

CLIMATE CHANGE ACTION PLAN FOR SUNDERLAND:

2008 TO 2022

**PHIL BARRETT
DIRECTOR OF DEVELOPMENT AND REGENERATION
SUNDERLAND CITY COUNCIL
PO BOX 102
CIVIC CENTRE
SUNDERLAND
SR2 7DN**

NOVEMBER 2008

1 CONTENTS

1	CONTENTS	2
2	FOREWORD.....	3
3	EXECUTIVE SUMMARY	4
4	INTRODUCTION	6
5	GREENHOUSE GAS EMISSIONS, 2001 TO 2006	10
6	GREENHOUSE GAS EMISSIONS, 2007 TO 2021.....	14
7	THE ACTION PLAN 2008 TO 2022	17
8	MANAGING THE PROCESS.....	23
9	APPENDICES.....	24

DRAFT

2 FOREWORD

- 2.1 To be inserted... (two submissions to be provided by the Leader and the NE Climate Change Champion, Jack White, 15, from Newbottle).

DRAFT

3 EXECUTIVE SUMMARY

Sunderland is aiming to become a clean, green city with a strong culture of sustainability, one of the five main aims within the Sunderland Strategy. Within this aim, the City has a specific commitment to reduce its greenhouse gas emissions. This commitment is endorsed further by Sunderland City Council and Sunderland Partnership being joint signatories to the Nottingham Declaration on Climate Change.

This Climate Change Action Plan is the framework through which Sunderland will work to reduce its carbon emissions, and is the first step towards meeting the UK government's longer term target of reducing greenhouse gas emissions by 80% come 2050. The Action Plan has targets to reduce the following two key greenhouse gases:

- Reducing carbon dioxide emissions from housing, public and commercial organisations and transports, by at least 26% between 1990 and 2022.
- Reducing methane emissions from the disposal of domestic waste, by at least 75% between 2001 and 2022.

To show how Sunderland can work towards meeting these targets, the Action Plan reports past trends in these greenhouse gas emissions, future trends under "business as usual" scenario, plus the impact of actions to reduce emissions. The key points are as follows:

- Currently Sunderland produces about 2,100,000 tonnes of greenhouse gas emissions each year: 31% from housing, 40% from public and commercial organisations, 20% from road transport, and 9% (as methane) from waste.
- Carbon emissions between 2001 and 2006 have risen and fallen during that time, but overall remain at 2001 levels. Methane emissions from domestic waste disposal have dropped substantially, due to increased recycling, and is the only sector to show reducing greenhouse gas emissions.
- Under a "business as usual" scenario, with no action plan, Sunderland's carbon emissions could increase by a further 9% between 2007 and 2022, from increases in housing, employment sites and transport.
- By 2022, actions reported here could reduce carbon emissions by:
 - 11.5% below 1990 levels, if all existing targets of city partners are achieved
 - 19.7% below 1990 levels, if new, ambitious initiatives are developed by city partners

- City targets on waste and recycling should reduce methane emissions by 90% by 2022
- Future revisions to the Action Plan in 2013 and 2018 must develop further projects to cut carbon emissions by another 7% at least if Sunderland is to meet its commitment of a 26% reduction by 2022.

Significant reductions in carbon emissions are expected from the following actions:

Housing

- A citywide home insulation programme, to improve insulation in over 50,000 homes in 15 years
- 5% of households per year replacing boilers with efficient condensing boilers.

Other carbon reductions will come from energy efficiency improvements in Gento properties, and requiring new homes to be built to the Code for Sustainable Homes standards.

Public and Commercial

- Encouraging all organisations to reduce carbon emissions by 20% in 15 years
- Incorporating local heat and power networks within regeneration schemes

Other carbon reductions will come from wind turbine developments supplying energy to local businesses, local heat and power networks within large, mixed use regeneration schemes (for example, Sunderland arc sites, Cherry Knowles Hospital site and housing development)

Transport

- Private car owners gradually replacing vehicles with more efficient models, as car manufacturers improve the fuel efficiency of new vehicles
- Introducing up to 10% biofuels in all road transport

Other carbon reductions will come from the development of workplace travel plans and running the “Smarter Choices” campaign, although their impact on carbon emission cannot yet be determined.

Waste.

- Landfill gas capture equipment at Houghton Quarry means that 75% of all future landfill emissions will be collected and combusted.
- Increasing domestic waste recycling rates to 45%,
- Creating new waste recovery facilities by 2015, to reduce the amount of waste going to landfill further.

These actions still require support and intervention to be successful. Some already have commitment and funding, but other represent new, ambitious opportunities to be developed further. This action plan will be reviewed and refreshed every 5 years (e.g. in 2013 and 2018), to provide detailed action plan for the subsequent 5 year period, and indicative actions for the following 10 years. In this way, a 15 year rolling action plan will always exist. In addition, annual progress reports will be produced to update actions, and carbon emission monitoring.

4 INTRODUCTION

Scientific consensus is greater than ever before that global warming is happening, and that the predominant cause of this warming is the production of greenhouse gases from human activities, mainly from burning fossil fuels, deforestation and cement production

Consequently, climate change is the greatest long-term threat currently facing our planet in recent times. All ecosystems, all populations, all habitats are expected to experience changing weather patterns, at a rate greater than any experienced in the last million years. This is why tackling climate change is the headline priority within the UK Government's strategy for sustainable development.

No individual, community or country across the world will be able to avoid the effects of climate change, as past emissions already cause global temperatures rise of 2°C by the end of this century. Communities have no choice but to adapt to this temperature rise, since this cannot be reversed.

To limit temperature rise any further, and avoid more catastrophic weather changes, it is estimated that humankind must reduce its production of greenhouse gases by 80% by 2050.

Action around the globe is taking place to reduce greenhouse gas emissions, and Sunderland's Climate Change Action Plan will provide the framework for Sunderland to make its contribution, by managing and reducing the City's greenhouse gas emissions over the coming decades.

Why we are developing an action plan

Sunderland is a city committed to tackling the causes and impacts of climate change. This commitment comes from the Sunderland Partnership and Sunderland City Council signing the **Nottingham Declaration on Climate Change** in November 2001.

The **Sunderland Strategy 2008 to 2025**, which is Sunderland's sustainable community strategy, has since adopted a target to reduce the city's carbon emission by at least 26% by 2025. This Action Plan is the framework that will guide how Sunderland reaches that goal.

The Action Plan will also demonstrate how Sunderland is aiming to support the **UK Climate Change Bill**, which has established legally binding carbon emission targets for the UK, the first country in the world to do so.

Carbon emissions from all local authority areas are now monitored by the UK Government, by National Indicator 186, and local authorities are required to report on their progress at reducing carbon emissions from their communities as a whole. For the Tyne and Wear City Region, NI186 is a target with the **Tyne and Wear City Region Multi Area Agreement**.

How this action plan supports other strategies

The Climate Change Action Plan does not stand on its own – it both relies on and supports many other citywide plans and strategies, the main ones being listed below, but with many more referenced in the action plan appendices.

