



Environmental Placement Programme Annual Report 2009



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1. Programme Achievements

- 50 projects
- 28,000 tonnes of waste diverted from landfill
- 5,000 tonnes of CO₂ saved
- £900,000 total cost savings identified
- £3m new sales identified
- 9 jobs
- 15 have new customers
- 23 with improved environmental management



First Minister with student finalists, judges

*Describing EPP as “very much a **‘win-win’ programme**” and “a unique initiative which benefits students, companies and the environment,” The First Minister said it created extra capacity for companies to boost their environmental performance and improved their competitiveness by cutting overheads in areas such as energy and waste.*

2. Projects

Company	Region	Project	Student	Course	University
Aberdeen City Council	Grampian	Waste Mihnimisation	Andrew Devine	Sustainable Environmental Management	SAC Craibstone
Aberdeen Fire and Rescue Service	Grampian	Energy	Emma Kerr	Geography	Aberdeen
Aberdeen Fire and Rescue Service	Grampian	Staff Travel	Mrinmoyee Nath	Geography & Spatial Planning	Aberdeen
Aberdeenshire Council (SNIFFER)	Grampian	Extreme Weather	Mark Watson	International Management	Heriot Watt
Active for All	Glasgow	Marketing	Colette Rhodie	Financial Services	Glasgow Caledonian
BAA Edinburgh/Glasgow	Edinburgh & Lothians	Carbon Trust	Alastair Bartholomew	Industrial Environmental Management	Abertay
Baker Oil Tools	Grampian	Environmental Management	Andrew Beadsworth	Sustainable Environmental Management	SAC Craibstone
Borders Machinery Ring	Borders	Marketing and Composting	Tricia Clark	Management Science & Economics	Strathlyde
Business Environment Partnership	Edinburgh & Lothians	Market Research	Niall Dolan	Geography	Newcastle upon Tyne
Castlegroup	Tayside	Research, EPCs, retrofitting	Tommy Sherwood	Mechanical Engineering	Strathclyde
Clackmannanshire Council (SNIFFER)	Forth Valley	Extreme Weather	Chris Brown	Geography	Dundee
Consolidate	Forth Valley	EMS	Fraser Inglis	Environmental Studies	Strathclyde
Down to Earth Solutions	Moray	Eco Building Research	Oriano Marchi	Quantity Surveying	Highlands & Islands
DS Smith Corrugated	Edinburgh & Lothians	Environmental Management	Sean MacDougall	Physics with Environmental Science	Heriot Watt
Dundee Chemicals	Tayside	Energy	Jennifer Brown	Chemical Engineering	Aberdeen

Company	Region	Project	Student	Course	University
East Lothian Council	Edinburgh & Lothians	Staff Enviro Survey	Graeme Wallace	Geography	Strathclyde
Falkirk Council (SNIFFER)	Forth Valley	Extreme Weather	Mike Simpson	Hydrology	Imperial College London
Fyne Homes	Highlands&Islands	Supply Chain of Waste Oil	Maria McAllister	Law	Glasgow
George Hotel	Edinburgh & Lothians	GTBS	Dariusz Bazazi	Environmental Geoscience	Edinburgh
Glasgow Resource Recovery Park	Glasgow	Marketing	Colm MacQueen	International Business & Modern Languages	Strathclyde
Glasgow Wood Recycling	Glasgow	Business Development/Waste Min	Ben Williams	Management & Marketing	Heriot Watt
Hebrides Alpha Trading	Highlands & Islands	Waste Minimisation	Donald Morrison	Sustainable Rural Management	Highlands & Islands
Hillcrest HA	Tayside	Air Source Heat Pumps	Andrew Woof	Geography	Dundee
Homeaid Caithness and Sutherland	Highlands & Islands	Biodiesel Feasibility	James Miller	Mechanical Engineering	Heriot Watt
Instant Neighbour	Grampian	Marketing	Alain Trail	Law with Italian	Glasgow
Keenan Recycling	Grampian	ISO14001	Kathryn Adams	Biological Sciences	Aberdeen
Knowtop Community Farm Project	Glasgow	Environmental Policy	Victoria Longhurst	Earth Sciences	Glasgow
Link Group Housing	Forth Valley	Waste	Chris Mason	Ecological Economics	Edinburgh
Lothian Fire and Rescue Service	Edinburgh & Lothians	Environmental Policy, CF reduction	Jacquelyn Kerr	Ecological Science	Edinburgh
Macsweens of Edinburgh	Edinburgh & Lothians	Rainwater Harvesting	Callum Kerr	Structural Engineering & Architecture	Edinburgh
Macsweens of Edinburgh	Edinburgh & Lothians	Environmental Management	Rowina Mortimer	Environmental Geoscience	Edinburgh
Malcolm Allan	Forth Valley	Packaging and Energy	Paul Johnson	Chemical Engineering	Edinburgh
Moray Recycling Action Group	Moray	Sustainability	Finola McFarlane	Architectural Studies	Glasgow School of Art

Company	Region	Project	Student	Course	University
Nairn's Oatcakes	Edinburgh & Lothians	Environmental Management	Samantha Jackson	Geography	Edinburgh
NISP	Edinburgh & Lothians	Marketing	John Harper	Physics	St Andrews
NISP	Edinburgh & Lothians	Environmental Management	Nicola Erskine	Environmental Management	Stirling
North East Scotland Preservation Trust	Grampian	Website Development	Callum Hopkins	Design for Digital Media	Robert Gordon
On Site Generation	Edinburgh & Lothians	Renewable Study	Hertha Taverner-Wood	Mechanical Engineering with Renewable energy	Edinburgh
Raytheon	Fife	ISO14064	Kirsty McGeough	Geography with Environmental Studies	Edinburgh
RoWAN	Highlands & Islands	IT Recycling/Data input	Ewan Hemmingway	Computer Science	Heriot Watt
Scottish Government	Edinburgh & Lothians	Cycle Scheme	Connie Bennett	History & Politics	Edinburgh
Scottish Government	Edinburgh & Lothians	Information Management	Verity Flett	Geography & Environmental Science	Dundee
Senergy	Grampian	Carbon Reduction	Ben Christman	Law	Aberdeen
Servite Housing	Tayside	Sustainability	Douglas Ndambuki	Environmental Protection & Management	Edinburgh
Tayside Contracts	Tayside	EMS	Rebecca Barclay	Environmental Geography	Stirling
TWMA	Grampian	Carbon Footprint	Tracey Elrick	Sustainable Environmental Management	SAC Craibstone
University of Dundee	Tayside	Waste	Craig Robb	Environmental Management	Dundee
University of Dundee	Tayside	Biodiversity	Laura Ann Duffy	Geography	Aberdeen
Westray Energy Action	Highlands & Islands	Anaerobic Digestion	Ingrid Austin	Sustainable Energy	Reykjavik

