO₂ /yr
14.2 % of total NRS CO₂ emissions for buildings

West Register House



It is a Category 'A' listed building of special archival or historic interest within the Edinburgh New Town Conservation Area and World Heritage Site. It is 3,366 square metres (36,248 square feet) and mainly used for archival storage, but an exhibition area is located on the ground floor while at first floor level, a small historic search room has been provided.

Electricity: 621,475 kwh
Gas: 285,173 kwh
Total energy cost: £70,345
CO₂ emissions: 391,663 kg CO₂ /yr
12.2 % of total NRS CO₂ emissions for buildings

Cairnsmore House



Cairnsmore House is single storey office accommodation located in Crichton Business Park in Dumfries. The building was formed from an existing brick structure and during 2006 and 2007 was completely refurbished. The internal size of the building is 317.25 metres.

Electricity: 31,042 kwh
Gas: 11,092 kwh
Total energy cost: £3,375
CO₂ emissions: 18,979 kg CO₂ /yr
0.6% of total NRS CO₂ emissions for buildings

Station Road



This single storey building was constructed in the early part of the 20th century and sits within a predominantly residential area of Corstorphine surrounded by flats and houses. The Station Road site equates to 0.945 acres. It is essentially a large open plan warehouse used for storage with a number of rooms at the front and the rear. Works to improve the facility were found not to be cost effective so this building is in the process of being sold in order to fund storage improvements to the other buildings within the NRS estate.

Electricity: 9,473 kwh
Gas: 226,831 kwh
Total energy cost: £10,862
CO₂ emissions: 47,181 kg CO₂ /yr
1.5% of total NRS CO₂ emissions for buildings

3.3 Projections and Value at Stake

Taking 2010-11 as the baseline year it is possible to calculate the emissions increase of our organisation over the next five years if no action is taken to reduce our resource consumption. The Business As Usual (BAU) estimate assumes there will be a growth forecast of 0.7% which is in line with current industry standards. For NRS it is projected that the BAU CO₂ emissions will rise to 3,421 tonnes by the end of 2015-16 financial year.

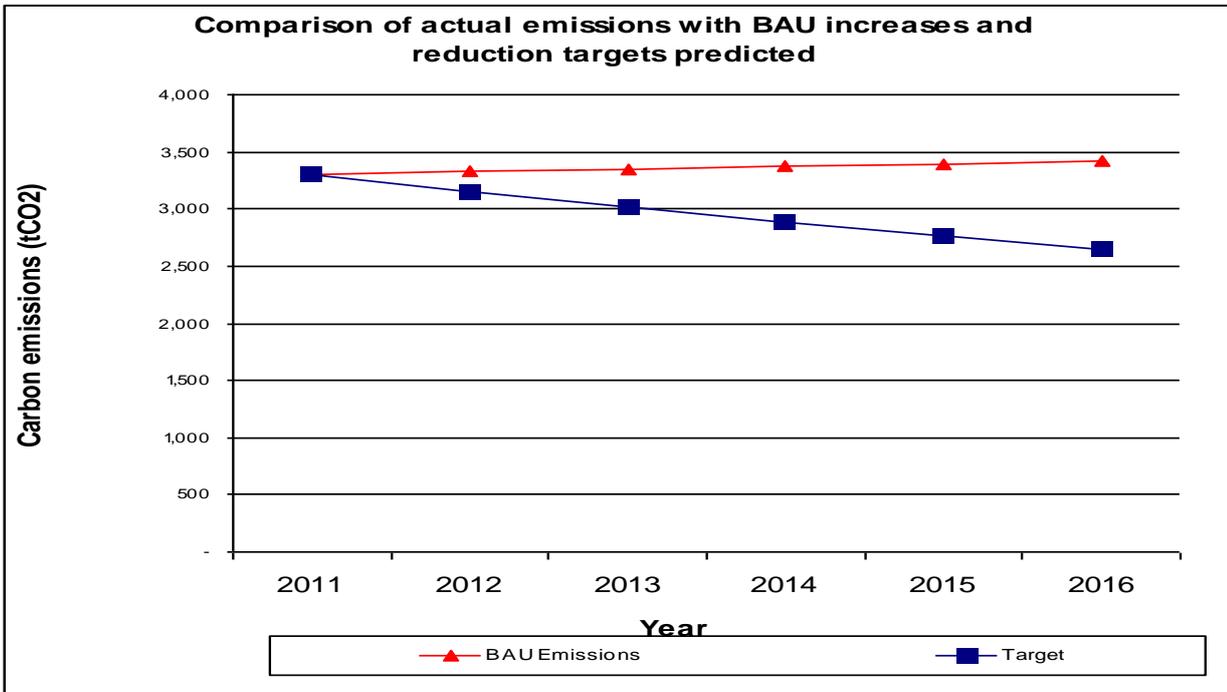


Fig. 6. Predicted comparison of the actual CO₂ emissions each year with Business as Usual increases (3,421 tCO₂ by 2015-16) and the reduction targets (2,643 tCO₂ by 2015-16).

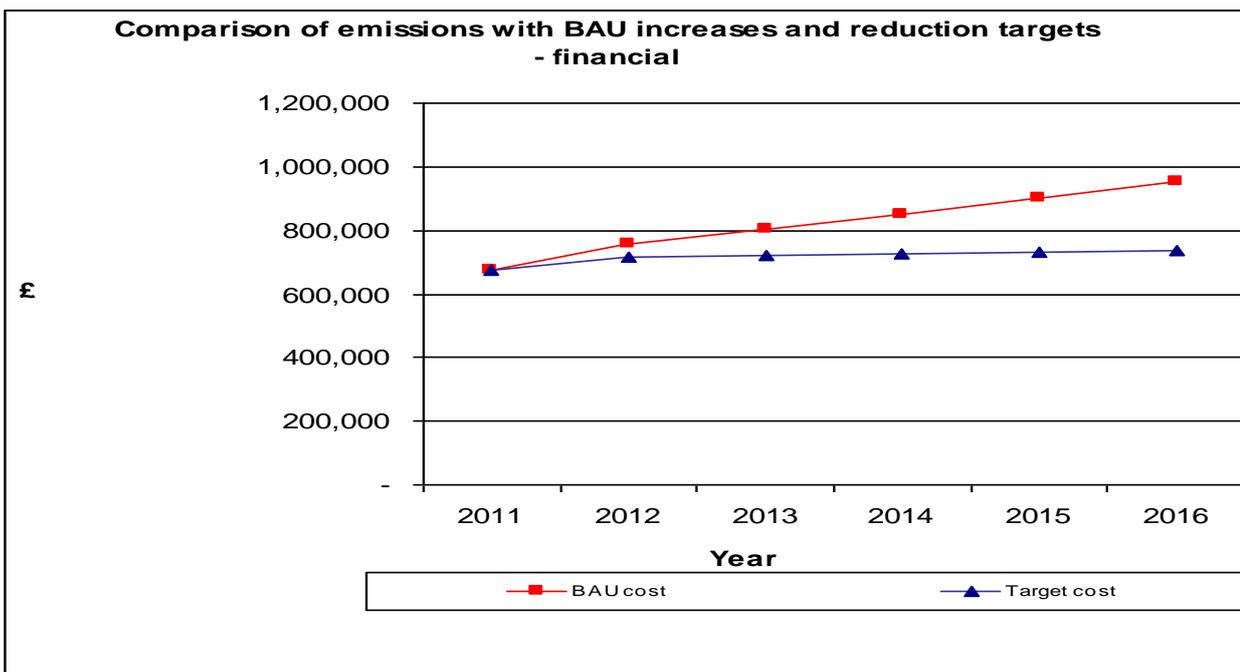


Fig. 7. Predicted comparison of the financial costs each year with Business as Usual increases and the reduction targets.

