



Birmingham Environmental Partnership

Birmingham's Carbon Savings 2008-09



Contents

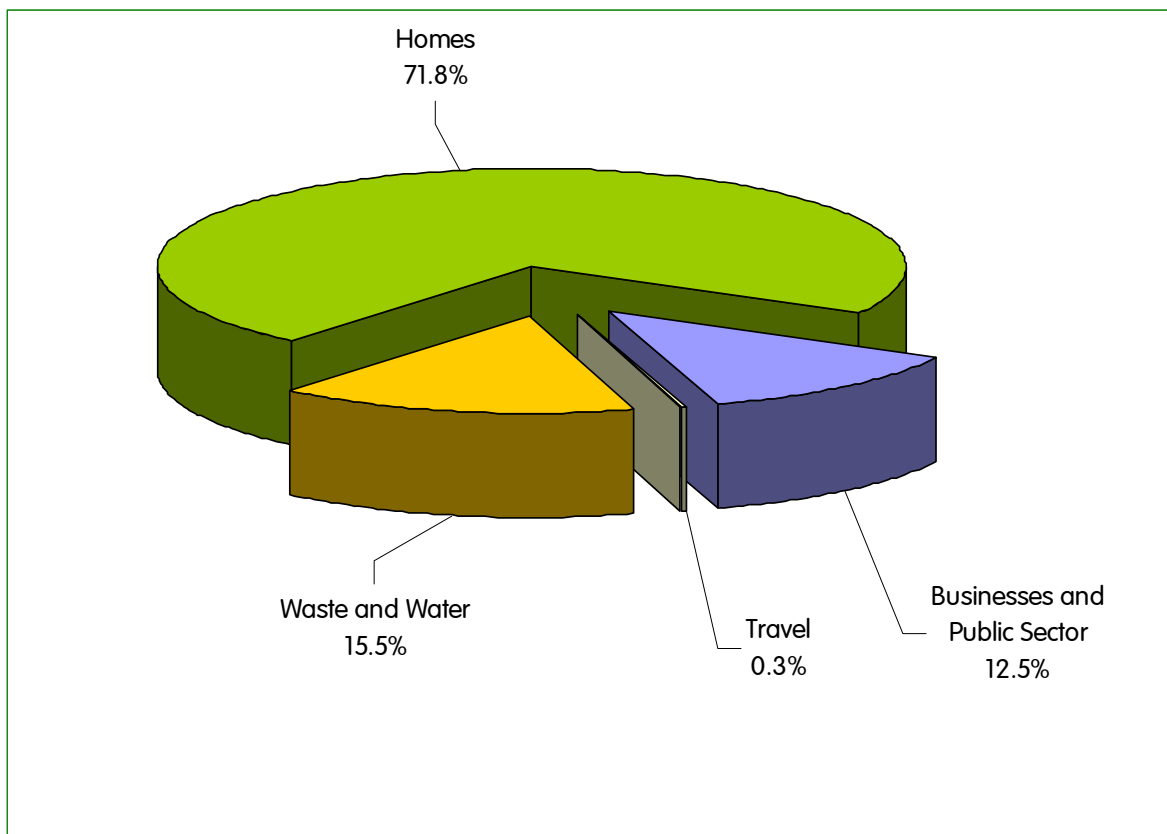
Executive Summary	Page 3
Introduction	Page 4
Findings	Page 5
The Domestic Sector	Page 6
Case Study- Greening Old Homes	Page 7
Case Study- Family Housing Association	Page 8
The Non-domestic Sector	Page 9
Case Study- Aston University Student Switch Off	Page 10
Case Study- Cotteridge Quaker Meeting	Page 11
Case Study- Enpure Ltd	Page 13
Travel	Page 15
Case Study- West Midlands Police vehicle fleet	Page 16
Waste and Water	Page 17
Case Study- Brindleyplace	Page 18
Contact Details	Page 20



Executive Summary

- Birmingham’s target for April 2008 to March 2009 was to save 100,000 tonnes of CO₂. This was agreed between Birmingham and the Government, in the Local Area Agreement, which is a plan to tackle the cross-cutting issue facing the city.
- A research exercise undertaken in April and May 2009 accounted for a total saving of **103,039 tonnes**
- Difficulties in collating information resulted in a likely undercount of CO₂ savings from the non-domestic and transport sectors. Organisations that have not been included here are invited to provide data on their carbon savings (please see contact details at the end of this report).