The **Sunderland Strategy 2008 to 2025**. Examples of how the Climate Change Action Plan will support the achievement of the strategy's 5 themes are as follows:

- **Prosperous City**, by helping businesses reduce energy costs, remain competitive, and by stimulating new technologies, which support the attraction of inward investment.
- **Healthy City**, by reducing local pollution, to improve air quality for residents, and raising awareness of health impacts of climate change (heatwaves, flooding incidents)
- **Safe City**, by improving understanding of weather risks, responding to extreme weather events, and reducing impacts from flooding.
- **Learning City**, by providing opportunities to for young people and adults to learn about sustainable living to help them make their own lifestyle changes.
- **Attractive and Inclusive City**, by contributing to the City's green image and aspirations, as well as actually helping reduce consumption of energy, waste and transport impacts.

The **Local Development Framework** both provides the information on how the city's housing, employment and transport will locate and develop and so effect carbon emissions, as well as bringing forward policies to ensure new development is designed and built as sustainably as possible.

Sunderland's **Housing Strategy** sets out the aims and objectives to improve the quality, range and choice of housing in Sunderland, which includes objectives to improve the energy efficiency on new and existing homes.

The **Joint Waste Management Strategy**, prepared in partnership between Sunderland, Gateshead and South Tyneside, sets out plans for increased recycling and waste recovery, which will see a reduction in emissions coming from landfilled domestic waste.

The **Tyne and Wear Local Transport Plan** provides the basis for understanding how traffic is expected to grow over the next 15 years, and what measures will be put in place to manage this growth and cater for local and sub-regional traffic movement. A high priority of the plan is to enable people to access facilities by bus, cycle and on foot.

Developing the action plan

Development of the Climate Change Action Plan began in March 2007, with funding support of £35,000 from DEFRA's Climate Change Challenge Fund, Sunderland being the only local authority in the North East to win this funding.

A draft action plan was produced in July 2007, to consult on the main options for reducing greenhouse gas emissions in Sunderland, and a range of consultation and awareness raising events were held throughout 2007, to collect views, opinions and support on the draft action plan (summarised in the table below).

Event	Date	Details
Sunderland Energy Summit	March 2007	80 professional partners discussed options for carbon reduction in and around Sunderland, at Nissan Motors UK.
Consultation document	June 2007	A 3 month consultation was launched, using roving display stands, consultation documents, postcards and leaflets, and website.
"Balloon" Climate Change Campaign	June to September 2007	A billboard campaign ran, using balloon images, and supported with distribution of Carbon Card Pack, balloons, beer mats to schools and organisations.
Summer roadshow	Summer 2007	A consultation stand toured summer events (the Airshow, Kite Festival) featuring the NE Climate Dome
"Balloon" Photo Competition	June to September 2007	A web-based photo competition, compiled residents' pictures of their favourite place in Sunderland that might be affected by climate change.
Community Spirit Focus Groups	September 2007	3 community workshops held to discuss carbon reduction option with residents in each of the three conurbations (Sunderland, Washington, Coalfields)

Key findings of the consultation are as follows:

- The consultation received 44 responses, comprising both written responses and responses arising from residents participating in 3 area focus groups
- Agreement that the final action plan should aim to cut emissions by 26 – 32% compared to 1990 levels, consistent with the Climate Change Bill
- 100% support for the 8 key options was received, with a preference for energy efficiency measures first (home insulation, domestic boiler improvement, reducing business energy consumption)
- Regarding renewable energy, preferences were for wind energy, either located offshore or on brownfield sites, but not rural sites. Support existed for Energy-from-Waste facilities as long as plants were clean, and provided local benefit. (34 out of

the 37 responses that provided an opinion on Energy from Waste, supported the option),

All consultation activities and campaign details, including a detailed report of the consultation findings, can be seen on the Council's website at:

www.sunderland.gov.uk/climatechange

This final version of the climate change action plan has taken account of the responses to the consultation on the draft action plan and views expressed through the events held in 2007.

A Sustainability Appraisal has also been carried out on the Climate Change Action Plan, to ensure that its aims meet the broad sustainability objectives of the Sunderland Strategy – which is Sunderland's sustainable community strategy. This appraisal can also be obtained from the weblink above.

DRAFT

5 GREENHOUSE GAS EMISSIONS, 2001 TO 2006

The first step in developing a successful Climate Change Action Plan is to be able to measure how much greenhouse gas emissions are produced by activities in Sunderland.

A baseline has been developed which includes the most significant sources of greenhouse gas emissions arising from activities in Sunderland. This is split into two groups:

Carbon dioxide emissions from:

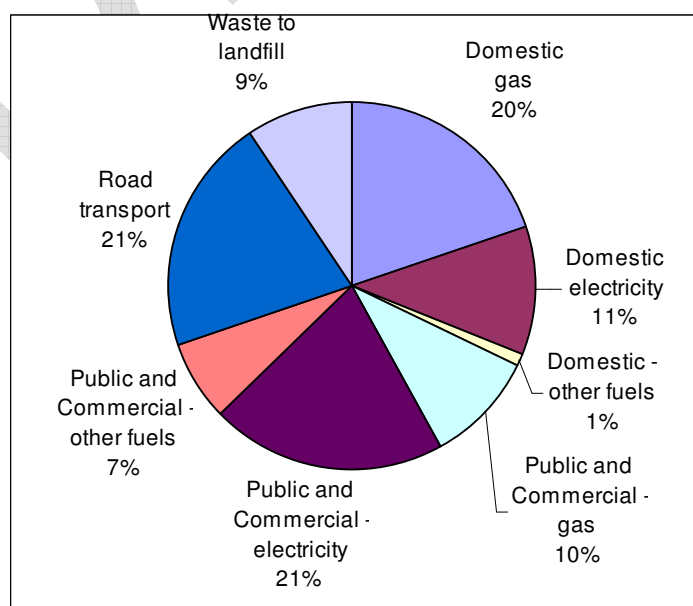
- Housing, caused by electricity consumption and gas combustion.
- Businesses and public organisations, caused by electricity and gas consumption, as well as other fuels (oil, coal)
- Traffic, arising from burning fossil fuels by vehicles using Sunderland's road network

Methane emissions from:

- Landfill, estimated from tonnes of domestic waste sent to landfill each year (to enable comparison, throughout this document, methane emissions from waste are reported as carbon dioxide equivalents, or "tonnes CO₂ eq.").

This baseline measures both direct emissions, caused by burning fossil fuels within Sunderland (e.g. transport fuels, natural gas) as well as indirect emissions caused by consumption of electricity in Sunderland that has been produced in power stations elsewhere. (See Appendix 1 for details of how the baseline is estimated, and what data is included).

Figure 1. Sectoral breakdown of greenhouse gas emissions from Sunderland (2001)



Summary

In the years measured, greenhouse gas emissions for Sunderland were estimated at approximately 2,100,000 tonnes of carbon dioxide. To put this into context, we would need to plant a new forest, 10 times the area of Sunderland, every 20 years to soak up this amount of greenhouse gas emissions

Carbon emissions. Emissions have fluctuated up and down between 2001 and 2006, but overall carbon emissions have remained static at around 1,930,000 tonnes. National Indicator 186 requires that carbon emissions be reported on a per person basis, and excluding emissions from waste. During 2001 and 2006, Sunderland's population declined by 4,000. On this per capita basis, Sunderland's emissions are actually increasing.

Methane emissions. Recent improvement in the amount of domestic waste recycled has greatly reduced the amount of waste going to landfill, and as a result, methane emissions from landfill have reduced by 17% between 2001 and 2006.