4 Carbon Management Projects

4.1 Existing/Completed projects

The projects detailed below are already underway, or have been completed, since the baseline year 2010-11 to begin delivering carbon savings in the near future:

Project Ref.	Project name/Description	Owner/Implementer	Capital/Implementation Costs	Annual net Saving (£)	Annual tCo ² Saving	Payback Years	Annual CRC Value of tCo ² Saving £	% of target	Year of first savings
NRS001	To Replace Variable speed drives onto the Trane Chiller at Thomas Thomson House	Estates	£8,950	£4,905	29	1.82	£348	4.27%	2013
NRS002	To Replace the boilers at Thomas Thomson House.	Estates	£109,188	£13,200	61	8.27	£732	9.04%	2013
NRS003	To Replace Variable speed drives to the Air Handling units in GRH and the Administration block and Chilled Water Pumps in Thomas Thomson House	Estates	£25,109	£10,654	62	2.36	£744	9.27%	2013
NRS006	Installation of PIR's to lighting circuits in New Register House Dome	Estates	£16,560	£17,280	101	0.96	£1,212	15.03%	2013
NRS007	Install PIR's to all lighting circuits in West Register House Strong room	Estates	£15,637	£5,629	33	2.78	£396	4.89%	2013
NRS009	Upgrade lighting T8 – T5 circuits in West Register House Programme	Estates	£45,000	£7,379	43	6.10	£516	6.41%	2013
NRS010	Upgrade lighting T8 – T5 circuits in areas of Ladywell House, General Register House and Thomas Thomson House	Estates	£30,900	£8,343	49	3.70	£588	7.25%	2013
Totals			£251,344	£67,390	378		£5,868		

4.2 Planned / funded projects

The projects detailed below are planned to take place with funding approved in order to deliver carbon savings mid-later term of this plan:

Project Ref.	Project name/Description	Owner/Implementer	Capital/Implementation Costs	Annual net Saving (£)	Annual tCo ² Saving	Payback Years	Annual CRC Value of tCo ² Saving £	% of target	Year of first savings
NRS004	Installation of variable speed drives on the supply and extract fans in the plant room at West Register House.	Estates	£8,110	£5,641	33	1.44	£396	4.93%	2014
NRS005	To Replace the boilers at Ladywell House	Estates	£120,000	£9,600	44	12.50	£528	6.60%	2014
NRS008	Upgrade the Storage Heating at General Register House	Estates	£17,516	£7,988	47	2.19	£564	7.01%	2015
NRS009	Upgrade lighting T8 – T5 circuits in West Register House Programme	Estates	£40,000 £40,000	£6,559 £6,559	38 38	6.10 6.10	£456 £456	5.73% 5.76%	2014 2015
NRS011	Business Travel Options and Fleet Rationalisation Plan	Estates	£0	£2,175	4	N/A	£48		2013
NRS012	Sustainability - Staff Awareness, Behavioural Changes and Energy Monitoring and Targeting	Procurement & Estates	£5,000	£18,366	107	0.27	£1,284	16.2%	2013
NRS013	Archival Storage Rationalisation – Sale of Station Road Storage Facility	Procurement & Estates	N/A	£9,937	48	0	£576	7.12%	2014
Totals			£230,626	£66,825	359		£4,308		

4.3 Near term projects

Project Ref.	Project name/Description	Owner/Implementer	Capital/Implementation Costs	Annual net Saving (£)	tCo ² Saving	Payback Years	CRC Value of tCo ² Saving	% of target	Year of first savings
NRS009	Upgrade lighting T8 – T5 circuits in West Register House Programme	Estates	£40,000	£6,559	38	6.10	£456	5.73%	2014
NRS009	Upgrade lighting T8 – T5 circuits in West Register House Programme	Estates	£40,000	£6,559	38	6.10	£456	5.76%	2015
NRS016	Fit Insulating Jackets to Uninsulated Heating Valves	Estates	£920	£1,035	6	0.89	£72	0.90%	2014
Totals			£80,920	£14,153	82		£984		

4.4 Medium to long term projects

Project Ref.	Project name/Description	Owner/Implementer	Capital/Implementation Costs	Annual net Saving (£)	tCo ² Saving	Payback Years	CRC Value of tCo ² Saving	% of target	Year of first savings
NRS014	Desktop Computer Replacement to Thin Client Within the Public Search Areas and Server Virtualisation for General Register House and Thomas Thomson House	ICT	TBC	£1,980	12	TBC	£144	1.73%	2014
NRS012	Sustainability - Staff Awareness, Behavioural Changes and Energy Monitoring and Targeting	Procurement & Estates	£2,000	£18,366	107	0.27	£1,284	16.2%	2015
NRS015	Feasibility Studies for Renewables	Procurement & Estates	TBC	TBC	TBC	TBC	TBC	TBC	2016
Totals			TBC	£20,346	119		£144		

Please note that funding for projects in the longer term is subject to funding approval and is yet to be fully agreed. In the case of feasibility studies for renewables the funding approval will follow a successful bid for funding which is dependant upon the result of the study.

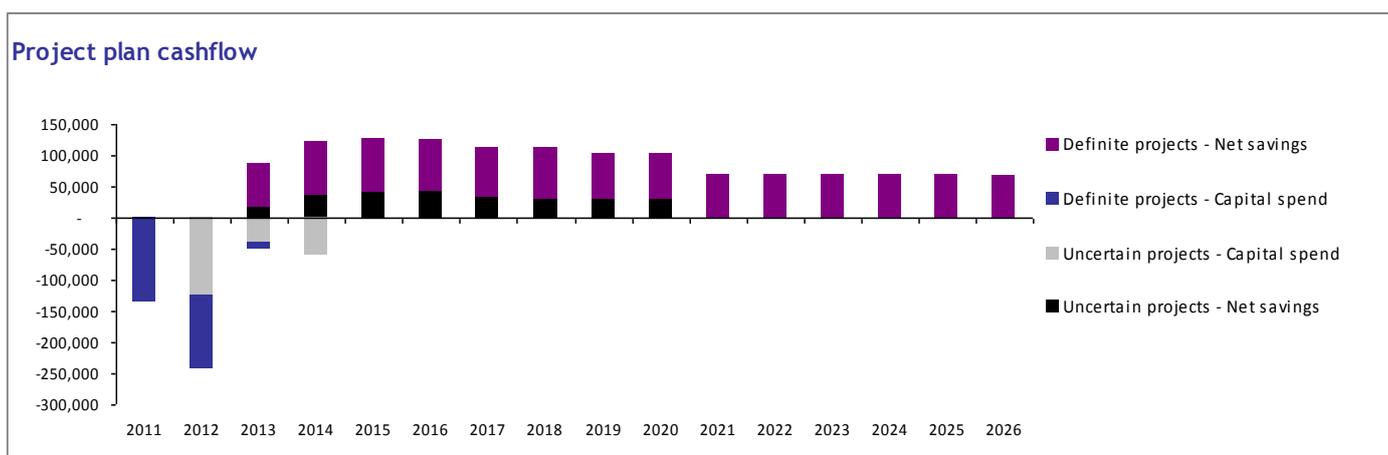


Fig. 8. This graph shows Cashflow Summary of the Spend and Savings for the Project Plan. This summary displays the capital outlay as negative and annual cost savings as positive and identifies between the definite projects which are programmed or have started and the uncertain projects where funding is still to be agreed. The cashflow calculations *do not* include inflation. The cost savings for the life of a project are calculated from the cost savings in Year 1.