Figure 1 CO₂ savings for 2008-09 by sector



Sector	Tonnes CO ₂ Saved
Domestic	74,000
Non-Domestic	12,848
Travel	271
Waste and Water	15,920
Total	103,039

Introduction

Birmingham's Target

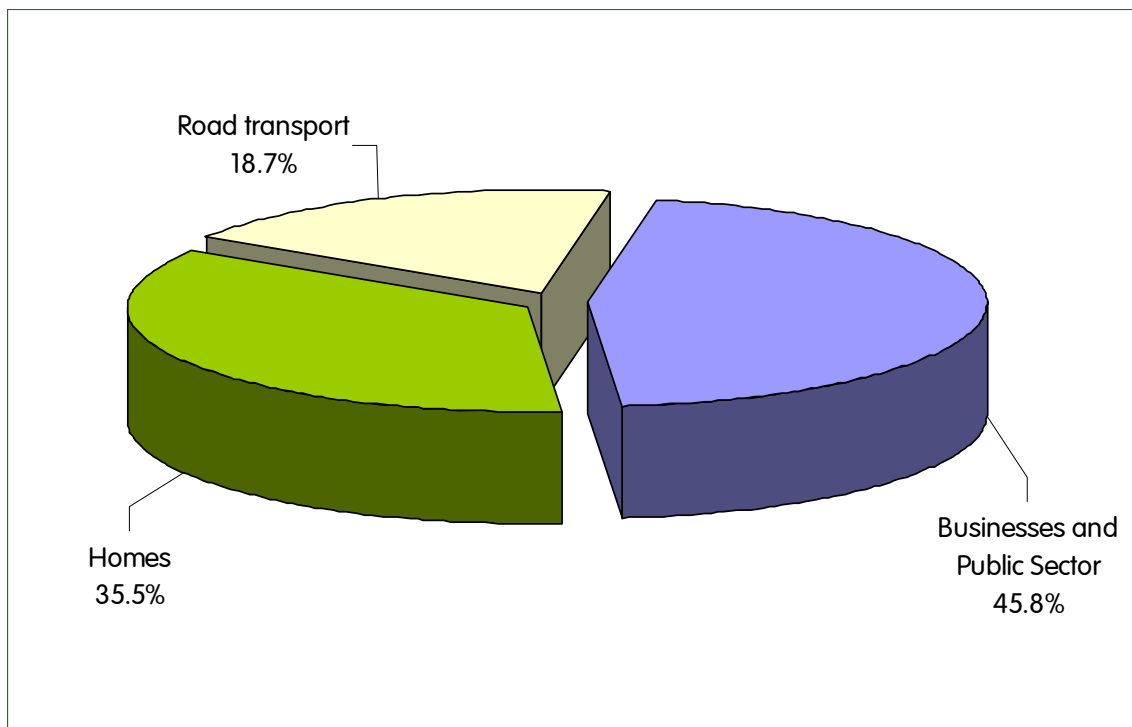
Birmingham has a target to reduce CO₂ emissions by 60% by 2026. This is agreed between Birmingham and the Government in the Sustainable Community Strategy, which sets out the local issues that the city faces.