TOTALS (tonnes CO₂ eq)	2001	2002	2003	2004	2005	2006
CARBON EMISSIONS¹						
Domestic emissions	684,908	682,301	683,668	680,678	678,645	677,765
Public / Commercial emissions	800,577	788,046	807,356	810,378	840,739	814,609
Road transport emissions	443,653	455,172	451,977	453,618	448,845	440,180
Total Emissions	1,929,138	1,925,520	1,943,002	1,944,675	1,968,230	1,932,554
Change since 2001 (%)	0.0%	-0.2%	0.7%	0.8%	2.0%	0.2%
Population in Sunderland ²	284,600	283,500	282,500	281,900	281,900	280,600
NI186 – per capita carbon emissions, excluding waste (tonnes CO ₂ eq) ³	6.78	6.79	6.88	6.90	6.98	6.89
Change since 2001 (%)	0.0%	0.2%	1.5%	1.8%	3.0%	1.6%
METHANE EMISSIONS						
Landfilled waste ⁴	198,431	201,426	185,034	182,027	164,954	164,518
Change since 2001 (%)	0.0%	1.5%	-6.8%	-8.3%	-16.9%	-17.1%

¹Source: 2005-2006 data from DEFRA NI186 statistics, data from 2004 and before from BERR and DfT, and normalised to DEFRA data (details in Appendices)

²Source: Sunderland Mid Year Population estimates, Office of National Statistics

³Source: 2005-2006 data from DEFRA NI186 statistics, data from 2004 and before estimated from carbon emissions and mid year population estimates

⁴Source: Sunderland City Council waste and recycling tonnages, converted to methane emissions (see appendix 3 for details)

Housing.

Household energy consumption has remained constant overall, but figures show that gas consumption, for heating purposes, has decreased by 10,000 tonnes, which is likely to reflect improvements in home energy conservation measures, largely made through initiatives of Sunderland Housing Group and Sunderland City Council. However, this decrease is being offset by increasing electricity consumption, which is likely due to increasing use of electrical equipment in the home.

Also, while housing numbers have increased by approximately 1,900 over the period 2001 to 2006 (4,500 new houses, and 2,600 losses), the net effect of this is likely to be neutral. Analysis shows that increases in electricity consumption from extra housing are offset by savings in gas consumption, when old, inefficient housing is replaced with new, thermally efficient housing.

Public and Commercial

The greatest fluctuation has occurred in the business and public sector, with annual changes both increasing or decreasing by up to 30,000 tonnes. In the same period, 400,000 m² of new development has occurred (not including clearances), which is likely to account for some of the changes. However, emissions from this sector also reflect changes in business productivity, so the number of complicating factors mean that it is not possible to explain the trends with any certainty.

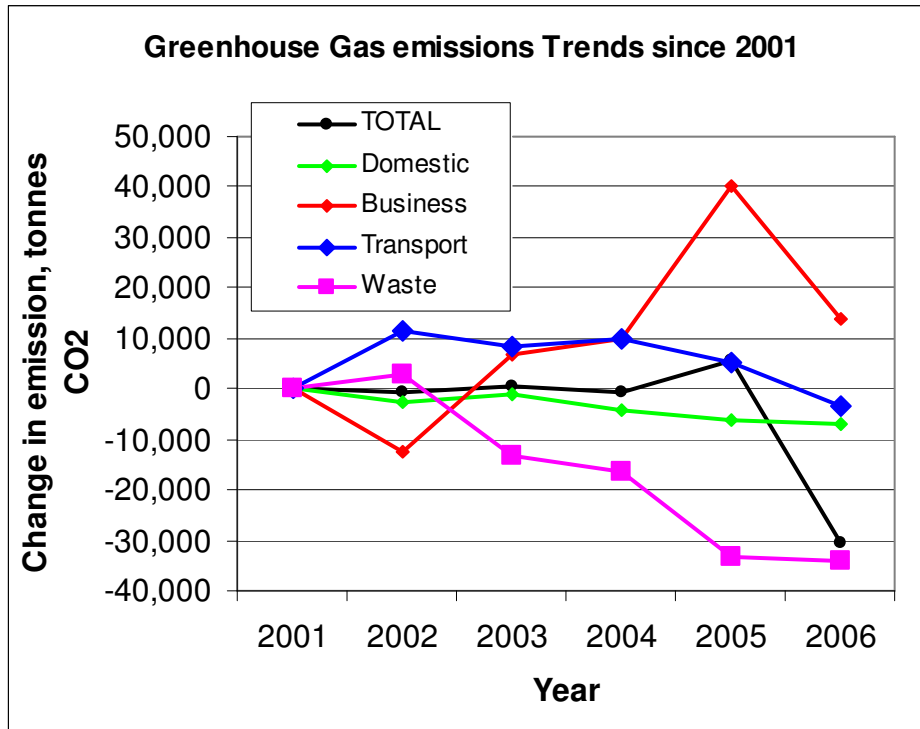
Transport

Transport emissions have been increasing, but reported figures for 2006 show emissions dropping close to 2001 levels. This is despite a 10.5% increase in traffic volume (measured in kilometres travelled on Sunderland roads) over the same period, suggesting vehicle efficiency is improving, although more years of data would be needed to confirm this trend.

Waste

Emissions from waste disposal have fallen by the greatest amount of all sectors. Despite yearly fluctuations, the total amount of municipal waste collected between 2001 and 2006 has remained broadly unchanged. But the increased recycling rates from 5% in 2001 to 23% in 2006 have reduced the amount of waste being sent to landfill, and hence reduced emissions by 33,000 tonnes.

Figure 2. Change in Sunderland's Greenhouse Gas emissions from 2001 to 2006.



DRAFT

6 GREENHOUSE GAS EMISSIONS, 2007 TO 2021.

Beyond 2006, we need to first understand the impact of anticipated development, and trends in consumption, if we are to begin to develop a plan to reduce emissions overall. Information has been collated on all known potential developments in the housing, public and commercial sectors, as well as relevant trends and targets in transport and waste. The future projections on how emissions will change under a 'Business as Usual' situation, without any additional local intervention, are as follows.

Summary

From expected development in Sunderland, there is the potential for greenhouse gas emissions to increase by a further 9.5%, between 2006 and 2021. Following National Indicator 186 (which is reported on a per-capita basis, and excluding waste emissions), the increase would be greater, at around 11.5%. The following sections explain in detail the reasons and assumptions for the projected emissions in each sector, which are summarised in the table below, and shown in Figure 3.