3. Case Studies

Aberdeen City Council

Waste Minimisation

Andy Devine is a Sustainable Environmental Management student at the Scottish Agricultural College in Aberdeen. His placement was to carry out an internal waste review at Aberdeen City Council.

His placement aims were to:

Review internal waste streams within the Aberdeen City Council buildings and services

Benchmark the council's approach to waste against other Scottish Local Authorities

Make recommendations to improve internal waste management based on the findings of the review

Aberdeen City Council could save £2,226,200.64 on landfill tax fees as a result of Andy Devine's placement with them.

Aberdeen and Grampian Fire and Rescue Service

Energy

Emma Kerr was placed with Aberdeen and Grampian Fire and Rescue Service to look at their energy management. The aim of the placement was to apply the principles of the energy management guidance strategy produced by the Carbon Trust. She assessed the current position of energy management in the company and identified barriers preventing the implementation of the energy management strategy. She also developed an energy management policy and identified all necessary training for staff.

Emma was also responsible for introducing an effective monitoring arrangement at the site.

Her placement has helped Aberdeen and Grampian Fire and Rescue Service move on with their environmental staff awareness, as well as helping them progress towards ISO14001.

Aberdeen and Grampian Fire and Rescue Service

Staff Travel Research

Mrinmoyee Nath was placed at Grampian Fire and Rescue Service (GFRS) to provide a travel plan. She contacted external stakeholders to collect knowledge about the operation of the company and contacted various internal stakeholders to gather information about the various schemes, ideas etc. She used travel builder website to create a travel plan for the Headquarters. She also distributed a questionnaire to staff. Finally Mrinmoyee created an access guide and car park management strategy for Headquarters and central fire station as well as travel plan guide.

Aberdeenshire Council

Extreme Weather Study

Mark Watson is studying towards a degree in International Management at Heriot Watt University. Mark Watson was placed with Aberdeenshire Council (placement was funded by Scotland and Northern Island Forum for Environmental Research - SNIFFER).

Mark carried out the research stage of a Local Climate Impact Profile (LCLIP). The LCLIP is a report highlighting the issue of climate change adaptation and how extreme weather events have affected Aberdeenshire in the past and currently.

Mark used a broad range of media sources and methodologies to identify severe weather events that affected Aberdeenshire, as well as their impact, consequences and responses to the events.

It is hoped that the report's recommendations will help improve Aberdeenshire Council's resilience and response to severe weather events.

Mark was a Regional Winner in the North East Awards Ceremony and was presented his certificate by Stewart Stevenson, Minister for Transport, Infrastructure, and Climate Change.

Active4all

Green Marketing

Colette Rhodie is a Financial Services student at Glasgow Caledonian University. She was placed with 'Yooz' (subsidiary of Active 4 All) in Glasgow.

Active for all is a building materials company which salvages leftover clean building materials to sell at half the trade price to smaller builders and the general public. All profits are going towards the first ever custom-built Sports Centre of Excellence for disabled people in the UK.

Colette was tasked with increasing awareness and promotion of the new Building Materials Reuse Centre.

She visited local building sites in order to persuade the site managers and marketing managers to collaborate with the 'Yooz' project. She designed leaflets to use at events, attended environment and construction events to network increase knowledge of the services the company could offer. The results of her placement were impressive – she collected 10 tonnes of material (valued at £1700) in just two days, and has realised a potential of up to 2,300 tonnes of materials that could now be diverted from landfill or from crushing/recycling (which use energy). This should give a first year turnover of £400,000.

Colette presented her project to a panel of judges at the National awards Ceremony held in the Budongo Trail, Edinburgh Zoo. She was presented with the prize of 'runner up' by the First Minister Alex Salmond.

BAA Edinburgh & Glasgow

Carbon Trust Standard

Alastair was placed with BAA and was based between Edinburgh and Glasgow Airports.

He started by collecting energy data (gas, electricity and fuel oil) from about 600 utility meters and pumps across the airport to calculate annual carbon footprints (2006-2008) with a view to applying for the Carbon Trust Standard (CTS) Certification. Absolute and benchmark increases in emissions due to airport expansion meant EAL failed to qualify and the application was aborted.

However the CTS data revealed the need for tighter energy management, leading Alastair to refine an airport-wide energy ownership' tree and consider how better to track and report energy use. As a result he went on to prepare a detailed 'Statement of Need' presenting a fully costed business case in support of Automated Metering and Reporting (AMR) to capture the real time-energy data congruent with the needs of the energy 'owners'. This received broad support from managers across the airport and the Managing Director agreed to sponsor the case in order to apply for the necessary capital funding.

It is expected the full survey will be carried out before the end of 2009 to clarify exactly what metering is needed and that the application for funding for the AMR package will be logged thereafter.

Baker Oil Tools

Environmental Management

Andy Beadsworth was placed with Baker Oil Tools in Aberdeen. The aim of his placement was to look at improving the company's environmental management. This would ensure the company's legal compliance as well as benefit the environment by reducing its CO₂ emissions. It would also bring two fold financial savings via reducing energy consumption thus reducing the amount of Carbon Reduction Commitment (CRC) allowances required.

Andy started by developing a road map for meeting the CRC legislation and evaluating and prioritising options for energy reduction in terms of saving tonnes of carbon and financial spend. He also developed documentation for meeting the Carbon Trust Standard and creating a model for best practice at Baker Oil Tools enabling duplication at their other UK sites.