In order to make progress towards achieving this, the following local target was set:

2008-09 target to save 100,000 tonnes of CO₂

Birmingham's Emissions by Sector

Figure 2 Birmingham's CO₂ emissions by sector- 2006



DEFRA, Emissions of CO₂ for Local Authority Areas, September 2008

Sector	Emissions (Tonnes CO ₂)
Non-domestic	2,951,000
Domestic	2,286,000
Travel (road)	1,202,000
Total	6,056,000

The largest proportion of Birmingham's emissions comes from businesses and the public sector. Birmingham has over 40,000 businesses, of which the vast majority are small and medium sized businesses, which are particularly difficult to tackle in terms of measuring and reducing CO₂ emissions.



Findings

Table 1 Reported and estimated savings for 2008-09

Sector	CO ₂ Saving 2008-09 (tonnes)	Source of Data
Domestic	74,000	Survey undertaken for the Home Energy Conservation Act
Non-Domestic	12,848	<p>Private Birmingham Mailbox Management Ltd Enpure Ltd Boots Plc Powerperfector (installations in Birmingham) Calthorpe Estates</p> <p>Public Government Office for the West Midlands Birmingham City Council West Midlands Fire Service</p> <p>NHS Heartlands Hospital- including their combined heat and power scheme Heart of Birmingham PCT, Birmingham East and North PCT and South Birmingham PCT South Birmingham Community Health</p> <p>Educational Aston University Student Switch-Off University of Birmingham Birmingham City University</p> <p>Other Cotteridge Quaker Meeting House</p>
Travel	271	West Midlands Police Range of initiatives by Birmingham City Council Enpure Ltd
Waste & Water	15,920	Birmingham City Council figures on total waste collected/ recycled/ incinerated Brindleyplace waste management scheme

71.8% of CO₂ savings that are accounted for come from homes, compared with the 35.5% of emissions that are produced by this sector according to the most recent figures.

Savings from businesses, public buildings and travel are likely to have been much higher than the figure recorded here. The small totals recorded demonstrate the challenge of measuring emissions in these areas.



Homes

Total domestic saving: 74,000 tonnes

The following activities (amongst others) in 2008-09 will have contributed towards CO₂ savings in homes:

- Birmingham Cutting CO₂ pledge website
- Energy Saving Trust telephone advice centre, providing impartial advice to residents (0800 012 512)
- Friends of the Earth; Faith and Climate Change Project which raises awareness of the need to save energy in all areas of life.
- Green Doctors; a pilot initiative in three areas of Birmingham, comprising proactive community-based advisors offering information and practical help to vulnerable households on energy and climate change matters. Delivered by Groundwork West Midlands.
- Social Housing Decent Homes Insulation Programme; management of insulation improvements to social sector properties. This was carried out by Birmingham City Council and local contractors.
- Northfield Energy Efficiency Partnership; an area based initiative working in partnership with the private sector to enhance energy efficiency across this ward of Birmingham.
- Lozells/Handsworth Eco Terrace Initiative: Eco refurbishment of 29 terraced dwellings within the inner city area to high standards of insulation, incorporating renewable measures. The homes are to be marketed for sale or made available for social renting. This is a partnership between Birmingham City Council's Housing Department, Family Housing Association, the Urban Living Pathfinder and local contractors.
- Supporting Worm Front Vulnerable Households: Managing a grant-aided system to assist private householders with their contribution towards Warm Front heating measures.



Case Studies

Greening Old Homes

Spreading the word about saving energy in the home

Balsall Heath resident, John Newson, has been reaping the benefits of the investments he has made over the last few years in making his 1884 home more energy efficient. This year John has dedicated time to sharing with others how they can similarly reduce energy usage in their homes, and hopes that the coming year will lead to more and more people reducing their energy usage.

Old homes, Super homes

John has become a member of the 'Old Home, Super Home' programme, administered by the National Energy Foundation and Sustainable Energy Academy, which promotes increasing the energy efficiency of existing housing stock by having a network of exemplar, lived in homes which are accessible to the public to inspire and educate. The latest open weekend for the house, in Balsall Heath, was May 16th – 17th 2009.