TOTALS	Key sources of change	CO2 change (tonnes, and %)	Source (including strategies and drivers)
Housing	<ul style="list-style-type: none"> 4,600 clearances 19,000 new builds (to new Part L Building Regulations 2006) 14,400 net increase in homes <p>Subtotal</p>	<p>-16,300</p> <p>+30,300</p> <p>+19,000</p> <p>+33,000 (+1.6%)</p>	<ul style="list-style-type: none"> Regional Spatial Strategy Local Development Framework (Housing Land Allocations) Gentoo Housing Investment Programme
Public and Commercial	<ul style="list-style-type: none"> Closure of Sunderland glassworks (Sep 2007) 50 ha of development within Sunderland Arc sites (315,000 m2 of floorspace) 175ha of business land development elsewhere (or 450,000 m2 of floorspace) <p>Subtotal</p>	<p>-31,600</p> <p>+20,500</p> <p>+62,700</p> <p>+51,600 (+2.4%)</p>	<ul style="list-style-type: none"> Local Development Framework Sunderland ARC Business Plan Business Land Availability Register Regional Spatial Strategy
Transport	<ul style="list-style-type: none"> 24% increase in road traffic mileage from 2007 – 2021 	<p>+104,700 (+4.9%)</p>	<ul style="list-style-type: none"> Tyne and Wear Local Transport Plan 2006-11
Waste emissions	<ul style="list-style-type: none"> Current services could achieve up to 25% recycling by 2007 Assumes waste per household stops increasing by 2009 	<p>-1,800 (-0.1%)</p>	<ul style="list-style-type: none"> Sunderland City Council's Waste Strategy (as of 2005)
Total		<p>+187,700 (+8.8%)</p>	

Housing

Housing emissions are set to increase overall, primarily due to the planned construction of 14,000 additional dwellings in the city between 2007 and 2021. Even though these new homes will be built to higher environmental standards than existing homes, it still means more gas and electricity will be consumed. However, the increase from additional homes is offset somewhat by plans to demolish and replace another 4,600 homes with new efficient homes. This will lead to a small reduction in carbon emissions.

Public and Commercial

In the business and public sector, an estimated 225 hectares of employment land will be developed by 2021, as dictated by the Regional Spatial Strategy. Of this, 50 hectares is within the Central Sunderland area, to be developed by Sunderland ARC. This development could increase annual emissions by 83,200 tonnes CO₂, or 4% of the city's total emissions. Some expected closures in the business sector, e.g. Sunderland Glassworks which was a significant energy user, will offset this increase somewhat.

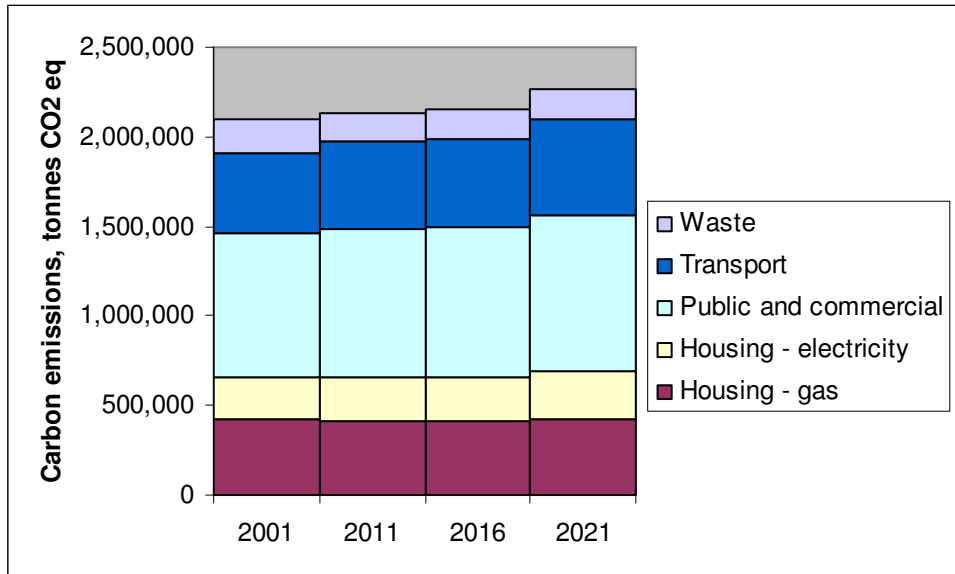
Transport

In the transport sector, traffic volumes (vehicle kilometres travelled on Sunderland roads) are estimated to increase by 24% between 2007 and 2021. The Local Transport Plan expects 2% growth per year to 2011, and a conservative estimate of 1% per year is assumed after that. This appears realistic, given the previous increase of 10.5% seen between 2001 – 2006. If this occurs without any improvement in vehicle fuel efficiency, then the city's emissions could rise by almost 6% due to transport alone.

Waste

In the domestic waste sector, assuming current disposal and recycling services remained as they were, it is expected that recycling rates will reach a maximum of 25%, and offer little extra reduction of emissions from waste.

Figure 3. Graph showing changes in CO₂ emissions under Business as Usual scenario.



DRAFT

7 THE ACTION PLAN 2008 TO 2022

This section outlines the actions between 2008 and 2022 which will begin to reduce Sunderland's carbon emissions towards the national target of a 80% reduction by 2050.

In line with the UK Climate Change Bill, Sunderland is aiming to cut its carbon emissions from housing, business and transport by between 26 and 32% by 2022, compared to a 1990 baseline.

In addition, through the South Tyne and Wear Joint Waste partnership, Sunderland is aiming to reduce the amount of domestic waste sent to landfill (and hence landfill emissions) by at least 75% by 2021, compared to 2001.

This Action Plan represents the starting position, which shows how far current plans will take the City in reducing carbon emissions, and how much more needs to be developed in future years, to meet our own carbon reduction targets. It is structured into the following carbon budgeting periods, in line with the Climate Change Act, as follows:

- 2008 to 2012. Detailed 5-year action plan, broken down into years, to outline actions in the first carbon budgeting period
- 2013 to 2022. Indicative carbon reduction framework for 2nd and 3rd carbon budgetary period

This action plan will be reviewed and refreshed every 5 years (e.g. in 2013 and 2018), to provide detailed action plan for the subsequent 5 year period, and indicative actions for the following 10 years. In this way, a 15 year rolling action plan will always exist, in order to manage progress to the UK Government's 2050 target.

In addition, annual progress reports will be produced to update actions, and carbon emission monitoring.

Summary.

As of 2006, it is estimated that Sunderland's carbon emissions were 8% below 1990 levels. In the absence of local data before 2001, this has been estimated from national trends.

By 2022, accounting for the anticipated 8.8% rise in carbon emissions between 2005 and 2022, carbon emissions would be 0.8% higher than in 1990 under business as usual situation.

This means that to reduce carbon emissions by at least 26% by 2022 baselines, Sunderland must cut its annual carbon emissions by about 27% in absolute terms, or 566,000 tonnes between 2008 and 2022. This amount includes what is needed to first reverse the 8.8% expected increase between 2006 and 2022.

The action plan shows that currently, Sunderland could achieve the following emissions reductions:

- 1% cut in carbon emissions, from commitments or requirements that are certain to occur
- 11.5% cut in carbon emissions, from targets that will probably be achieved
- 19.7% cut in carbon emissions, if all actions, even including ambitious ones, are achieved

Even were all actions achievable, a shortfall of 6%, or another 132,000 tonnes of carbon emissions savings would need to be achieved to meet the minimum 26% reduction target.

On a per capita basis (as required by National Indicator 186), sub-national population projections indicate that numbers of residents should stabilise from 2012 onwards, and so the per capita carbon emissions projections show a similar trend as for absolute carbon emissions.