4.5 Projected achievement towards target

From the tables of projects from the short to long term it is clear that our original target aspirations of a 20% reduction over the five year period is achievable. Although there are areas where we were doing well, in particular waste management and reductions in the amount we sent landfill, we needed to focus our attention on energy efficiency and the collation of the relevant data required to enable us to develop and implement a suitable programme. By participating in this Carbon Management Programme with the Carbon Trust it has provided this focus and allowed us to have independent energy surveys undertaken by Carbon Trust representatives on 4 of our buildings which has greatly helped us to identify areas to target and invest resources in order to make both financial and carbon savings.

In addition to the projects we have detailed NRS will continue to explore other projects which could help us achieve even greater carbon emissions and financial savings.

If all of the projects listed realise their potential carbon emission savings then NRS will achieve at least the 20% CO₂ reduction on the baseline year 2010-11.

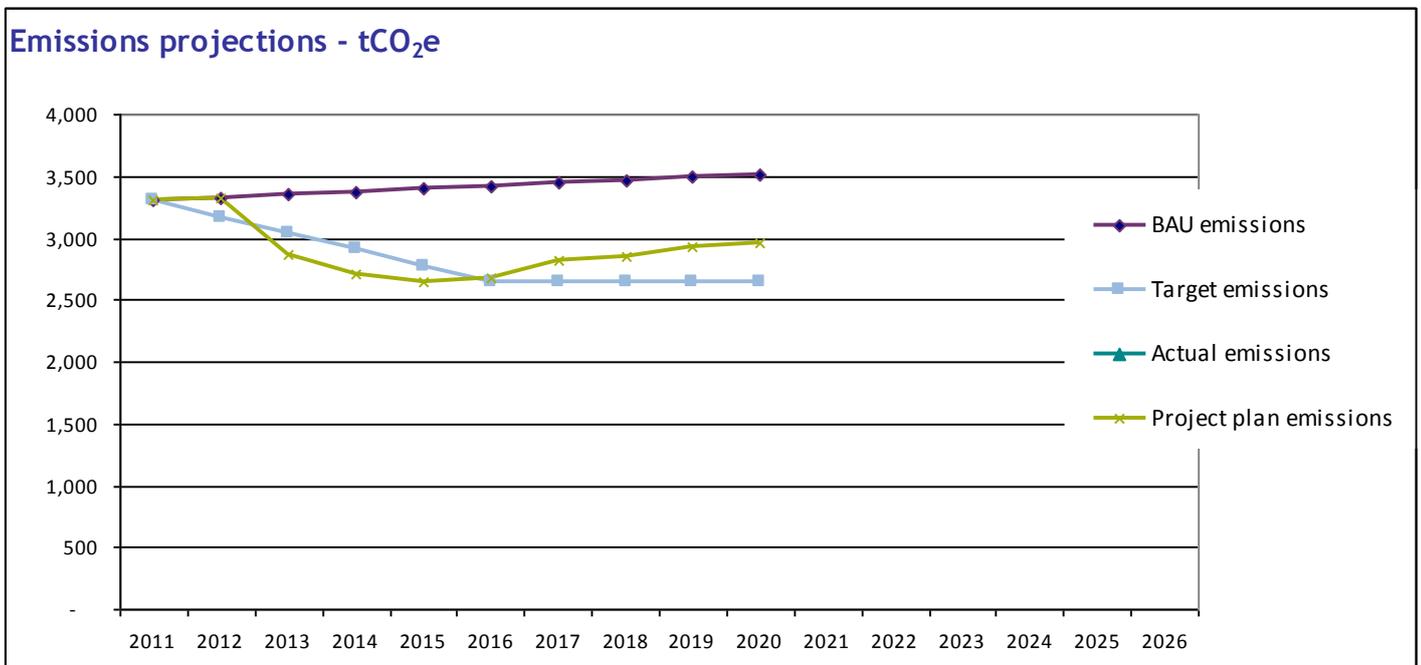


Fig. 9. Shows emissions projections for business as usual, the target emissions and the project plan emissions. By the target year of 2015-16 with the implementation of the proposed projects in this plan NRS will meet the target 20% reduction in carbon emissions. The actual emissions will be added over the life of the plan as the details become available at the end of each financial year.

5 Implementation

The projects identified within this Carbon Management Plan have been identified as those ones which offer the best energy saving opportunities and contribution to reducing our carbon emissions. Responsibility for the majority of these projects lies within the Procurement and Estates Team who have earmarked money within the budget allocations for the next few years to invest in energy efficiency improvements as part of the maintenance programme to heating and lighting within the buildings in order to make savings in the future.

Key to the success of this Carbon Management Plan is raising staff awareness and encourage 'buy in' to promote a behavioural change focused on reducing resource consumption across the organisation and embed sustainability into our everyday activities.

NRS formed a new Sustainability Committee during 2011-12 comprising representatives from all divisions of our organisation with responsibility to implement sustainability across the organisation. This committee will take forward Carbon Management. There are real energy and financial savings to be made by implementing staff awareness campaigns which will be supplemented with the revival of the Environmental Guardians role within each of the buildings during 2012.

5.1 Financing

Assumptions

- Where the fuel costs continue to increase more than the rate predicted in this plan (assumed a 2.5% annual growth rate net of inflation) then the payback period for any capital projects will reduce;
- Programme/maintenance budgets within the Estates team are focused on energy efficiency improvement measures, however, the earmarked funding for future projects cannot be guaranteed in the uncertain economic climate;
- All potential projects that will require a capital investment will have a feasibility study conducted before it is progressed;
- The way in which we report our progress is currently being reviewed within our Corporate Plans but we intend to publish our Environmental performance on an annual basis.

5.1.1 Benefits / savings – quantified and un-quantified

	2011	2012	2013	2014	2015	2016
Net cost saving - £	-	-	87,095	121,412	126,352	124,402
Reduction plan annual tCO ₂ saving	-	-	486	664	693	687
Reduction plan carbon value (approx) - £	-	-	5,832	7,966	8,314	8,243
% of target achieved	0%	0%	74%	174%	279%	383%

Fig. 10. Annual tCO₂ and cost savings summary

Unquantified benefits:

There are some benefits we have not been able to quantify in financial terms. The main one being the enhanced reputation of NRS as an organisation fully supporting and contributing to the Scottish Government's commitment to meeting specific targets for the reduction of carbon emissions within the wider climate change agenda.

5.1.2 Financial costs and sources of funding

Funding for the first two years is funded from internal budgets and for the other remaining Estates projects in the later years funding has been requested in the budget bids as part of the business planning process and will be in competition with other projects across NRS.