It is hoped that initiatives such as open homes will lead to more people across the city making greater savings over the coming year.



Family Housing Association

Installing solar panels and providing advice in the community

Following on from the successes of Family Housing Association's Summerfield eco village, the end of 2008 saw a new project begin in the Lozells area. The project focused around distributing energy saving light bulbs and information packs on 'green issues,' including recycling and water conservation, to 1500 homes; providing solar panels and efficient boilers to a selection of eligible homes; and funding a 'Green Doctor' to visit residents.

Providing energy saving advice in the home

Family Housing's Residents Engagement Officer spent time in the community with residents explaining the initiative, building trust and encouraging people to find out what measures they were eligible for, such as having solar panels installed for free or new, energy efficient boilers fitted.

The project was funded by housing market renewal organisation Urban Living and resulted in 26 houses being fitted with solar panels and the packs distributed. A 'Green Doctor' visited 60 homes from January to March 2009 and still visiting homes to provide energy saving advice around heating, insulation and water. The Cherry Tree Centre also hosts a weekly surgery and it is hoped that work can be extended into schools in the future.



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Carbon Savings

The amount of energy savings achieved will not be known until later in the year when residents receive their bills as the project ran until March 2009. Sheffield Hallam University has been commissioned to analyse the project and its impact on energy consumption. It is hoped that savings of up to 60% in gas consumption for water heating will be made due to the solar panels. These savings will be complimented by the savings made due to residents using their homes more efficiently, following advice from the information packs and consultations with the Green Doctor.





Businesses and Public Sector Buildings

Total non-domestic saving: 12,848 tonnes

Source of Data: Results were collected in an email and telephone survey, as discussed below. See savings by individual organisations in table below.

Table 2 Savings by organisation

Name of Organisation	CO2 Saving 2008-09
Private	
Birmingham Mailbox Management Ltd	27.8 tonnes
Enpure Ltd <i>NB Enpure saved a further 20.5 tonnes which are recorded under 'Travel'</i>	70 tonnes
Boots plc <i>NB between 2007 and 2008, Boots saved a further 10 tonnes which are not included here.</i>	0.2 tonnes
Powerperfector (installations in Birmingham)	1,144 tonnes
Calthorpe Estates	40 tonnes
Public	
Government Office for the West Midlands	456 tonnes
West Midlands Fire Service	22 tonnes
Birmingham City Council	718 tonnes
University	
Aston University- Student Switch Off	110 tonnes
University of Birmingham	868 tonnes
Birmingham City University	463.4 tonnes
NHS	
Birmingham East and North PC, Heart of Birmingham PCT, South Birmingham PCT	1,387 tonnes
Heartlands Hospital- Including the Combined Heat and Power system	7,100 tonnes
South Birmingham Community Health	427 tonnes
Other	
Cotteridge Quaker Meeting House	15.4 tonnes

NB This is only a representative sample and does not include all non-domestic organisations that have made savings.

Key
 Black- accurately calculated savings
 Amber- an informed estimate



Case Studies

Aston University- Student Switch-Off

Reducing energy usage in student halls of residence

Total Saving 2008-09: 110 tonnes

Aston University has over 2,000 students living in halls of residence on campus. In 2006-07, the university emitted 16,410 tonnes of CO₂ through electricity, gas and oil usage.



*Eco Power Ranger: Neil Jennings,
Student Switch-Off Coordinator*

Student Switch-Off

The Student Switch Off is a national energy-saving competition between halls of residence. Halls within each university compete against each other to reduce their energy consumption from their baseline year. Prizes are given out during the year to reward individuals for their efforts.

Educating peers to make easy changes

The campaign was launched at Aston University in October 2008. During Freshers' Week, representatives of the campaign were on campus to give out information and recruit students.