CARBON EMISSIONS (tonnes CO₂ eq)	1990	2001	2006	2022
Business as usual emissions	2,102,810	1,929,138	1,932,554	2,122,091
Carbon savings:				
definite				-37,200
probable				-258,900
possible				-433,800
% change from 1990	0 %	-8.3%	-8.1%	Definite -0.9%
				Probable -11.4%
				Possible -19.7%
Population projections		284,600	280,600	278,400
CO₂ emissions per capita		6.78	6.89	6.06

For emissions from waste, the Action Plan shows that Sunderland is likely to exceed current targets, and cut waste emissions by 91% by 2022, from the combined effect of landfill gas collection, increased recycling rates and the introduction of new technology to recover waste instead of landfilling. There is greater certainty that reductions in waste emissions will be made, since all actions are related to adopted targets.

METHANE EMISSIONS (tonnes CO₂ eq)	1990	2001	2006	2022
Business as usual emission	n/a	198,431	164,518	162,662
Target emissions			164,518	18,199
Carbon savings from 2001			-33,913	Definite -158,632 Probable -180,232
% change from 2001		-16.9%	-17.1%	Definite -80.0% Probable -90.8%

The key actions that go towards making these carbon emission reductions are summarised in the table below and in Figure 4, and discussed in the following section. Detailed descriptions for all the actions are given in the appendices. The status column outlines the nature of the action (requirement, target or ambition), with a colour coding to show the likelihood of delivery, where green, amber and red indicates definite, probable, and possible.

Area	Key actions	Carbon saving (tonnes CO ₂ eq)	Status	Lead partner
Housing	Insulating 57,250 homes and fitting renewable systems to 6,500 homes	-51,200	3-yr target + long term ambition	Council
	83,000 condensing Boiler replacements	-27,800	National requirement	Householders
	Gentoo's Reality Retrofit Programme	-19,200	Corporate target	Gentoo
	14,600 homes built to Code for Sustainable Homes Level 3 or higher	-15,100	Planning requirement	Council and Private Developers
	District Heating/Power to 4,000 homes	-6,400	Planning Ambition	Sunderland City Council, developers
	Subtotal	-119,700		
Public and Commercial	Sunderland City Council's Carbon Plan	-13,100	5 yr target + long ambition	Council
	A 20% Carbon Reduction Commitment over 10 years	-155,000	Ambition	All business and public organisations
	4 more turbines (2.6MW) at Nissan's car plant	-2,400	Corporate target	Nissan
	10% renewable energy in new development	-7,000	Planning requirement	Developers
	District Heating/Power in regeneration schemes	-13,400	Ambition	Council and Developers
	Subtotal	-190,900		
Transport	Vehicle efficiency increasing 15%	-76,600	EU and UK target	Private motorists
	10% biofuels in all road fuels	-46,400	National requirement (under review)	Transport fuel suppliers
	Subtotal	-123,000		
Carbon emission total		-436,500		
Methane emissions from waste	Methane collection and combustion on main landfill site	-122,900	Installed 2007	Biffawaste
	Increasing recycling to 45%	-13,600	Shared target	South Tyne and Wear Waste Partnership
	Recovering another 30% of waste, from going to landfill	-8,000	Shared target	
	Subtotal	-144,500		

Housing

The greatest carbon reduction in housing comes from actions to improve the energy efficiency of existing homes, which reflects the fact that 90% of the current housing stock will still exist in 2022. Ample scope exists to increase insulation levels, and natural boiler replacement will increase boiler efficiencies. This includes a small proportion of micro-renewable energy systems being fitted to homes over 15 years.

The social housing sector makes up a quarter of all housing stock, with Gentoo owning 37,000 homes in Sunderland, and planning a retrofit of low carbon technology to all, following a pilot scheme from 2008 to 2010.

New homes will also cut carbon emissions, through meeting progressively higher levels of the Code for Sustainable Homes, coming into effect in 2010 and 2013, so that by 2016 all homes will be built to zero carbon emissions. This new code will require even better levels of insulation further and low-carbon energy sources to be built in new homes. Where district heating and power can be incorporated in the major mixed use housing developments (Sunderland ARC site, Cherry Knowles Hospital and housing site), further carbon savings could be possible.

Public and Commercial

Like housing, the greatest carbon reduction will come from energy efficiency improvements in existing organisation, stimulated by the Carbon Reduction Commitment, energy price rises, and local campaigns to get businesses to go public with their carbon emission reduction plans. The Action Plan will encourage all organisations to make 20% cuts in carbon emissions over the next 10 years.

Wind turbine development represents the Nissan Wind Farm, established 2006, and expanded in 2008. The Regional Spatial Strategy indicates that other small wind developments are feasible in Sunderland's urban fringe, but no proposals currently exist. Wind developments that supply the National Grid (e.g. Eppleton Wind Farm), are not counted, as they already contribute to national renewable energy targets.

Creating local heat and power supplies within regeneration schemes (e.g. Sunderland ARC, or others lead by English Partnership, e.g. Cherry Knowles Hospital site and housing scheme) could offer significant source of low-carbon energy, that would make a big contribution to cutting emissions from the commercial sector.

Transport

Currently, improvements in vehicle efficiency offer the greatest opportunity to cut road transport emissions, which will gradually filter into to Sunderland's private vehicles, as private cars are replaced with newer, more efficient models, which car manufacturers are required to produce under EU law. It is assumed that vehicle efficiencies will improve by 1% per year up to 2021.

Other EU directives require that by 2020, up to 10% of road transport fuels come from renewable biofuels, introduced gradually from 2008. However, targets are in review, to ensure the impacts of biofuels on food prices and land use can be managed.