Andy calculated the savings Baker Oil Tools will make will emerge once a closer understanding of the Kirkhill sites energy performance is analysed. This will be through the reduction in energy consumption leading to fewer allowances purchased for the CRC. Coupled with informed decision making that is considered and systematic.

As a result of Andy's placement, Baker Oil Tools have benefited from; reduced utility bills, corporate social responsibility recognition, increased staff awareness, improved team spirit as well as a greater transparency regarding energy use/ reporting.

Borders Machinery Ring

Tricia Clark was placed at Borders Machinery Ring (BMR), the first Ring to be formed in the UK which aims to rationalise labour, machinery and input costs in the farming industry.

Tricia's placement involved work between two of their sites – Hawick and Berwick -on -Tweed.

The main aim of her placement was to develop a business plan outlining potential growth in the future as well as researching funding opportunities available to their project.

She was also tasked with marketing their commercial composting venture this involved; developing signage to the site, increasing the web presence, researching local suppliers, and raising awareness of the company's services location.

She summarised her placement by creating a report detailing potential business growth in the future, including preparation of business growth plan – growth of premises

She also helped BMR tighten up their systemisation/documentation of existing composting procedures.

Green Marketing

Business Environment Partnership

Niall Dolan was placed at the Business Environment Partnership (BEP) in Dalkeith, Midlothian. His placement aimed to:

- Obtain or develop a business database.
- Design and distribute a survey to 17,000 Scottish businesses.
- Support the survey findings by gaining input through small focus groups attended by representatives of the business community.
- Assimilate and analyse the results of both the survey and the cross section.

Niall spent time researching current surveys already undertaken to help in developing the survey questions before sending it out to businesses. Niall compiled a summary report detailing the outcomes of his survey. The BEP now have an increased awareness of the specific needs of the businesses it serves, as a result of his placement.

Market Research

Castlegroup Scotland

Tommy Sherwood was placed at Castlegroup Scotland to assess environmental issues that a commercial building may have. He also looked at assessing what issues were important to estates and building managers when performing building works.

During his placement Tommy researched environmental issues relating to commercial buildings as well as also identifying appropriate building technologies that could be used when improving the current building stock; specifically through reducing heat losses by improving building envelopes.

After research, Tommy concluded that there was no need for a "champion technology" for energy efficient exteriors and that there has been no recent cost effective technological improvement in this area. All that is required is to ensure that the exterior building envelope is as air and moisture tight as possible. This however this would require much investment and the biggest obstacle will be to convince the decision makers to invest in energy efficient exteriors.

Due to the economic climate the company did not have a building that would have been appropriate to study and due to this, the project objectives had to be changed and developed during the placement.

The objectives changed to include research of exterior building renovation technology and also contact building managers to gauge their attitudes to energy efficiency building renovations. Changes to working circumstances therefore meant the company were flexible to the outcomes of the project and Tommy's placement still provided valuable research that Castlegroup Scotland can make use of.

Energy Efficiency Research

Clackmannanshire Council

Extreme Weather Study

Clackmannanshire Council is the smallest local authority in mainland Scotland and has a responsibility for around 50,000 citizens. Based in Alloa, Chris Brown was working with the Sustainability Team, within the wider Development and Environmental Service.

Chris was placed with Clackmannanshire Council to carry out research for a Local Climate Impact Profile (LCLIP) which is an extreme weather study for climate initiative. This work was to then lead on to provide a basis for developing adaptation strategies to help the Council and community cope with climate change. The main placement objectives were to:

Carry out extensive research of media and council records of severe weather events in the region since 2000

Liaise with Council staff to verify, add and expand on the impacts of severe weather

Produce a report detailing the consequences, appraisals and any short fallings in coping

His first task was to carry out a trawl of local and national media and Council logs, in order to record weather events, their impact, consequence and the response of the Council. He also carried out interviews and meetings with several key staff members in order to gather specific information with regards to the specific responses of services, the costs and resources involved.

Clackmannanshire Council were also looking to the future development of adaptation strategies to help the Council and the community in coping with climate change and Chris's work provided the foothold on which this could be taken forward.

Clackmannanshire Council will be able to develop and push forward these adaptation strategies as well as raising awareness of the implications of climate change among the Council services, as a result of Chris's EPP placement with them.

Consolidate

Environmental Management System

Fraser Inglis was placed at Consolidate to help the company put in place an ISO 14001 compatible environmental management system (EMS). The placement concentrated on the planning phase of a system -set out by Clause 4.3 of the standard. The main placement objectives were to:

Carry out an Environmental Review of activities

Create a Register of Environmental Aspects (Clause 4.3.1)

Create a Register of Legislation (Clause 4.3.2)

His first task was to inspect the company premises and current project site as part of the M74 completion project. The information obtained was then enhanced by a desktop study into relevant regulations and industry best practise. He then used this review process to create the two prescribed Register documents. In unison, Consolidate were also striving to create the specific operating procedures required to fill the gap between current practises and required standard.

Consolidate have implemented several new procedures in the areas of waste management, diffuse pollution and resource efficiency as a result of Fraser's EPP placement with them. The project also directly produced potential savings of 48.62t CO₂ (equivalent) and over £17,000.

The company aims to achieve ISO 14001 certification during 2010 and have extended Fraser's placement to help them work towards this.

Down to Earth Solutions

Eco Building Study

Down to Earth Solutions is a Community Interest Company based in Forres, Moray. Oriano Marchi was placed with the company to produce a report on the social, economical and environmental impacts of using recycled and/or reclaimed materials in new built housing.

Oriano visited a range of recycling enterprises in Moray and engaged with staff to ascertain local supply and demand of materials. He estimated the current condition of the materials that would be suitable for construction purposes and cost of time and labour needed to bring back into use. He then produced a database of locally available recycled materials which could be used in construction. His report included a Bill of Approximate Quantities (BAQ) for builder cost of standard construction as well as a BAQ for self builder cost of construction for one strawbale house, using recycled materials.

He studied the breakdown of the BAQ for cost comparison, detailing where savings could be made and any significant findings.

Oriano produced a detailed report of approx 2000 words (including the two Bills of Quantities) of the social, economical and environmental impacts of using recycled materials in new built houses.