There are now nearly 300 students signed up as Eco Power Rangers, whose job is to encourage other students to take easy energy saving measures, such as turning equipment off standby, turning off lights, and putting lids on pans when cooking. In return, students can win prizes from sponsors including Ben&Jerry's ice cream.

Carbon savings

Between October 2008 and February 2009, Aston University halls of residence saw an 11.9% reduction in electricity usage. This equates to a saving of 110 tonnes of CO₂.



Cotteridge Quaker Meeting House

Creating a more sustainable Meeting House

Total Saving 2008-09: 15.4 tonnes



In 2004-05, the meeting house used 41,528kwh of electricity, mostly in its storage heaters; generating this electricity produced 20.7 tonnes of CO₂. The cost of the electricity was more than 10% of the meeting's income.

The meeting has been working to reduce its footprint since 2005. This case study will focus on actions in 2008-09.

A more efficient Meeting House

Air sourced heat pumps

When the conventional night storage heaters in the foyer and classrooms failed, the decision was taken to install three air sourced heat pumps. These are, on average, three times more efficient than direct electric heaters.

Air sourced heat pump
and dry lining-

Total saving: 7,167kg



The air sourced heat pump is installed



Insulating the walls

Dry lining of solid walls

The solid walls in the foyer and classrooms were lined with insulating board to reduce heat loss.

Replacing windows

Six larger windows in the foyer and three windows in the WCs were replaced with more efficient sealed argon units.

Total saving 2008-09: 8,205kg

Growing environmental awareness

Through monitoring their carbon footprint and investigating ways to reduce it, the meeting and its individuals have increased their awareness of climate change issues.

They have hosted a meeting of local churches on making buildings more energy efficient, and have spoken at several others. They have visited four other Quaker meetings to share their experiences.

The meeting has an EcoTeam, who measure their waste output and energy usage, discuss major environmental issues and agree to take two actions to address these issues. The meeting's website provides a lot of useful information on reducing your individual carbon footprint.



Enpure Ltd

Reducing emissions from head office building and staff travel

Total saving 2008-09: 98.5 tonnes

Winner of the C+ Carbon Positive Award for Birmingham at the Prince of Wales May Day Summit on Climate Change

Enpure is a process engineering business with approximately 300 staff, specialising in water, waste water and municipal solid waste, offering a range of services from design through to construction, to the environmental and industrial sectors.

Enpure's main customers are water companies, and they have committed to measure their carbon footprint in order to meet the requirements that will be placed on water companies by the Carbon Reduction Commitment from April 2010.

Less travel, greener travel

Enpure included a key performance indicator on their 2008/09 balanced scorecard for reduction of business travel CO₂ by 5% per year.

They worked with their leasing company to remove the larger and more inefficient vehicles from the list offered to employees, and replaced them with low CO₂ alternatives, including hybrid cars.



Enpure encourages car sharing and use of hybrid cars, participates in the Cycle to Work scheme and provides tips to employees on 'greener' driving.





Enpure have undertaken an Energy Saving Trust green-fleet review and are working to implement the recommendations made. One of these measures is to offer "greener" and defensive driving tips via the company intranet. The company encourages car-sharing, whenever feasible, for visits to sites and also runs an intranet car sharing portal for employees travelling to work. Enpure are signatories to the Cycle to Work scheme, whereby large reductions on the cost of bicycles are made available to employees who wish to cycle to work.

To lessen the actual amount of travel taking place (especially air travel to sites in the UK and Eire) they have adopted the WebEx system of remote conferencing which, allied to telephone and video conferencing at HQ, allows project reviews, financial reviews and design consultations to take place without any travel from head office to site.

Saving energy in head office

Almost all the computer monitors in the company have been replaced with very efficient TFT flat-screen displays. The redundant CRTs went to charity.

When the company moved to their new office in Quinton, they took the opportunity to replace the office printers with the very latest efficient and energy saving models. This has been backed up with a system whereby documents will only print when the sender presents their ID passcard. This has dramatically reduced the amount of printing that has gone to waste.