	2011	2012	2013	2014	2015	2016
Total capital cost - £	134,698	241,646	49,030	59,516	TBC	TBC
Annual operational costs - £	-	-	-	-	-	-
Total costs	134,698	241,646	49,030	59,516	-	-

Fig. 11. Key financial metrics summary

5.2 Governance for Implementation

5.2.1 Embedding Carbon Management

Prior to the merger to form NRS both GROS and NAS have taken steps since 2006 to improve environmental performance by reducing resource consumption and carbon emissions. This Carbon Management Plan will become an integral part of the 'Sustainability' programme within NRS. It marks the beginning of the journey to embed carbon management into our operational activities through a programme of carbon reduction projects which are both behavioural and technical aimed focused on reducing the carbon footprint of the organisation.

During 2011-12 financial year NRS introduced a Sustainability Committee comprising of members who represent main business areas including estates, procurement, conservation, IT, Corporate Planning and Development and frontline business areas. This committee will oversee the implementation of the Carbon Management Plan and the identification of future projects. Everyone in NRS has a role to play in ensuring the success of this project. It is important that we work together to make more sustainable choices when procuring goods and services from external suppliers; by reducing the waste we produce and also reducing our resource consumption in order to deliver Carbon Emissions savings. The role of the Sustainability Committee is key to improving staff awareness and promoting the necessary behavioural change in the organisation in order to reduce our energy consumption.

From 2012-13 formal reporting of our performance on a quarterly basis will be included in our corporate plans based on data reported by our FM, energy, waste and travel contractors. In addition, from 2012-13 carbon and sustainability statements will be included in the branch plans for the business areas to encourage all staff involved in planning process to consider this when making planning decisions.



5.2.2 Data Management – measuring the difference, measuring the benefit

NRS will further develop the monitoring and targeting procedures in order to provide regular checks on performance, identify trends and targets to enable prompt and corrective action to be taken when necessary. During 2011-12 we have installed automated metering into our larger buildings which allows access to half hourly meter readings. Further work is required by the Estates team to analyse and utilise this data on a monthly basis to identify and then target areas for improvement. This information will be shared with the Sustainability Committee to agree areas for improvement. The Sustainability Committee is currently working on providing information to staff on how they can improve their working practices in order to contribute to reducing our carbon emissions.

5.3 Resource commitment

5.3.1 Implementing the Initiatives

Overall implementation of the Carbon Management Plan will be the responsibility of the Project Leader (who is Head of Procurement and Estates) supported by other members of the Sustainability Committee (Carbon Management Team), in particular Estates Manager, Head of Conservation, Head of Communications and an IT Manager. A Carbon Management Programme Board will be established during 2012-13 which will include the Project Sponsor and Project Leader and some of the key Sustainability Committee Members who will meet half yearly to review progress and suggest future amendments where necessary. Approval for any amendments will be sought from the Registrar General and Keeper of the Records of Scotland.

5.3.2 Maintaining quality over time

This first version of the Carbon Management Plan for NRS is a basis for preparing a strategy for a carbon emissions reduction, through a number of projects, over a five year period having established a starting point. Progress on the plan will be reported, in writing, quarterly as part of the NRS corporate planning and monitoring process. There will be a need to maintain and revise the plan, coming up with new initiatives on a regular basis which can be explored and developed further. The Carbon Management Plan will be subject to an annual review by the Carbon Management Programme Board and updated with any new initiatives that have been proposed by the Sustainability Committee (Carbon Management Team). This plan is therefore a living document which will evolve and mature over time.

5.3.3 Programme Management of the CM Programme

The Carbon Management Plan will be owned by the Carbon Management Programme Board that will be established during 2012-13 and will include the Project Sponsor and Project Leader and some of the key Sustainability Committee Members (carbon management Team). The Project Leader will provide progress updates in the form of a written brief, on quarterly basis as part of the NRS corporate planning and monitoring process and to the Carbon Management Programme Board and Sustainability Committee. This written brief will include brief details on progress on the projects included in the plan, any new initiatives being explored and the carbon emissions reduction progress against the target.

The project management of specific projects will be allocated to the manager in the business area best able to manage the project through to its conclusion. Updating the Carbon Management Project Leader of progress on a regular basis.



5.3.4 The Programme Board (or other Governance structure) – strategic ownership and oversight

A Carbon Management Programme Board is to be established during 2012-13 which will include the Project Sponsor and Project Leader and some of the key Sustainability Committee Members (Carbon Management Team) (from relevant business areas – Conservation, Estates, ICT, Corporate Planning and Development etc) who will meet quarterly to begin with, then half yearly to review progress and suggest future amendments and initiatives proposed by the Sustainability Committee where necessary. Approval for any amendments will be sought from the Registrar General and Keeper of the Records of Scotland.

The progress on the individual projects, including updating risks, within the Carbon Management Plan will be reported by the Project Leader on a quarterly basis as part of the NRS corporate planning and monitoring process, using a traffic light status of red, amber or green allowing the Board to focus on only those projects with issues.

5.3.5 The Carbon Management Team – delivering the projects

The Sustainability Committee, with responsibility for Carbon Management, will meet at least quarterly. The areas of NRS business represented in our Sustainability Committee are Procurement, Estates (including Facilities Management, Waste Management and Building Maintenance), Conservation, IT Services, Corporate Planning and Development and Frontline business areas.

Any new projects proposed will be subject to an appraisal by the Committee. Successful project proposals will then be presented to the Programme Board for approval, by the Carbon Management Project Leader and then sign off by the Registrar General and Keeper of the Records of Scotland. The Carbon Management Project Leader will then ensure the Definition of Projects (Appendix A) is revised.

5.3.6 Succession planning for key roles

Throughout this document the roles and responsibilities have been allocated against job titles instead of individuals in order to assist with continuity and succession planning. Whoever, occupies the post will be responsible for the Carbon Management Programme duties associated with that post and these will be included in the job descriptions.

5.4 Implementation Plan

The Sustainability Committee will be instrumental in driving forward the Carbon Management Plan by supporting the identified projects and initiatives. In particular promoting the Business Travel Options Plan to encourage staff to consider if it is necessary to travel at all and using more sustainable modes of travel where travel is required.

The Sustainability Committee are also key to developing a robust strategy for communicating carbon reduction messages to NRS staff. Promoting and implementing a successful staff awareness campaigns with a focus on energy efficiency and reducing our resource consumption.

There will be an annual review of the Carbon Management Plan to document progress against what we stated in the Plan and a written report produced by the Carbon Management Project Leader. The report will focus on the progress made and the costs and benefits derived. Also to revise to include any new initiatives. This review will be approved by Carbon Management Programme Board and then published.

Appendix A: Definition of Projects

Project: Reference:	To Replace Variable speed drives onto the Trane Chiller at Thomas Thomson House. NRS- 001 – Years 1-5
Owner (person)	Estates Manager
Department	NRS Procurement & Estates
Description	Programme to replace ageing system, as the original system is over fifteen years old, with more efficient components to reduce energy consumption.
Benefits	Financial savings: £4,905.00 per year (54,500kWh) Payback period: 1.82 Years CO ₂ Emissions reduction: 29.71 tonnes CO ₂ per annum 4.26% of target - the percentage of the CO ₂ savings target this project will annually contribute
Funding	Project cost: £8,950.00 Operational costs: None Source of funding: Funded from existing Estates Programme budget for the year.
Resources	Project to be delivered by FM Contractor and from existing resources within NRS Estates Team
Ensuring Success	Requirements: Adequate resources to ensure project is rolled out. Risks: Other accommodation/financial priorities may delay project.
Measuring Success	Estate team will have regular meetings with FM contractor and Energy sub contractor to review energy / data readings associated with the project. The meetings will take place monthly.
Timing	Milestones / key dates e.g. <ul style="list-style-type: none"> • start date: 01/02/2011 • completion date (when it will deliver savings): 31/03/2013
Notes	Savings are based on cost factor/£ unit guidelines suggested by the Carbon Trust. This project is part of a wider accommodation initiative to review ageing equipment/plant within NRS estate and replace with more energy efficient components.