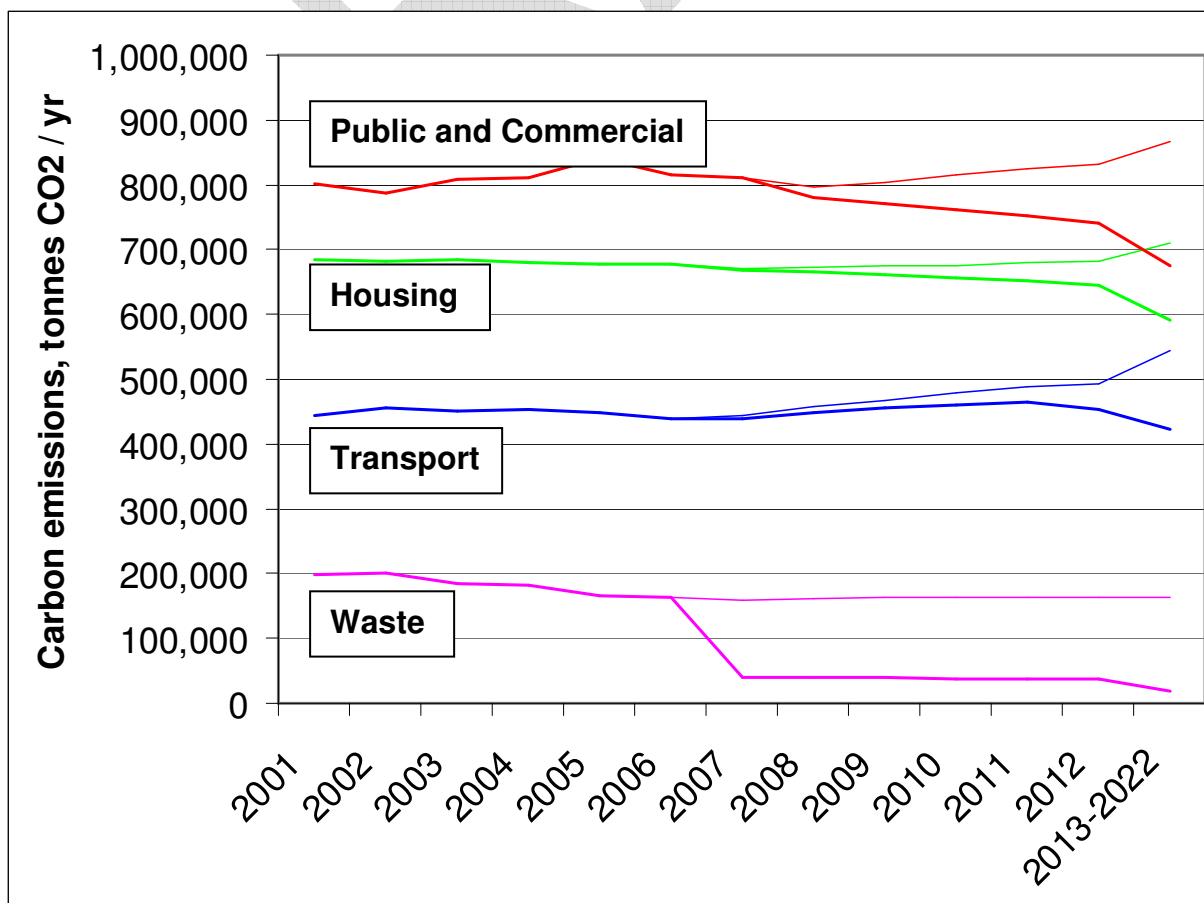
Other sustainable transport initiatives are being taken forward (travel plans, Smarter Choices campaigns) but their impact on transport emissions have yet to be determined. Future revisions to this Action Plan need to focus on developing more transport interventions, which will hopefully arise from the next revision to the Tyne and Wear Local Transport Plan, due in 2012.

Waste

Carbon emissions from the disposal of domestic waste are set to drop by 90%, by far the greatest reduction of all sectors. This reflects the extent to which the UK Government is requiring both public and private waste disposal organisations to reduce landfill amounts and emissions.

In Sunderland, installation of landfill capture equipment at the main site, Houghton Quarry, means that from 2007, 75% of all future landfill emissions are being collected and combusted, producing electricity in the process. The South Tyne and Wear Joint Waste Management Strategy will increase recycling rates to 45%, and create new waste recovery facilities by 2015, to reduce the amount of waste going to landfill further.

Figure 4. Changes in carbon emissions expected as a result of the Climate Change Action Plan (heavy lines) compared to the Business as Usual scenario (light lines).

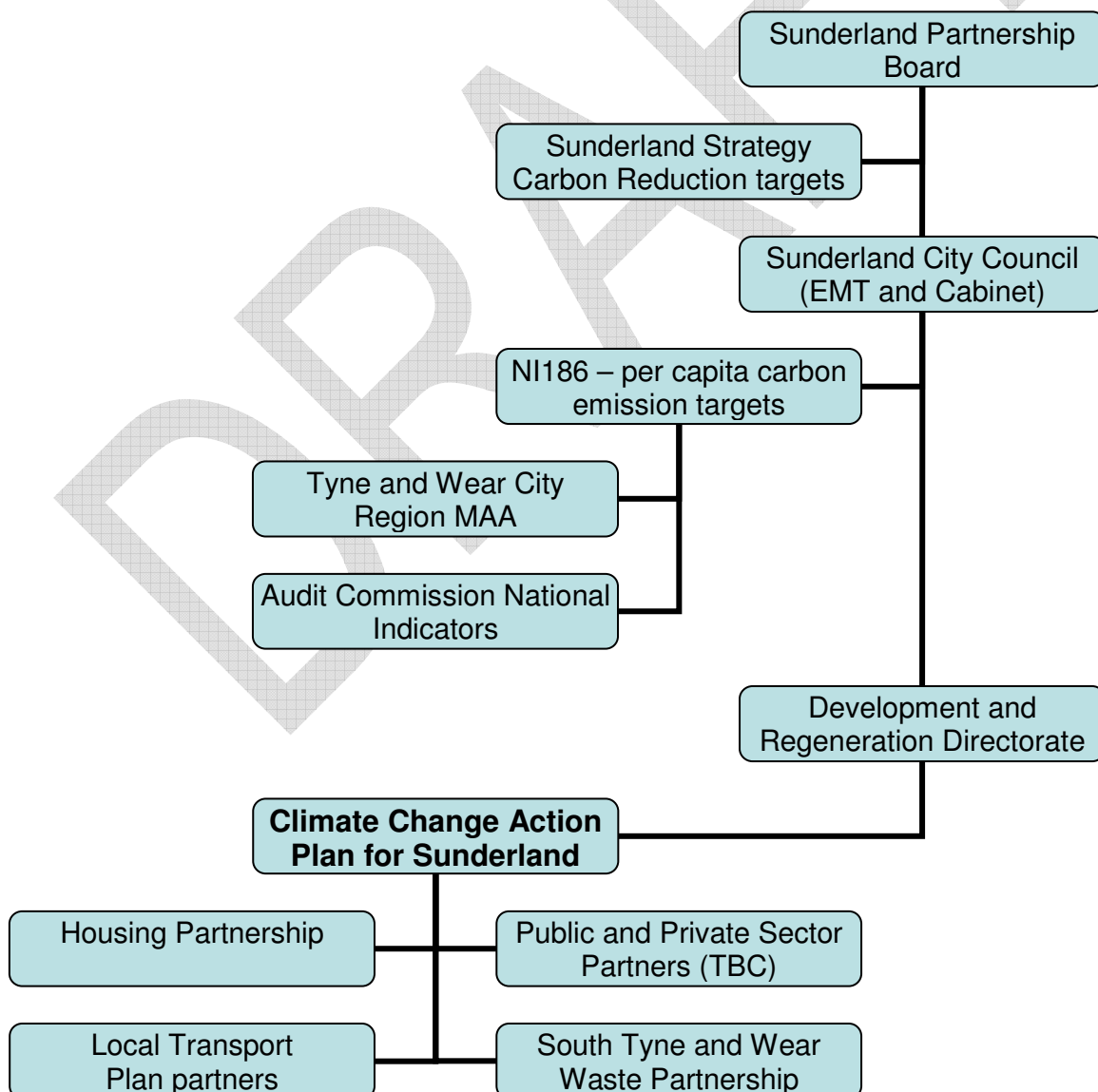


8 MANAGING THE PROCESS

This Action Plan is adopted by Sunderland City Council and the Sunderland Partnership. The following roles will be adopted to manage the Action Plan:

- Sunderland City Council's Sustainability Team will take responsibility for managing and reporting on the Action Plan. This includes preparing annual progress report, and revising the action plan every 5 years.
- Various partnerships and groups will have responsibility for reporting progress in each sector to the Sustainability Team
- Action Plan progress will be reported upwards to the City Council and Sunderland Partnership, for reporting to:
 - Sunderland Strategy, against targets to reduce carbon emissions
 - Tyne and Wear City Region Multi Area Agreement, against progress on NI186
 - Central Government, against progress on NI186

Figure 5 below represents the reporting structure to be adopted for the Action Plan.