There is a recycling policy at head office which deals with paper and card, aluminium and steel cans, certain plastics, toner cartridges, batteries and waste electrical and electronic equipment.

An integrated approach across the whole company

An Environmental Improvement Group, consisting of one individual from each department, has been established. The group sits quarterly, and environmental issues from each department are raised and discussed. This facilitates the open sharing of ideas and ensures an integrated approach to emissions reduction across the company. The minutes of the EIG are reviewed by the board of directors and made available to employees via the company intranet.

Enpure have an Environmental Officer who owns and drives the carbon reduction policy, and whose work is fully integrated into the company management systems. Enpure are certified to ISO14001:2004.

Carbon savings for 2008-09

Enpure House: 70 tonnes of CO₂
Travel: 28.5 tonnes of CO₂ (company car fleet)

NB this figure has been included in the total saving for Travel rather than business and public sector buildings



Travel

Total saving from travel: 271 tonnes

Source of data:

- West Midlands Police shift from petrol to diesel vehicles: 250.3 tonnes
- Birmingham High Occupancy Vehicle Lane trial: 0.2 tonnes
- Enpure Ltd 20.5 tonnes

Birmingham City Council has been responsible for the following schemes over the past year, which are likely to have led to savings in CO₂ emissions:

- Highway infrastructure refresh e.g. lower carbon options for street lighting and traffic lights
- Stratford Road Red Route to allow free flow of traffic
- School Travel Plans
- Company TravelWise travel plans

TravelWise is a national scheme that aims to promote sustainable transport options. Birmingham City Council has a small team that runs the TravelWise campaign for the city's businesses, schools and community groups. However, the team does not record CO₂ emissions saved by participating organisations.



Case Study

West Midlands Police Vehicle Fleet

Reducing emissions by switching to diesel vehicles

Total Saving 2008-09: 250.3 tonnes

The West Midlands Police as a force has operated 1,806 vehicles over the last year, with nine of the force's twenty one geographical units (around 774 vehicles) falling within Birmingham. Fleet managers in the force became aware that there were opportunities to achieve emissions reductions targets by switching to diesel vehicles.

Benefits of diesel

Significant reductions in CO₂ were made simply by choosing the right vehicle. Improvements in diesel engines have led to more diesel vehicles being fit for purpose within the force's fleet. In some cases, mpg has been doubled by switching to diesel.



Carbon savings

The past year has seen an increase in the proportion of diesel vehicles from 73% take up where a diesel option is available in 07/ 08, to 85% in 08/09. This has led to an 11% reduction in CO₂ emissions from vehicles in Birmingham, from 2309.2 tonnes to 2058.8 tonnes.

The average emissions per car have been reduced to 148 g/ km (grams emitted per kilometre) from the previous year's average of 166g/ km. This is ahead of the Government's target of 150 – 160g/ km within two years.

Looking to the future

It is hoped that the next generation of electric cars will hold enough charge to be practical for use within the Police fleet and the force's acquisition policy includes a strong emphasis on environmental impact. Trials of low CO₂ vehicles are taking place and a class of smaller vehicles being considered.





Waste and Water

Waste

Total saving from waste: 15,149 tonnes

Source of data:

- Birmingham City Council total waste collected/ recycled/ incinerated and land-filled, 07/08 and 08/09 data: 15,117 tonnes
- Brindleyplace waste management scheme: 32 tonnes (see case study)

Water

Total Saving: 771 tonnes

Source of data: Severn Trent Water total supply to Birmingham 07/08 and 08/09 data

The considerable CO₂ saving for waste is a result of an increase in the amount of waste recycled, and a decrease in the amount of waste produced, in 08/09. The overwhelming majority of CO₂ savings included in this figure come from the domestic sector which accounts for only **15%** of the total waste that Birmingham produces. The Brindleyplace case study (see below) illustrates the potential within the non-domestic sector to reduce CO₂ emissions through reducing waste and improving recycling rates.