Project:	To Replace the boilers at Thomas Thomson House.
Reference:	NRS- 002 – Years 1-5
Owner (person)	Estates Manager
Department	NRS Procurement & Estates
Description	Programme to replace ageing system, as the original system is over fifteen years old, with more efficient boilers to reduce energy consumption.
Benefits	Financial savings: £13,200 per year (330,000 kWh) Payback period: N/A CO ₂ Emissions reduction: 60.59 tonnes CO ₂ of per annum 9.03% of target - the percentage of the CO ₂ savings target this project will annually contribute
Funding	Project cost, £109,188.00 Operational costs: None Source of funding: Funded from existing Estates capital budget for the year.
Resources	Project to be delivered by FM Contractor and from existing resources within NRS Estates Team
Ensuring Success	Requirements: Adequate resources to ensure project is rolled out. Risks: Other/accommodation/financial priorities may delay project.
Measuring Success	Estate team will have regular meetings with FM contractor and Energy sub contractor to review energy / data readings associated with the project. The meetings will take place monthly.
Timing	Milestones / key dates. <ul style="list-style-type: none"> • start date: 01/11/2010 • Interim dates: Installation & testing completed: 10/04/11 • completion date (when it will deliver savings): 31/03/2013
Notes	Savings are based on cost factor/£ unit guidelines suggested by the Carbon Trust. This project is part of a wider accommodation initiative to review ageing equipment/plant within NRS estate and replace with more energy efficient components.

Project: Reference:	To Replace Variable speed drives to the Air Handling units in General Register House (GRH) and the Administration block and Chilled Water Pumps in Thomas Thomson House (TTH) NRS- 003 – Years 1-5
Owner (person)	Estates Manager
Department	NRS Procurement & Estates
Description	Programme to install variable speed drives on all Air Handling Units (AHU) with CO ₂ controls within the space to provide energy reduction and greater environmental control within in the area.
Benefits	Financial savings: £10,653.75 per year (118,375kWh) Payback period: 2.36 Years CO ₂ Emissions reduction: 62 tonnes CO ₂ per annum 9.26% of target - the percentage of the CO ₂ savings target this project will annually contribute
Funding	Project cost: - £25,109.00 Operational costs: None Source of funding: Funded from existing Estates Programme budget for the year.
Resources	Project to be delivered by FM Contractor and from existing resources within NRS Estates Team
Ensuring Success	Requirements: Adequate resources to ensure project is rolled out. Risks: Other accommodation/financial priorities may delay project.
Measuring Success	Estate team will have regular meetings with FM contractor and Energy sub contractor to review energy / data readings associated with the project. The meetings will take place monthly.
Timing	Milestones / key dates <ul style="list-style-type: none"> • start date: 05/01/2011 • completion date (when it will deliver savings): 31/03/2013
Notes	Savings are based on cost factor/£ unit guidelines suggested by the Carbon Trust. This project is part of a wider accommodation initiative to review ageing equipment/plant within NRS estate and replace with more energy efficient components.

Project: Reference:	Installation of variable speed drives on the supply and extract fans in the plant room at West Register House. NRS- 004 – Years 2-5
Owner (person)	Estates Manager
Department	NRS Procurement & Estates
Description	Programme to install variable speed drives on all Air Handling Units (AHU) with CO ₂ controls within the space to provide energy reduction and greater environmental control within in the area.
Benefits	Financial savings: £5,641 per year (62,679kWh) Payback period: 1.44 Years CO ₂ Emissions reduction: 33 tonnes CO ₂ per annum 4.93% of target - the percentage of the CO ₂ savings target this project will annually contribute
Funding	Project cost: £8,110.00 Operational costs: None Source of funding: Funded from existing Estates Programme budget for the year.
Resources	Project to be delivered by FM Contractor and from existing resources within NRS Estates Team
Ensuring Success	Requirements: Adequate resources to ensure project is rolled out. Risks: Other accommodation/financial priorities may delay project.
Measuring Success	Estate team will have regular meetings with FM contractor and Energy sub contractor to review energy / data readings associated with the project. The meetings will take place monthly.
Timing	Milestones / key dates e.g. <ul style="list-style-type: none"> • start date: 2011 • completion date (when it will deliver savings): 31/03/2014
Notes	Savings are based on cost factor/£ unit guidelines suggested by the Carbon Trust. This project is part of a wider accommodation initiative to review ageing equipment/plant within NRS estate and replace with more energy efficient components.

Project:	To Replace the boilers at Ladywell House
Reference:	NRS- 005 – Years 4-5
Owner (person)	Estates Manager
Department	NRS Procurement & Estates
Description	Programme to replace ageing system, as the original system is over fifteen years old, with more efficient boilers to reduce energy consumption.
Benefits	<p>Financial savings: £9,600.00 per year (240,000 kWh)</p> <p>Payback period: 12.5 years</p> <p>CO₂ Emissions reduction: 44.45 tonnes CO₂ per annum 6.6% of target - the percentage of the CO₂ savings target this project will annually contribute</p>
Funding	<p>Project cost: £120,000</p> <p>Operational costs: None</p> <p>Source of funding: Funded from existing Estates capital budget.</p>
Resources	Project to be delivered by FM Contractor and from existing resources within NRS Estates Team
Ensuring Success	<p>Requirements: Adequate resources to ensure project is rolled out.</p> <p>Risks: Other/accommodation/financial priorities may delay project.</p>
Measuring Success	Estate team will have regular meetings with FM contractor and Energy sub contractor to review energy / data readings associated with the project. The meetings will take place monthly.
Timing	<p>Milestones / key dates:</p> <ul style="list-style-type: none"> • start date: 01/11/2012 • Interim dates: Installation & testing completed: 01/06/2013 • completion date (when it will deliver savings): 31/03/2014
Notes	<p>Savings are based on cost factor/£ unit guidelines suggested by the Carbon Trust.</p> <p>This project is part of a wider accommodation initiative to review ageing equipment/plant within NRS estate and replace with more energy efficient components.</p>

Project:	Installation of PIR's to lighting circuits in New Register House Dome
Reference:	NRS- 006 – Years 1-5
Owner (person)	Estates Manager
Department	NRS Procurement & Estates
Description	Replacement of high energy consumption/ageing lighting in this old building with energy efficient lighting and controls to reduce energy consumption.
Benefits	Financial savings: £17,280 per year (192,000kWh) Payback period: 0.96 years CO ₂ Emissions reduction: 101 tonnes of CO ₂ per annum 15.06% of target – the percentage of the CO ₂ saving target will this project annually contribute
Funding	Project cost: £16,560.00 Operational costs: None Source of funding: internal - Funded from existing Estates capital budget.
Resources	Project will be delivered within current resources
Ensuring Success	Requirements: Adequate resources to ensure project is rolled out. Risks: Other/accommodation/financial priorities may delay project.
Measuring Success	Estate team will have regular meetings with FM contractor and Energy sub contractor to review energy / data readings associated with the project. The meetings will take place monthly.
Timing	Milestones / key dates:. <ul style="list-style-type: none"> • start date: 18/1/2011 • completion date (when it will deliver savings): 31/03/2013 • interim deliverable / decision points: Installation & testing completed: 1/04/12
Notes	Savings are based on cost factor/£ unit guidelines suggested by the Carbon Trust.