This report will be assimilated into a feasibility study currently being conducted by Down to Earth Solutions.

DS Smith Corrugated

Environmental Management

Sean MacDougall carried out his placement at DS Smith Packaging and Corrugated. They specialise in the confectionary market and are the biggest producer of paper, and biggest merchant of recycled paper in Britain. They also have 15 similar sites across the UK, which would benefit from the environmental procedures and projects put in place.

The main objective to be achieved was to set up an Energy Management System (EMS) called 'energy desktop'. This would allow for data storage and analysis on energy consumption, utility use, quantity of product and waste. This can now be used for setting benchmarks and KPI's to inform management, through automated emails, and compare with similar sites to determine best practice.

Sean was also set aims to quantify electrical energy distribution throughout the site to enforce ISO14001 targets. Around 60% of energy use was mapped, consisting of mainly production machines, and identified possible £19K of savings from power factor correction. There is also an achievable saving of £47K through installing the new T5 generation of lamps.

A water balance was initiated and identified £16K and 16Km³ saving per annum. Recommendations were given on sub-meters, meter calibration and water saving devices to be installed in the soon to be refurbished toilets.

Waste streams were also tackled to minimise costs and increase recycling and re-use. Dust extraction waste was sent for tests and shows promising results as a form of biomass. Wood cutting-forms were also recycled and hazardous waste contractors were also changed due to ambiguity of waste treatment.

Dundee Chemicals

Energy/Heat Recycling

Jennifer Brown was placed at Dundee Chemicals to investigate their onsite heat exchanger and set recommendations to promote energy recycling. The main placement objectives were to:

- Gain a better understanding of the energy saving process and evaluate the options presently available
- Evaluate the costs associated with fuel, pumping and running time
- Produce an optimum working schedule for the system

At optimum efficiency the exchanger can double the water tank's initial temperature, for example from 17.6°C to 35.4°C in 2 hours. Also, after production a large volume of steam is currently left unused. This quantity is difficult to measure but in approximately 4-5 hours the boilers loses 7 to 7.5 bar pressure. Such a high pressure indicates a significant amount of excess steam.

At the present time the site already works to maximum efficiency and once they have upgraded the plant the recovered energy will be utilized in production.

Jennifer's work with the company has given Dundee Chemicals confidence that their process can be even more environmentally friendly in future.

East Lothian Council

Environmental Staff Survey

Graeme Wallace was placed with East Lothian Council to design and implement a survey across the organisation examining staff awareness and attitudes towards environmental issues.

The purpose of the survey was to benchmark staff understanding of environmental issues, their behaviour at work in terms of energy and resource use and the methods they believed to be most beneficial in terms of training. This would inform the Communications Strategy that is currently being developed by the Council's sustainability teams (Carbon Management Team and Conserve Resources at Work (CRAW) group on the best

ways to engage with staff, identify staff members to establish a network of green champions and reduce energy and resource use across the Council. This will play a part in reducing their carbon emissions target. The survey was designed and placed online for staff to respond. Graeme produced a report analysing the results of the survey and providing recommendations for the above groups. Most important of these were that CRAW needs to be more visible across the Council, a variety of communication methods need to be used to raise awareness and increase understanding on best practice for energy and resource reduction.

Energy Action Westray

Anaerobic Digestion

Ingrid Austin was placed at Energy Action Westray (EAW) in the Orkney Islands. The island of Westray is one of Orkney's archipelago which is host to many influential energy projects. The Biogas Plant is one such project where anaerobic digestion is a speciality. Ingrid's main objective this year has been to investigate the potential to expand the use of biogas in the island's energy mix. This involved the investigations into the use of district heating as a distribution method for the energy sourced from anaerobic digestion. The main placement objectives were to:

- Identify the demand for a cluster of homes and commercial properties
- Investigate other district heating schemes and rural energy projects

She also made further recommendations for the development of district heating in Westray.

As a result of hosting the Environmental Placement Programme, EAW have been able to kick-start the investigative processes into the likelihood of District Heating in Westray becoming a solution to fuel poverty and affordable warmth in the rural part of Scotland where small scale district heating may otherwise be disregarded.

Falkirk Council

Extreme Weather Study

Mike Simpson was placed with Falkirk Council (placement was funded by Scotland and Northern Island Forum for Environmental Research - SNIFFER).

Mike was tasked with carrying out the research stage of a Local Climate Impact Profile (LCLIP). The LCLIP is a report highlighting the issue of climate change adaptation and how extreme weather events have affected the local area in the past and today

Mike used a variety of media sources and methodologies to identify severe weather events that affected the Falkirk area, as well as their impact, consequences and responses to the events. He also liaised with Council staff to verify, add and expand on the impacts of severe weather. He produced a report detailing the consequences, appraisals and any short fallings in coping.

Mike's placement and specifically his report's recommendations will help improve Falkirk Council's resilience and response to severe weather events.

Fyne Futures

Biodiesel Feasibility Study

Maria McAlister is a Law student at the University of Glasgow. She was placed at Fyne Futures Recycling Centre to set up a waste vegetable oil collection service on Bute and the surrounding areas for the production of biodiesel.

Her first task was to identify all potential suppliers of waste vegetable oil, contact them and then set up a collection service for those who were interested. She also looked at the company becoming a vegetable oil supplier on the Isle of Bute in order to secure all available waste vegetable oil. Fyne Futures were also looking into increasing the size of their biodiesel plant for which funding has now been applied with the view to getting a plant that can produce 400 litres per batch.

The company 69% on their fuel bills as a result of implementing the results of her placement and have also succeeded in implementing a regular waste vegetable oil collection service.

Maria won the regional Awards Ceremony for the Highlands and Islands and went on to present at the National Awards Ceremony held in Edinburgh.

The George Hotel

Green Tourism Business Scheme

Dariusz Bazazi was placed at The George Hotel in Edinburgh to improve their environmental management and then market and promote this to potential customers.

After an initial assessment for the various areas of the hotel and liaising with staff and managers, he concluded they should register to be certified to the Green Tourism for Business Scheme (GTBS). This would ensure their environmental management procedures were in place and also give them a target to work towards. Once the award was achieved, this could be used as a 'Green Marketing' Tool' and hopefully retain business while achieving more.