A 650 million litre reduction in water usage in Birmingham from 07/08 to 08/09 resulted in a saving of 771 tonnes of CO₂. This reduction will have come from savings in both the domestic and non-domestic sector, as well as improvements to Severn Trent's water infrastructure.



Case Study

Brindleyplace

Improving and expanding waste management and recycling services

By providing a joined-up and flexible recycling service, the Brindleyplace management team has made it easy for tenants to recycle a variety of materials. Collections can be made from individual premises, and materials are removed from the site in large volumes to be recycled, saving CO₂ and money at the same time.

Total Saving 2008-09: 32.0 tonnes

NB This figure is based on average expected carbon savings from the businesses that joined the scheme in 2008-09, and carbon saved from recycling of co-mingled materials (plastics, paper and tin cans) which was launched in 2008-09.

Highly Commended at the C+ Carbon Positive Award for Birmingham at the Prince of Wales May Day Summit on Climate Change

Brindleyplace is a mixed use development, comprising 11 buildings providing office space for 8,500 people. There are also 30 bars and restaurants.

Prior to 2004, waste management contracts in Brindleyplace were managed in a variety of ways, with collections taking place at various times of the day, seven days a week. When contracts came up for renewal in June 2004, all waste management services were reviewed.

Joined-up waste management leading to carbon savings

The in-house service team took on management of waste services for businesses wishing to participate.

Brindleyplace already had an onsite compactor, and it was identified that increased use of this would cut out the need for businesses to use conventional bin collection services on an individual basis.

Electric golf buggies with trailers were purchased as an economical and environmental way of transferring waste across the site to the compactor.





A cardboard baler was leased and tenants were asked to flatten cardboard so that it could be baled for recycling. Revenues from cardboard have steadily risen, with returns for 2008 totaling £4,491. The cost of sending these 133 tonnes to landfill would have been £7,847.

In September 2007, the recycling service was expanded to include non-confidential paper, cans, plastics, newspapers and toners. Tenants were given the option to use the communal bins or request scheduled collections from their offices. In 2008, 30 tonnes of plastics, paper and cans have been diverted from landfill. There are 100 glass bins, which are emptied twice a week. In 2008, 352 tonnes of glass was separated for recycling and reuse.

Tenant Environmental Awareness

The scheme has enabled smaller tenants to participate in recycling schemes that currently are not common in high street environments due to cost and space implications. This has resulted in the forging of cooperative working relationships, which have been capitalized on as other environmental initiatives have been explored. The scheme has continued to expand, with more tenants taking part every year.

Carbon savings for 2008-09

Total emissions saved 2008-09 through cardboard recycling, glass recycling and reduction of waste collection vehicles: 202.429 tonnes

Total number of units in the scheme at end of 2008-09: 49

Number of units that joined in 2008-09: 2

Therefore, average expected saving: 9.4 tonnes

Co-mingled recycling- launched in 2008-09 (plastics, paper and tin cans)

Tonnage recycled: 30 tonnes

Avoided emissions: 22.631 tonnes

The Veolia Environmental Services Greenhouse Gas Tracker was used to calculate emissions. Therefore transfer routes and destinations are based on this tool using facilities as close as possible to 2008 facilities used.

Assumptions:

- *Mileage is calculated on dedicated vehicles rather than the proportion that would be applied to Brindleyplace only if calculated emissions on a "milk run".*
- *Direction emissions are calculated based on vehicle type and mileage travelled.*
- *Avoided emissions are calculated taking account of carbon savings through reducing manufacturing in the future*
- *Landfill gas capture rate has been assumed at 50%*
- *Landfill calculation to be refined to include fuel and electricity used*



Contact Details

For more information, or if you would like to report your savings, please Contact Keith Budden, Birmingham Environmental Partnership Manager, on 0121 464 9169 or keith.budden@birmingham.gov.uk