Project:	Install PIR's to all lighting circuits in West Register House Strongroom
Reference:	NRS- 007 – Years 2-5
Owner (person)	Estates Manager
Department	NRS Procurement & Estates
Description	Replacement of high energy consumption/ageing lighting in this old building with energy efficient lighting and controls to reduce energy consumption.
Benefits	Financial savings: £5,629 per year (62549.7kWh) Payback period: 2.8 years CO ₂ Emissions reduction: 33 tonnes of CO ₂ per annum 4.89% of target – the percentage of your CO ₂ saving target will this project annually contribute
Funding	Project cost: £15,637 Operational costs, e.g. annual maintenance or running costs Source of funding: internal - Funded from existing Estates capital budget.
Resources	Project will be delivered within current resources
Ensuring Success	Requirements: Adequate resources to ensure project is rolled out. Risks: Other/accommodation/financial priorities may delay project.
Measuring Success	Estate team will have regular meetings with FM contractor and Energy sub contractor to review energy / data readings associated with the project. The meetings will take place monthly.
Timing	Milestones / key dates:. <ul style="list-style-type: none"> • start date: 18/1/2012 • completion date (when it will deliver savings): 31/03/2013 • interim deliverable / decision points: Installation & testing completed: 1/04/12
Notes	Savings are based on cost factor/£ unit guidelines suggested by the Carbon Trust.

Project:	Upgrade the Storage Heating at General Register House
Reference:	NRS- 008 – Years 2-5
Owner (person)	Estates Manager
Department	NRS Procurement & Estates
Description	Upgrade the high energy consumption/ageing storage heating in this old building with energy efficient storage heating to reduce energy consumption.
Benefits	Financial savings: £7,987.50 per year (88750 kWh) Payback period: 2.2 years CO ₂ Emissions reduction: 47 tonnes of CO ₂ per annum 7.01% of target – the percentage of the CO ₂ savings target will this project annually contribute
Funding	Project cost: £17,516 Operational costs: None Source of funding: internal - Funded from existing Estates capital budget.
Resources	Project will be delivered within current resources
Ensuring Success	Requirements: Adequate resources to ensure project is rolled out. Risks: Other/accommodation/financial priorities may delay project.
Measuring Success	Estates team will have regular meetings with FM contractor and Energy sub contractor to review energy / data readings associated with the project. The meetings will take place monthly.
Timing	Milestones / key dates:. <ul style="list-style-type: none"> • start date: 01/08/2012 • completion date (when it will deliver savings): 31/03/2015 • interim deliverable / decision points: Installation & testing completed: 1/04/14
Notes	Savings are based on cost factor/£ unit guidelines suggested by the Carbon Trust.

Project:	Upgrade lighting T8 – T5 circuits in West Register House
Reference:	NRS- 009 – Years 2-5
Owner (person)	Estates Manager
Department	NRS Procurement & Estates
Description	A phased programme to replace T8 higher energy consumption light fittings in this old building with more energy efficient T5 light fittings to reduce energy consumption.
Benefits	<p>Financial savings: Phase 1 - £7,379, Phase 2 - £6,559 & Phase 3 - £6,559 non cumulative Phase 1 – 81,993.6kwh, Phase 2– 145,877kwh pa, Phase 3 – 227,760kWh</p> <p>Payback period: 6.10 years for each phase CO₂ Emissions reduction: 119 tonnes of CO₂ per annum (Phase 1 – 43, Phase 2 – 81, Phase 3 – 119) 17.9% of target (Phase 1 -6.41%, Phase 2 – 5.73%, Phase 3 – 5.76%) – the percentage of your CO₂ saving target will this project annually contribute</p>
Funding	<p>Project cost: £125,000.00 (Yr 1 - £45,000, Yr 2 - £40,000, Yr 3 - £40,000) Operational costs: None Source of funding: internal - Funded from existing Estates budget.</p>
Resources	Project will be delivered within current resources
Ensuring Success	<p>Requirements: Adequate resources to ensure project is rolled out. Risks: Other/accommodation/financial priorities may delay project.</p>
Measuring Success	Estate team will have regular meetings with FM contractor and Energy sub contractor to review energy / data readings associated with the project. The meetings will take place monthly.
Timing	<p>Milestones / key dates:.</p> <ul style="list-style-type: none"> • start date: 18/4/2011 • completion date (when it will deliver savings): 31/03/2013, 31/03/2014 & 31/03/2015 • interim deliverable / decision points: Installation & testing completed: 1/04/12
Notes	Savings are based on cost factor/£ unit guidelines suggested by the Carbon Trust.

Project: Reference:	Upgrade lighting T8 – T5 circuits in areas of Ladywell House, General Register House and Thomas Thomson House NRS- 010 – Year 2-5
Owner (person)	Estates Manager
Department	NRS Procurement & Estates
Description	A programme to replace T8 higher energy consumption light fittings in these buildings with more energy efficient T5 light fittings to reduce energy consumption.
Benefits	Financial savings: £8,343 per year 92,700kWh Payback period: 3.7 years CO ₂ Emissions reduction: 49 tonnes of CO ₂ per annum 7.25 % of target – the percentage of the CO ₂ saving target will this project annually contribute
Funding	Project cost: £30,900 Operational costs: None Source of funding: internal - Funded from existing Estates budget.
Resources	Project will be delivered within current resources
Ensuring Success	Requirements: Adequate resources to ensure project is rolled out. Risks: Other/accommodation/financial priorities may delay project.
Measuring Success	Estate team will have regular meetings with FM contractor and Energy sub contractor to review energy / data readings associated with the project. The meetings will take place monthly.
Timing	Milestones / key dates:. <ul style="list-style-type: none"> • start date: 31/5/2012 • completion date (when it will deliver savings): 31/03/2013 • interim deliverable / decision points: Installation & testing completed: 1/10/12
Notes	Savings are based on cost factor/£ unit guidelines suggested by the Carbon Trust.