9 APPENDICES

The appendices include the following sections

Section 1. Tables showing the expected carbon savings that are currently known, or anticipated, broken down into the 5 years of the coming carbon budgeting period, plus the subsequent 10 years of the 2 following 5 year periods

Section 2. Detailed information regarding all carbon savings actions

Section 3. Information on how the greenhouse gas inventory was compiled

SECTION 1

SUMMARY OF CARBON SAVINGS (TONNES CO₂)

Action	2007	2008	2009	2010	2011	2012	2013-2022
Housing	-1,990	-4,788	-5,671	-6,799	-9,450	-9,490	-81,587
Public and Commercial	0	-15,916	-18,174	-20,340	-19,353	-18,487	-101,552
Transport	-4,440	-4,531	-4,590	-4,646	-4,692	-16,303	-83,845
Subtotal - cumulative	-6,429	-31,665	-60,100	-91,885	-125,380	-169,661	-436,646
Business as Usual emissions	1,925,761	1,925,698	1,947,190	1,970,210	1,993,410	2,008,755	2,136,385
Target Emissions	1,919,331	1,894,033	1,887,091	1,878,325	1,868,030	1,839,095	1,699,739
% reduction (from 2001)	-0.5%	-1.8%	-2.2%	-2.6%	-3.2%	-4.7%	-11.9%

CARBON SAVINGS (TONNES CO₂) FROM HOUSING

Action	2007	2008	2009	2010	2011	2012	2013-2022
H1. Home Insulation – Sunderland Energy Efficiency Programme	-299	-3,096	-3,733	-4,369	-4,477	-4,582	-30,678
H2. Domestic Boiler replacement	-1,691	-1,692	-1,693	-1,694	-1,699	-1,703	-17,641
H3. Gentoo – Reality Retrofit programme			-53	0	-2,647	-2,637	-13,878

H4. Code for Sustainable home – minimum				-540	-568	-568	-13,016
H5. Code for Sustainable home – extra			-190	-195	-60		
H6. District Heating Systems							-6,374
Subtotal - cumulative	-1,990	-4,788	-5,671	-6,799	-9,450	-9,490	-81,587
Business as Usual emissions	670,245	672,194	674,238	676,339	679,637	682,935	710,893
Target Emissions	668,255	665,416	661,789	657,091	650,939	644,746	591,117
% reduction (from 2001)	-1.5%	-1.9%	-2.5%	-3.2%	-4.1%	-5.0%	-12.9%

CARBON SAVINGS (TONNES CO₂) FROM PUBLIC AND COMMERCIAL

Action	2007	2008	2009	2010	2011	2012	2013-2022
PC1a Local Carbon Commitments – specific organisations		-1,674	7	-3,076	-1,595	0	-6,714
PC1b Local Carbon Commitments – overall target		-14,242	-16,101	-13,224	-14,911	-16,650	-81,341
PC2 Wind Turbine Development			-1,627				
PC3 Local Energy Networks				-1,814	-1,814	-1,121	-8,692
PC4 Sustainable construction			-887	-1,032	-1,032	-716	-4,806
Subtotal - cumulative	0	-15,916	-34,090	-54,430	-73,783	-92,270	-193,822
Business as Usual emissions	811,526	795,809	804,678	815,001	825,326	832,489	880,547
Target Emissions	811,526	779,893	770,588	760,572	751,543	740,219	686,724
% reduction (from 2001)	-3.5%	-7.2%	-8.3%	-9.5%	-10.6%	-12.0%	-18.3%

CARBON SAVINGS (TONNES CO₂) FROM TRANSPORT

Action	2007	2008	2009	2010	2011	2012	2013-2022
T1 Tyne and Wear Local Transport Plan	None expected						
T2 Workplace Travel Plans	TBC						
T3 Improving Vehicle Emissions	-4,440	-4,531	-4,590	-4,646	-4,692	-4,692	-49,057
T4 Renewable Transport Fuels Obligation						-11,612	-34,788
T5 Smarter Choices	TBC						
Subtotal - cumulative	-4,440	-8,971	-13,561	-18,207	-22,899	-39,202	-123,048
Business as Usual emissions	443,990	457,695	468,274	478,870	488,447	493,332	544,945
Target Emissions	439,550	448,724	454,713	460,663	465,548	454,129	421,897
% reduction (from 2001)	-2.1%	0.0%	1.3%	2.6%	3.7%	1.2%	-6.0%

CARBON SAVINGS (TONNES CO₂) FROM WASTE

Action	2007	2008	2009	2010	2011	2012	2013-2022
W1. Landfill gas collection	-120475	-1226	-1210				
W2. Recycling targets				-2,710			-10,872
W3. Waste recovery targets							-7,970
Subtotal - cumulative	-120475	-1226	-1210	-2710			-18,842
Business as Usual emissions	159,438	161,061	162,662	162,662	162,662	162,662	162,662
Target Emissions	38,963	39,360	39,751	37,041	37,041	37,041	18,199
% reduction (from 2001)	-76.4%	-76.1%	-75.9%	-77.5%	-77.5%	-77.5%	-89.0%

SECTION 2

HOUSING ACTIONS

Action H1	Sunderland Energy Efficiency Programme		Status: Short term target, with long term ambition (probable)			
Action	<ul style="list-style-type: none"> Deliver a citywide insulation programme, from 2008 to 2011, which in the first 3 years will install 15,000 measures (loft or cavity wall insulation), and hopefully continue into 2012-2014 Develop pilot approaches to tackle “hard to treat” homes, through solid wall insulation Develop trial installations of renewable energy systems 					
Funding	<ul style="list-style-type: none"> DEFRA’s Carbon Emissions Reduction Target 2008 to 2011 (CERT) £10M Contribution from able-to-pay residents £1.8M Strategic Housing Improvement Programme (SHIP), funding to be confirmed 					
Project partners	<ul style="list-style-type: none"> LEAD: Sunderland City Council, Housing Strategy Partners: <ul style="list-style-type: none"> Utility Companies Warmfront 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
	-3,096	-3,733	-4,369	-4,477	-4,582	-30,678
Assumptions	<p>The Private Sector Housing Stock Condition survey (2002) identified the capacity for much greater improvements, with the following opportunities</p> <ul style="list-style-type: none"> Cavity Wall insulation to 52,872 dwellings Increasing Loft insulation to 47,572 dwellings <p>The current Sunderland Energy Efficiency Programme, (SEEP), has shown the potential to generate approx 100 referrals per week for loft/cavity wall insulations (ca. 5,000 per year), which is assumed will continue.</p> <p>Solid wall insulation is assumed to be taken up at 300 per year (2008-2011), increasing to 500 per year (2012 to 2014)</p> <p>Domestic renewable energy systems are assumed to start at 100 per year from 2009, increasing by 100 each year to 2012.</p>					
Support	Sunderland received £70K funding through DEFRA’s Community Energy Efficiency Fund to develop plans for a citywide energy efficiency programme. This is resulting in a more robust arrangement for home energy efficiency financial support using utility funding under the CERT (Carbon Emissions Reduction Target) programme.					