Dariusz established a Green Team at the Hotel who would hold meetings regularly. He increased staff awareness so monitors were turned off when not in use and reception staff were able to pass on public transport information and sustainable activities that hotel guests could take advantage of during their stay. He made sure there were plenty of healthy food options on the menu and added fair trade wines to the dinner menu for guests. He made sure recycling was maintained and improved and made sure machines and equipment (eg in the kitchen) were turned off when not in use.

The George Hotel was successful in achieving the Silver Level of GTBS earlier this year as a result of the Environmental Placement Programme.

Glasgow Resource Recovery Park

Green Marketing

Colm McQueen was placed at Glasgow Resource Recovery Park to look at marketing the company's green credentials. The aims of the placement were to develop a new business plan, identify sources for potential funding and develop marketing material.

He started by familiarizing himself with the company, the market for recyclates and reusables, and the concept of resource recovery parks.

He compiled a new business plan and recommend that the company adapt this for different target audiences and funding criteria. Similarly, before submitting applications Colm suggested presenting the plan to networks such as the Community Recycling Network for Scotland in order to galvanize support and receive feedback.

As a result of this placement, the company have an updated and revised business plan, a strategy document re funding applications and a revised flowchart for operations of Park as well as a revised strategic approach for current and new ideas.

Glasgow Wood Recycling

Business Development

Ben Williams was placed with Glasgow Wood Recycling (GWR). His placement objectives were to promote the 'Dear Green Place' through improvement of advertising and formulation of a new marketing strategy, to research and implement processes and procedures that improve the effectiveness of the operation. He was also tasked with researching and developing potential partnerships with schools and community groups in order to raise awareness of the products and services GWR has to offer.

Ben improved signage and advertising surrounding the 'Dear Green Place' and implemented practical improvements within the cost/resource constraints of the organisation.

He created a green house on site made from reused plastic bottles collected from local community groups and schools. This helped promote the ethos of the company and get local bodies involved with the development of the site.

Ben worked closely with volunteers on site and helped them to gain as much as possible from their time at GWR. This involved working closely with disadvantaged/disabled workers and volunteers who come from difficult backgrounds.

As a result of Ben's placement, GWR have improved volunteer training and involvement as well as utilisation of green space for volunteers and staff.

They also now diverting wood waste away from landfill and adding value to a commonly wasted resource.

GWR are now progressing towards being completely self-sustainable in terms of government funding/grants as a result of Ben's environmental placement.

Hebrides Alpha Trading

Waste Minimisation

Hebrides Alpha is a Community Interest Company employing a range of initiatives to fund the provision of support for those with addiction issues.

Donald Morrison was placed at Hebrides Alpha to further a study into turning locally produced waste cardboard into briquettes for burning as an alternative to coal, peat and wood.

The main placement objectives were to:

- Produce complete feasibility study and produce a new marketing and business plan for the cardboard recycling initiative
- Roll out the textile recycling service
- Increase customer base for the existing plastic, glass and can recycling scheme

Initial tasks involved:

- Investigating current developments within the cardboard recycling industry
- Investigating solid fuel supply and market
- Liaising with partner agencies involved in textile project
- Creating promotional material and attending local shows to promote company

Results to date include:

- Presentation of report and forecasts to Board of Directors on Cardboard Recycling scheme projecting the diversion of 600 tonnes of waste cardboard from landfill
- Completion of feasibility study
- Ordering of 20 textile banks projecting the recycling of 120 tonnes of material annually
- Increase of 11% in customer base for recycling scheme over duration of placement

Hebrides Alpha have succeeded in increasing their recycling customer base by 11% as a result of the Donald's placement with them, and a new promotional campaign initiated using material designed and created by Donald.

Hillcrest Housing Association

Air Source Heat Pumps

Andrew Woof was placed at Hillcrest Housing Association to investigate the energy efficiency and cost effectiveness of 5 heat pumps that Hillcrest recently installed. The main placement objectives were to examine:

- Whether the manufacturer's claims on running costs can be justified
- If heat pump running costs can be affordable to our low income client group
- The internal temperatures that can be achieved with heat pumps
- What other housing providers were doing in terms of renewables
- The running cost comparisons with alternative heating systems
- If it is feasible to carry on with the installation programme
- How to take the energy monitors trial forward through the monitoring of existing units, comparing other monitors on the market and offering energy monitors to other tenants via the newsletter

Using a sound methodology, the project was divided into three key components; investigating the current heat pump program; monitoring of the existing heat pumps and reviewing the renewable technology utilised by other housing providers. This allowed him to come to the two following main conclusions:

- Hillcrest should install a further 5 external air source heat pumps at a carbon saving of 9.25 tonnes and a cost saving of £3070 per annum.
- Hillcrest should install 15 additional energy monitors at a carbon saving of 0.27 tonnes of carbon and a cost saving of £1000 per annum

HomeAid Caithness and Sutherland

Biodiesel Feasibility

James Miller was placed with HomeAid Caithness and Sutherland. The company wished to run one of their two delivery vans on 100% biodiesel, and eventually to running the warehouse heating system on biodiesel as well. James started by researching biodiesel. He found for example that blends of around 5-7% biodiesel (5-7% biodiesel, 95-93% petroleum diesel) would still be covered by the company's vehicle warranty and would work as these blends are currently being sold in Britain and meet European and British standards for road fuel." He then investigated suitable biodiesel processors, chemical, storage and PPE (personal protective equipment) suppliers, and also located and spoke to suitable local companies that would be able to supply HomeAid with the waste cooking oil that is required to produce the biodiesel. James found HomeAid could reduce their running costs, become less dependant on outside funding, and could lower their emissions caused by the delivery vans through use of biodiesel. He also concluded they had the added benefit of creating new links with local businesses to promote the company and hopefully in turn help a greater cross-section of people.