Project:	Business Travel Options and Fleet Rationalisation Plan
Reference:	NRS- 011 – Years 1 - 3
Owner (person)	Head of Procurement & Estates
Department	NRS Procurement & Estates
Description	<p>Implement the NRS Travel Options – Policy and Guidance on Business Travel in NRS. Originally commissioned for GROS in 2010 and then re-written for the newly merged organisation during 2011.</p> <p>Includes considerations and alternatives to business travel to encourage a behavioural change to reduce unnecessary business travel; Monitoring, reporting and regularly reviewing the amount of business travel.</p> <p>Reviewing and rationalising the merged vehicle fleet replacing any vehicles where necessary in accordance with the EU Cleaner Vehicles Directive.</p>
Benefits	<p>Financial savings: £1,338</p> <p>Payback period: N/A</p> <p>CO₂ Emissions reduction: 2 tonnes of CO₂ per annum</p> <p>0% of target – the percentage of your CO₂ saving target will this project annually contribute</p>
Funding	<p>Project cost: £0</p> <p>Operational costs: N/A</p> <p>Source of funding: internal.</p>
Resources	This project will be delivered within current resources within Procurement and Estates Branch
Ensuring Success	<p>Critical to the success of this project is every individual in NRS taking ownership and carrying out their work in an efficient way, using the travel methods which strike a balance between 3 important factors – cost to the taxpayer, staff time, and impact on the environment.</p> <p>Principal risks: Already stretched staff resources.</p>
Measuring Success	Quarterly review and reporting of business travel in Corporate Plans and staff feedback are metrics for displaying performance or achievement
Timing	<p>Milestones / key dates e.g.</p> <ul style="list-style-type: none"> • start date: 31/1/2012 • completion date (when it will deliver savings): 31/03/2013 • interim deliverable / decision points: 01/10/2012
Notes	By engaging all staff across the business areas, to consider alternatives to business travel and to reduce unnecessary business travel as part of the behavioural change working towards a low carbon organisation, this project has the potential to contribute significant benefits.

Project: Reference:	Sustainability - Staff Awareness, Behavioural Changes and Energy Monitoring and Targeting NRS- 012 – Years 2 - 5
Owner (person)	Sustainability Committee
Department	NRS
Description	A range of activities across the organisation to raise staff awareness and to actively promote energy efficiency and recycling including widening the work of the Sustainability Committee and appointing 'green champions in each of the buildings.
Benefits	Financial savings: £18,366.12 per year (204,068 kwh pa) for 2 years then £9,183 for 2 years Payback period: N/A CO ₂ Emissions reduction: 107 tonnes of CO ₂ per annum for 2 years then 54 tonnes of CO ₂ per annum 8.06% of target – the percentage of the CO ₂ saving target will this project annually contribute
Funding	Project cost: £5,000 then £2,000 2 years later to repeat the campaign Operational costs: None Source of funding: internal
Resources	This project will be delivered within current resources within NRS Sustainability Committee and re-appointment of green champions throughout the organisation.
Ensuring Success	Critical to the success of this project is every individual in NRS engaging in a carbon reduction programme, taking ownership and carrying out their work in an environmentally efficient way. Risks are that staff do not fully engage
Measuring Success	Quarterly monitoring and reporting of energy usage and waste (recycling & general) disposal will be the metrics for displaying performance or achievement
Timing	Milestones / key dates e.g. <ul style="list-style-type: none"> • start date: 01/04/2012 • completion date (when it will deliver savings): 31/03/13 • interim deliverable / decision points: 31/03/2013, 31/03/2014 & 31/03/2015
Notes	By involving all staff across the business areas to fully engage with the behavioural change working towards a low carbon organisation this project has the potential to contribute significant benefits. Savings are based on guidelines suggested by the Carbon Trust.

Project:	Archival Storage Rationalisation – Sale of Station Road Storage Facility
Reference:	NRS- 013 – Years 3 - 5
Owner (person)	Head of Procurement & Estates
Department	NRS Procurement & Estates
Description	Following the merger to form NRS a review of the NRS Estate was conducted, to assess ongoing maintenance requirements, repairs and costs to rationalise storage within the buildings. Due to the high maintenance requirements and costs necessary to retain this building as a storage facility the decision was made to sell Station Road and absorb the records within the other archival records stores within the NRS estate.
Benefits	Financial savings: £9,937 per year – dependant upon market conditions and sale price achieved Payback period: N/A CO ₂ Emissions reduction: 48 tonnes of CO ₂ per annum 7.12% of target – the percentage of the CO ₂ savings target will this project annually contribute
Funding	Project cost: Cost neutral Operational costs: None Source of funding: This is a revenue generating project.
Resources	This project will be delivered within the current resources in Procurement and Estates Branch and the externally appointed Property Marketing Agent to manage the sale of the property.
Ensuring Success	Requirements: Adequate resources to ensure project is rolled out. Risks: Obtaining relevant planning permissions/completing various technical surveys may delay project. Market conditions/lack of interest from prospective buyers/failure to achieve a sale price within estimates.
Measuring Success	Bi-monthly meetings with Property Marketing Agent to discuss progress and management of the sale process.
Timing	Milestones / key dates <ul style="list-style-type: none"> • start date: 01/03/2012 • completion date (when it will deliver savings): 01/03/2014 • 31/03/2013
Notes	The savings are based on the sale being concluded by 31/03/2013, which are subject to change if the sale of the property is delayed.

Project: Reference:	Desktop Computer Replacement to Thin Client Within the Public Search Areas and Server Virtualisation for General Register House and Thomas Thomson House NRS- 014 – Years 3 - 5
Owner (person)	Head of IT Infrastructure
Department	NRS IT
Description	When the existing 165 Desktop PC's in the public search rooms are due for replacement they will be replaced with Thin Client terminals. Server virtualisation is required in these buildings as part of the ICT merger within NRS.
Benefits	Financial savings: £1,980 per year Payback period: N/A CO ₂ Emissions reduction: 12 tonnes of CO ₂ per annum 1.73% of target – the percentage of your CO ₂ saving target will this project annually contribute
Funding	Project cost: TBC Operational costs: None Source of funding: internal – cost neutral as undertaken as part of the PC & server replacement programme
Resources	Additional resource - delivered within current resources
Ensuring Success	Requirements: Adequate resources to ensure project is rolled out. Risks: Other/ICT/financial priorities may delay project.
Measuring Success	Metrics for displaying performance or achievement When success will be measured / evaluated
Timing	2013-15 (when it will deliver savings): 01/03/2014
Notes	This project is part of a wider ICT initiative following the merger to review ageing equipment within NRS and replace with more energy efficient equipment.

Project:	Feasibility Studies for Renewables
Reference:	NRS- 015 – Years 4 - 5
Owner (person)	Head of Procurement & Estates
Department	NRS Procurement & Estates
Description	A renewables feasibility study is to be commissioned in 2012 to explore options (photovoltaic/ground source heat pumps/wind power systems) for General Register House, New Register House and Thomas Thomson House. See Appendix B.
Benefits	Financial savings: £ TBC Payback period: Expected by be at least 12 years CO ₂ Emissions reduction: TBC tonnes of CO ₂ per annum % of target – TBC - the percentage of your CO ₂ saving target will this project annually contribute
Funding	Project cost: TBC Operational costs: TBC depending on renewables selected Source of funding: internal and subject to funding bids supported by business cases.
Resources	Additional resource (e.g. people) requirements to enable delivery and where these will come from If this project will be delivered within current resources, say so
Ensuring Success	The key success factors, or things that will need to happen for this project to be approved is a robust feasibility study that can obtain funding approval to progress Principal risks: technical and financial (the costs turn out to be too high compared to the estimated savings).
Measuring Success	Regular monitoring of energy usage and meetings with FM contractor and Energy sub contractor to review energy / data readings associated with the project.
Timing	Subject to approval start date 2014
Notes	See Appendix B

Project:	Fit Insulating Jackets to Uninsulated Heating
Reference:	NRS- 016 – Year 2-5
Owner (person)	Estates Manager
Department	NRS Procurement & Estates
Description	Fit insulation jackets to the uninsulated heating valves in the plant rooms at Thomas Thomson House and New Register House, and the boiler rooms at New Register House and Ladywell House to reduce energy consumption.
Benefits	Financial savings: £1,035 per year Payback period: 0.89 years CO ₂ Emissions reduction: 6 tonnes of CO ₂ per annum 0.90 % of target – the percentage of the CO ₂ saving target will this project annually contribute
Funding	Project cost: £920 Operational costs: None Source of funding: internal - Funded from existing Estates budget.
Resources	Project will be delivered within current resources
Ensuring Success	Requirements: Adequate resources to ensure project is rolled out. Risks: Other/accommodation/financial priorities may delay project.
Measuring Success	Estate team will have regular meetings with FM contractor and Energy sub contractor to review energy / data readings associated with the project. The meetings will take place monthly.
Timing	Milestones / key dates:. <ul style="list-style-type: none"> • start date: 31/5/2012 • completion date (when it will deliver savings): 31/03/2014 • interim deliverable / decision points: Installation & testing completed: 1/10/12
Notes	Savings are based on cost factor/£ unit guidelines suggested by the Carbon Trust.

Appendix B: Basis for NRS Feasibility Study on Potential Renewable Energy

The basis for the feasibility study to be commissioned in 2012-13 financial year is to explore options for renewable energy by installing Photovoltaic Panels to generate electrical power for the building(s) as a whole and not simply be limited to providing hot water either for the heating system or for the hot water boilers. Also to consider wind turbines at one of the buildings.

We expect the feasibility study will provide a clear indication of what can be achieved using the available roof space on the buildings in question, the design and suggested size of the panels and the appropriate mounting system to be installed which will not be visible from ground level. The study will also include and provide estimates of:

- annual energy production
- annual CO₂ savings
- annual financial savings
- Solar PV peak power target
- Costs
- Information on potential Grants
- Options on system monitoring and metering

An initial estimate of the number of potential PV panels and the power output generated which might be achievable at New Register House, General Register House and Ladywell House are shown below. Please note these estimates are taken from some initial research NRS conducted during February 2012 in order to provide a basis for NRS to commission an actual feasibility study which would further explore options for renewable energy in some of the buildings.

Robust cost estimates and the amount of power output which could be achieved will be provided as part of the actual feasibility study as well as identifying the best building for the renewables pilot study, subject to funding approval.



The approximate amount of power produced by 15 PV Solar panel System **per annum is estimated at 1,600kWh**

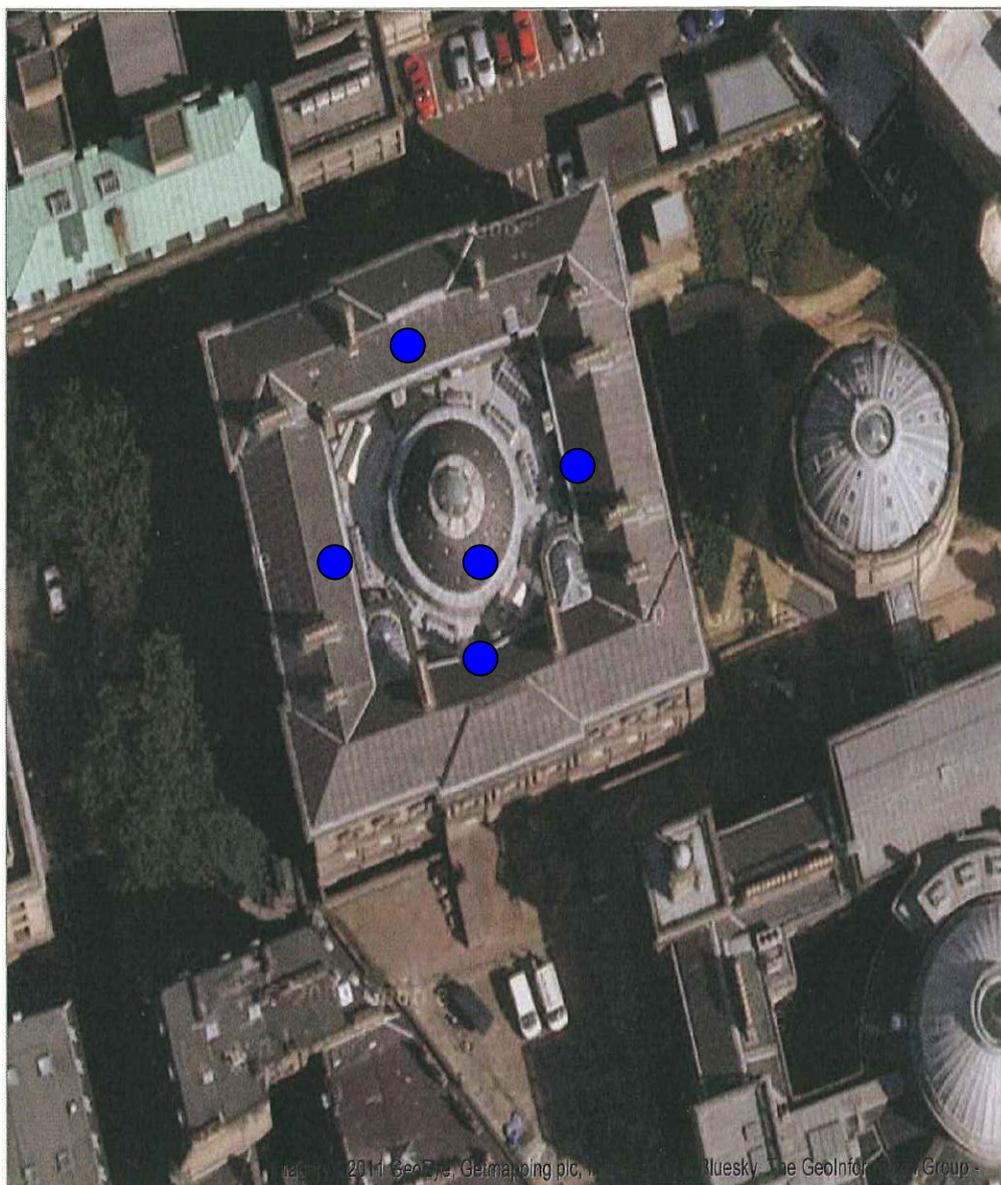
The estimated number of Solar Panels it may be possible to install, on three of the properties which will be considered in the feasibility study, together with the estimated power output that may be achieved per annum is:

Property	Approx No of PV Solar panels	Approx power which might be achievable kWh / annum
Ladywell House	150	15,990kWh
New Register House	60	6,396kWh
General Register House	90	9,594kWh
Thomas Thomson House	60	6,396Kwh

For illustration the following photograph shows the potential locations of PV panels on just one of the proposed NRS properties for this feasibility study. The reason for the choice of location for each system is to be as unobtrusive as possible in order to have the best chance of obtaining the relevant planning consents particularly for the Listed buildings (New Register House and General Register House)

The Feed-in-Tariff was on the 12th December 2011 cut from 43p/kWh to 21p/kWh making the returns will fall from 8% - 12% to just 4.5%. However at this time this percentage is still above interest rates. It is worth of noting that solar hot water systems up to 200kWh still currently attract an 8.5% per kWh payment under the Renewable Heat incentive.

New Register House



 Denotes potential location of PV panels on inside face of slated roof.