Instant Neighbour

Green Marketing

Instant Neighbour is a charity which aims to tackle poverty in the North East of Scotland by providing support to people on low incomes. Its core service is the collection of used household furniture and electrical goods and the redistribution of these to people on low incomes. This also prevents these items from going to landfill as waste. In addition, the organisation runs a variety of profit-making initiatives which are intended to provide financial support for the delivery of the core service. Alain Traill was given the task of producing a marketing plan to accompany the organisation's new five-year development plan. After carrying-out detailed research Alain was able to identify and provide a comprehensive profile of Instant Neighbour's target markets. This enabled him to produce a marketing plan which will allow the organisation to target these markets more effectively. Successful implementation of the plan will result in a 90% increase in turnover from profit-making services as well as a 100% increase in the tonnage of waste diverted from landfill inside five years.

Keenan Recycling

Environmental Management System

Kathryn Adams was placed with Keenan Recycling. The company initially recycled solely Green Waste but have now expanded by building a new in-vessel composting system which now allows them to recycle food waste. Kathryn's placement involved analysis of current operations and develop an environmental management system to conform with ISO14001 standards. She set up, and initiated implementation of, an appropriate Environmental Management System which will enable the company to continue their progress towards ISO 14001 certification.

Knowtop Community Farm

Environmental Policy Development

Victoria Longhurst was placed with Knowtop Community Farm in West Dunbartonshire. She worked to establish a system for recycling and raise awareness of environmental issues in the local community. Through surveys, workshops and practical steps such as introducing a wormery, Victoria improved on-site recycling and demonstrating the ease of it to staff and visitors.

Lothian & Borders Fire and Rescue Service

Environmental Policy Development

Jacquelyn Kerr was placed with Lothian and Borders Fire and Rescue Service (LBFRS) to improve their environmental management. LBFRS wished to reduce its carbon footprint and become more environmentally sustainable.

She developed a policy and practice statement and many of the changes suggested in the statement and action plan will have economical savings as soon as they have been implemented. When the meter was checked for example, it was found that the station had been overcharged in that month. The fire service was refunded £6000.

She also made suggestions that LBFRS could include renewable energy systems and environmentally sustainable infrastructure and purchasing efficient electrical appliances at some of their sites.

Jacquelyn also recommended that an environmental steering group be formed to ensure that the environmental policy is implemented, monitored and adequately reviewed.

LBFRS have made savings as a result of Jacquelyn's placement and have been able to move on significantly with their environmental management policy.

Macsweens of Edinburgh

Rainwater Harvesting

Callum Kerr was placed with Macsweens of Edinburgh to investigate the possibility of rainwater harvesting at their site in Midlothian.

Callum began by calculating the potential water that could be collected. He then calculated the amount of water required for toilets and an estimate for the plastic washing. He identified the most suitable location for a water tank and the optimum system for collecting rainwater from the roof.

Callum also trialled various ways of washing plastic packaging to find most economical and effective method in terms of water use and time. This involved consultation with SEPA, Scottish Water and recycling companies over issues of contaminated plastic.

He discussed the specification for a rainwater harvesting system with various suppliers in order to produce a range of quotes for potential solutions.

Callum then consulted with potential contractors over the amount of work (and costs) required to install the system and plastic washing facility.

As a result of Callum's placement, Macsweens now have a full report into the feasibility of installing a rainwater harvesting system and the costs and benefits associated with this.

Macsweens of Edinburgh

Environmental Management

Rowena Mortimer was placed at Macsweens of Edinburgh to investigate and improve their environmental management and look at ways they could make environmental improvements and savings.

She started by collecting and collating all of the data on energy usage, water consumption and effluent, waste production, recycling activities and emissions. She then assembled the data and narrative for the proposals for use in environmental business awards.

She was also tasked with further advancing the environmental management system currently in place, and working towards a formalised process Macsweens could put in place in the future.

Finally she completed a feasibility study into a biomass burner system to replace the current gas system for the site in Midlothian.

As a result of Rowena's placement, areas of the business which need further improvement have been highlighted. Macsweens have also made significant progress towards implementing an environmental management system and also have a feasibility study on biomass.

Malcolm Allan

Energy and Packaging Development

Paul Johnson, a Chemical Engineering student from Glenrothes, was placed at Malcolm Allan to investigate and set recommendations to reduce energy usage and improve waste management at the site.

A waste baler was installed; this resulted in a reduction in waste disposal costs of £8710/yr and a rebate for baled cardboard from a recycling plant.

After monitoring the site's energy, Paul developed an energy awareness campaign, resulting in annual energy reduction of 178256 kWh, a saving of £16150 and a reduction of the site's carbon footprint by 95.72 tonnes of CO₂.

22.4 tonnes of waste were diverted from landfill by improving recycling procedures and arranging for the installation of hand-dryers in staff toilets.

Paul won the Edinburgh and Lothians Regional Award and then went on to win the prize of 'Scotland's Most Enterprising Green Student' at the National Awards held in Edinburgh Zoo. He was presented his certificate and prize by the First Minister Alex Salmond.

Moray Recycling Action Group

Sustainability

Finola McFarlane was placed at Moray Recycling Action Group (MRAG) in Buckie, Moray. MRAG wished to promote sustainability in the community, and help to increase awareness of the importance of sustainable living for staff customers and the wider community.

Finola helped create a display area, including information boards and demonstration examples as well as a "Dummies Guide to Sustainability". This would form the basis of an ongoing project at the MRAG and would be part of a permanent exhibition showcasing the need to become sustainable in order to tackle climate change.

Finola also helped fashion a solar hot water pre heater panel to replace the existing electric hot water tap in the staff room to show, on a small scale, how renewables can work. As well as this, some simple changes were made, for example, reducing waste water and using an Owl monitor.

The main part of the project was to design an eco home. This design was then to be used by MRAG to produce a large scale model. This would sit alongside the information boards and would demonstrate ways in which to increase energy efficiency in the home. She based her design on a typical Buckie home, making it energy efficient through retro-fitting.

As a result of Finola's placement, MRAG now have an invaluable resource for staff and customers and more importantly, the wider community to promote sustainable living.

Nairn's Oatcakes

Environmental Management

Samantha Jackson was placed with Nairn's Oatcakes in Edinburgh to assist in the review of their Carbon Trust Report conducted in 2007. The Carbon Trust recommendations were reviewed and researched in order to give an understanding of their appropriateness. Outside contractors were invited into the company to give an expert opinion on implementing energy efficient measures for the three biggest energy users on site – air compressors, motors and lighting. Through retrofitting energy saving devices to these three utilities Nairn's could save up to £8,000 annually in energy costs.

A monitoring database was also set up to observe patterns of utility consumption over time. After conducting walk rounds and from speaking with staff it was found that many of the machines were left on 24 hours a day within both the factory and the offices. Samantha held an 'Environmental Week' in which a switch off campaign was launched to raise staff awareness of unnecessary energy consumption. An opportunity for future work was also realised through creating new documentation including a register of environmental aspects and legislation. It is expected that this work carried out will be invaluable to future progress in ISO 14001 accreditation.

NISP

Green Marketing

John Harper was placed at NISP in Edinburgh to study the issues affecting the viability of food waste collections in the commercial sector, so that operators might be helped to expand in the future and hence reduce carbon emissions, cut waste to landfill and provide useful green products such as fertiliser and biogas.

In order to get a general idea of how the service works he spoke with representatives of CORE and TEG (a company that operates several in-vessel composting plants and are running a similar food waste collection service in the north of England).

He collected data from food waste producing businesses in Edinburgh, Lothians and Fife, who are recycling their food waste with CORE.

As a result of John's placement, NISP are now able to do more work in the area of food waste and assist CORE and other companies in expanding their operations. This will result in a reduction in the quantity of food waste that is being sent to landfill, with the associated benefits that will bring.

North East Preservation Trust

Website Development

Callum Hopkins was placed at North East Scotland Preservation Trust to create a website that would advertise what the Trust did, past and future projects the Trust has taken on and advertise materials and the presence of the newly acquired Materials store in Mintlaw. The main placement objectives were to:

- Build a successfully website that can be maintained by Trust employees
- Advertise the Trust, it's projects and the store
- Attract Visitors so sales of recycled materials will be increased

His first task was to design possible website designs for the look and navigation for the website. A selection of designs was created and the Trust made a decision on which they felt was the strongest. Once a choice was made, he started to create the website in a way that it would allow it to be used through the internet. He also helped the North East Scotland Preservation Trust purchase a solar powered web server to house the website on.

Depending on the success of the website and the encouragement and advertisement to purchasing recycled building materials it brings, the Trust hopes to divert 250+ tonnes in the next 3 years from landfill to the materials Store and back into Building sites. All materials purchased from the store and used on future buildings sites emit 0% carbon and therefore in the long run of diverting zero carbon emission materials to building sites, will benefit the environment dramatically.

North East Scotland Preservation Trust have in obtaining a website that is live on the internet for internet users to visit and learnt more about the Trust and view materials that are for sale to contractors for future buildings.

On Site Generation

Renewables Study

Hertha Taverner-Wood was placed with On Site Generation. Her placement was divided into two projects. The first looked at retrofitting existing buildings with renewable energy technologies to reduce energy consumption carbon emissions. The second study was completed for the Scottish Maritime Museum in Irvine.

She started by undertaking a study to assess the feasibility of installing renewables in order to generate electricity to improve a village hall's energy independence. An 11kW wind turbine was recommended as the most suitable option, with the possibility of combining this with solar photovoltaics or battery back-up.

For the second part of the placement for the Scottish Maritime Museum she looked at a listed historic building, originally built as an engine shed for boats, which has a roof composed of glass. As a result of her placement the roof will be replaced, which provides an opportunity to install semi-transparent photovoltaic glazing. This involves photovoltaic cells laminated in glass, which can be installed in place of standard glazing. The system recommended would be 60kWp and provide around 50,000kWh every year.

Hertha identified total savings of 540,000 kWh/yr and 35 tonnes CO₂ for On Site Generation's projects.

Raytheon

Greenhouse Gas Emission (SO14064)

Kirsty McGough was placed at Raytheon Systems Limited (RSL) in Glenrothes. Already certified to ISO14001, Raytheon now wished to update and improve their current carbon footprint in order to comply with the requirements of the Carbon Reduction Commitment (CRC) and wished to use the carbon footprint to aid data collection and set carbon reduction targets.

Kirsty developed the carbon footprint the company had, to meet the requirements of the standard ISO 14064 to enable verification. She also helped record carbon emissions using different data sources (e.g. DEFRA and IPCC) and made an easy-to-use system to record the different data sets.

She then completed actions highlighted in the gap analysis completed for ISO 14064 verification as well as updating carbon footprint for the company's two main sites in a format that could be used for CRC and the Carbon Trust Standard.

Rosshire Waste Action Network

IT Equipment Recycling Scheme

Ewan Hemmingway was placed at Rosshire Waste Action Network (RoWAN) to update and improve their website, increase exposure of the company and train staff on the use of the new site.

Ewan started by researching the technologies involved and experimented with various frameworks to find the most suitable one. He then took time to code and design the website, migrate content across and then spend a week trialling and testing it for use.

In the second half of his placement he looked at Search Engine Optimisation – to increase the ability and likelihood of finding RoWAN when a member of the public was to search for it.

In the last few weeks of his placement he concentrated on marketing to ensure the website was the best it could be. He also spent time developing staff training packages and delivering it to the staff at RoWAN.

Ewan also added a feature to automatically create PDF versions of every page with users being encouraged to save these rather than print. If people did need to print, the default was printer friendly versions of each page also provided should it be necessary to print them.

The new website that Ewan has developed is expected to create a much greater awareness of RoWAN and their environmental work, which should lead to environmental benefits such as reduced waste to landfill and reduced use of resources.

Scottish Government

Cycle to Work Scheme

Connie Bennett is a History and Politics student at the University of Edinburgh. She was placed with the Scottish Government to work on creating a Cycle Friendly Employer Award to coincide with the Government's Travel Plan, published in December 2007.

Through staff surveys and on-site research, Connie was able to make recommendations on how best to conduct the award as well as how best to encourage cycling throughout government offices. Connie's project will improve facilities for cyclists, reduce emissions from travel necessary for Scottish Government business, improve sustainability in the prevailing economic climate and help deal with the threat of climate change.

Connie presented the outcomes of her placement to the panel of judges at the Regional Awards Ceremony held in Edinburgh; she won her heat and then went on to present at the National Awards Ceremony held the next month where First Minister Alex Salmond gave the key note speech.

Scottish Government

Information Management

As a forerunner to participation in the Carbon Trust's Carbon Management Programme the Government needed to establish a baseline in respect of waste production, energy & water consumption and business travel for the remaining buildings. Prior to the placement a baseline excel tool (developed by the Carbon Trust) was established and contacts made within the organisations structure in order for the required data to be collected. As the Scottish Government attempts to reduce its own carbon emissions by 80% by 2050, its participation in this phase of the Carbon Management Programme will highlight the government's commitment to sustainability and be an initial step towards meeting this ambitious target.

Verity Flett was placed at the Scottish Government to liaise with various internal and external contacts in order to collect the required data that would complete the baseline tool. The main project objectives were as follows:

- Collate the available data for approximately 60 locations across Scotland
- Identify the gaps in sources of data held for each site
- Provide appropriate estimated values where actual data was not available.

She was first required to contact key members of staff and consolidate existing data into appropriate figures to be input into the baseline. By the end of the project the data collected included £2,114,385 costs from energy, waste, water and business travel. She also calculated 68.2 tonnes CO₂ were used.

Senergy

Carbon Reduction

Ben Christman was placed at Senergy's offices in Banchory, Aberdeenshire. The main placement objectives were to:

- Calculate the carbon footprint for the period June 2008 to May 2009
- Increase staff awareness of environmental issues
- Help motivate employees to reduce the environmental impact of the office by 10%
- Review Green Travel Initiative (sustainable travel incentive scheme)

Ben's first task was to calculate the carbon footprint for the past year. This required the collection of a vast amount of data on staff commuting habits, business travel, consumption of electricity, water, gas, etc. This was made into a large poster to increase staff awareness of the effect of their office activities. He canvassed employee opinions about several suggestions to increase environmental awareness, reduce the environmental impact of the office and review the GTISCHEME. Using this feedback and his own research he made a list of recommendations to Senergy to achieve the aims of his placement. These included the use of a giant car sharing map to co-ordinate staff commutes, subsidisation of bus travel and a reduction in the use of domestic air travel for business purposes.

Servite Housing Association

Sustainability

Douglas Ndambuki was placed with Servite Housing Association in Dundee to assess their existing Carbon Footprint and look at ways to reduce energy use.

As well as this he also made an assessment of fuel poverty status in schemes and made recommendations for their reduction.

Douglas also reviewed the association's new build standards and suggested ways to strengthen sustainability features as well as investigating staff commuting patterns and make recommendations to increase car sharing and public transport use.

Douglas produced a sustainability policy for Servite Housing Association with associated action plans.

As Servite Housing Association embarks on the challenge of meeting its sustainability targets (as set out in their 2009-2014 business plan), Douglas's placement will help assess the company's current status, providing the much needed baseline figures to work with. It will also signpost the avenues and opportunities available for the organisation to meet its goals.

Tayside Contracts

Environmental Management System

Rebecca Taylor is an Environmental Geography student from the University of Stirling. She was placed with Tayside Contracts (a commercially based local authority contracting organisation) to revise and develop the company's environmental management system.

Rebecca's placement involved reviewing and updating environmental policies, procedures and documents to accommodate recycling centres and the processes carried out at them. She carried out an environmental aspect and impacts assessment and produced environmental review reports detailing the options for improvements.

As a result of the placement, Tayside contracts will reduce the amount of waste and pollution produced and subsequently lowers their environmental footprint. The environmental management system ISO 14001 is international recognised and has the potential to attract more customers through raising the company profile and could increase competitiveness in the industry. There are other benefits to Rebecca's placement with Tayside Contracts including potential cost savings through improved environmental management.

Rebecca won the Tayside Regional Awards Ceremony, held in Dundee in August 2009 and went on to present at the National Awards Ceremony in Edinburgh Zoo.

Total Waste Management Alliance

Carbon Footprint

Tracey Elrick was placed at TWMA to investigate the comparative carbon footprint of a portable TCC-Rotomill treating drill cuttings at source on an offshore platform versus that of a similar skip and ship to shore operation whereby drill cuttings are transported to the company's Peterhead treatment facility. Further to this Tracey was also required to develop a 'Carbon Foot-printing Calculator'.

Tracey's results reveal the carbon footprint of a skip and ship operation to be almost 2 times that of a portable unit treating cuttings at source on an offshore platform. Furthermore, and based on the lower annual estimate of drill cuttings produced on the UK Continental Shelf, additional benefits will include the diversion of 28,000 tonnes of waste powder from landfill; 6000m³ of waste oil re-used in the drilling system and 6000m³ of water would require no further wastewater treatment. This project has also increased the company's awareness of the CO²e emissions associated with each process within each method of treatment and highlights where future savings may be made.

In addition to this, Tracey's carbon foot-printing calculator is now an operational tool which will greatly assist the TWMA and its clients in identifying the carbon footprint comparison for any well within the North Sea.

Tracey won the Regional Awards Ceremony for the North East for her enterprising ideas and successful placement with TWMA.

University of Dundee

Waste Minimisation

Craig Robb was placed at the University of Dundee (UOD) to conduct a waste audit of the City Campus general waste stream. The main placement objectives were as follows:

- A comprehensive waste audit of the main Dundee Campus and recommendations for reducing the waste going to landfill
- To increase recycling levels and staff/student awareness of this

A comprehensive report detailing the results of the audit and the recommendations made.

Each building within the City Campus was given a date on which an individual audit would take place. A morning survey was conducted to identify the number and location of general waste and paper recycling bins. This was then followed up by an afternoon audit where general waste was segregated and weighed according to type; Recyclable, Compostable and Non Recyclable.

Craig identified the following savings for the UOD including £22,814 in waste charge through landfill diversion and 145,600m³ in greenhouse gas emissions.

From the audit results, an immediate increase in paper recycling was recommended, which could cut nearly 30% off waste collection charges. A plastic recycling was also a major waste produced in quantity to be recycled.