Action H2.	Domestic Boiler Replacement	Status: National requirement (definite)
Details	<ul style="list-style-type: none"> From April 2006, Building Regulations require all replacement domestic boilers to be efficient, condensing boilers Natural replacement should see, on average, 5,000 boiler replaced 	

	each year. <ul style="list-style-type: none"> Action needed to confirm numbers of boilers installed each year, and investigate merits of any promotional or enforcement work, regarding condensing boilers 					
Funding	Funding would only be required for any research, promotional and enforcement work					
Project partners	<ul style="list-style-type: none"> LEAD: Private householders Support: Sunderland City Council, Building Control section 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
	-1,692	-1,693	-1,694	-1,699	-1,703	-17,641
Assumptions and support	Assuming a boiler life of 25 years suggests that, out of the 120,000 properties in Sunderland, approximately 5000 boilers are replaced annually. It is assumed that replacement with a condensing boiler will reduce energy consumption for space heating by 10%.					

Action H3.	Gentoo Energy Efficiency Programme	Status: corporate target (probable)				
Details	<ul style="list-style-type: none"> Reality Retrofit, in its pilot phase, is a project to install 100 homes with low-carbon technology, and measure its impact (by March 2010) (-52 tonnes) Reality Retrofit, in its rollout phase, will install the most effective low-carbon measures in 37,000 homes, through the planned investment programme, from 2011 onwards (-18,612 tonnes) Eco-logic. A competition to design 50 zero-carbon home, which will be then built by 2010 (-60 tonnes) All other new builds will meet Level 3 of Code for Sustainable Homes, from March 2009 onwards, giving 1 year lead on Building Regulations (-190 tonnes) Commitment to reduce the carbon footprint from Gentoo's own operations by 12.5% by March 2010 					
Funding	Gentoo's Investment Plan					
Project partners	<ul style="list-style-type: none"> LEAD: Gentoo 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
		-53	0	-2,647	-2,637	-13,878
Assumptions and support	Reality Retrofit project assumes a 10% reduction in home energy consumption will arise. For new builds, carbon saving is calculated from the difference between development carbon emissions and those required by building regulations at that time (e.g. zero carbon development in 2011 is equivalent to a 75% reduction compared to building regulations in 2011).					

Action H4.	Code for Sustainable Homes (minimum)	Status: planning requirement (probable)				
Details	<ul style="list-style-type: none"> The Government plan to make it compulsory that all new homes are built to increasing environmental construction standards, under the new Code for Sustainable Homes 					

	<ul style="list-style-type: none"> In April 2008, it became compulsory that all new homes receive a rating under the Code. From 2010, new homes will be required to meet Level 3 of the Code, from 2013, Level 4, and from 2016, Level 6. 					
Funding	To come from private developers					
Project partners	<ul style="list-style-type: none"> LEAD: Sunderland City Council, Planning and Environment Section Support: Private developers 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
			-540	-568	-568	-13,016
Assumptions and support	<p>In Sunderland, 4,200 homes will be built between 2010-2012, 4,200 homes between 2013-2015, and 6,300 homes built beyond 2016.</p> <p>A Code Level 3 dwelling will produce 25% less carbon emissions than a dwelling built to Part L Building Regulations (2006). A Code Level 4 dwelling will produce 44% less carbon emissions than a dwelling built to Part L Building Regulations (2006). A Code Level 6 dwelling will produce 100% less carbon emissions than a dwelling built to Part L Building Regulations (2006).</p>					

Action H5.	Code for Sustainable Homes (extra)	Status: developer targets (probable)				
Details	<ul style="list-style-type: none"> Commitment from several housing developers will see new homes built to greater than the minimum Code for Sustainable Homes by the following developers (and sites): <ul style="list-style-type: none"> Gentoo, at 500 various dwellings Sunderland ARC, at Farringdon Row (450 dwellings) English Partnerships, at Lambton Cokeworks (350 dwellings) 					
Funding	From private developers					
Project partners	<ul style="list-style-type: none"> LEAD: Private Developers 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
			-190	-195	-60	
Assumptions and support	That the above development will be built to at least 1 code level above the CSH requirement at that point in time.					

Action H6.	Local Energy Networks (see PC3)	Status: Ambition (possible)				
Details	Covers the housing-based component of Local Energy Network developments in PC3 (see below for more details)					
Funding	As for PC3					
Project partners	<ul style="list-style-type: none"> As for PC3 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
						-6,374
Assumptions and support	<ul style="list-style-type: none"> As for PC3 					

PUBLIC AND COMMERCIAL ACTIONS

Action PC1.	Local Carbon Commitments	Status: ambition (possible)				
Details	<p>An overall commitment will be sought by the city to reduce carbon emissions from the public and private sector by 20% in 10 years. The actions to achieve this are as follows:</p> <ul style="list-style-type: none"> Sunderland City Council is showing leadership, through its own Carbon Plan which aims to cut Council emissions by 10% by 2012, and more thereafter Sunderland Carbon Reduction Commitment. A campaign will encourage organisations to measure their own carbon footprint, and register their carbon commitments with the Council, which will be reported annually. National Carbon Reduction Commitment. The number of organisations required to take part in the national Carbon Reduction Commitment from Jan 2010 will be determined, and included within the Sunderland Carbon Challenge. 					
Funding	All carbon reduction work to be funded by organisations, justified by savings from energy bills					
Project partners	<ul style="list-style-type: none"> Large public sector organisations High energy using private companies Regional support providers 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
Accounted for	-1,674	7	-3,076	-1,595	0	-6,714
Remainder	-14,242	-16,101	-13,224	-14,911	-16,650	-81,341
Assumptions and support	<ul style="list-style-type: none"> That 20% savings can be made at 2% per year over 10 years. 					

Action PC2	Wind Turbine Development	Status: corporate target (definite)				
Details	<p>Various initiatives lead by many partners across the city will increase the capacity of wind turbines in Sunderland, consisting of the following:</p> <ul style="list-style-type: none"> Sunderland City Council will install up to 0.5MW of wind energy to power its own buildings Sunderland City Council will explore the feasibility of leasing Council land for wind turbine development Eppleton Wind Farm will be brought back into operation, and upgraded to at least 8MW, and maybe 12MW Nissan plan to expand Nissan Wind Farm from 4MW to 6MW by 2009 					
Funding	<p>Funding for wind energy to power facilities in Sunderland would be expected to come from those organisations themselves. All other wind development would be financed through private wind developers, seeking to supply the national grid</p>					
Project partners	<ul style="list-style-type: none"> Sunderland City Council Nissan 					

	<ul style="list-style-type: none"> Private wind developers 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
CO ₂ Savings		-1,627				
Wind Capacity target	4MW	6.6MW		7.1MW	15.1MW	TBC
Assumptions and support	<p>Carbon savings are only recorded for wind developments that power facilities in Sunderland.</p> <p>Carbon savings from wind turbines installed to feed into the national grid are accounted for nationally, and so cannot be counted here. However, the capacity of wind energy installation in Sunderland (in MW) will be reported to chart progress.</p>					

Action PC3.	Local Energy Networks	Status: ambition (possible)				
Details	<p>Through the Local Development Framework, all major, mixed used developments will be required to consider the feasibility of installing district energy networks, to provide low-carbon sources of heat and electricity to site occupants.</p> <p>At present, the following opportunities exist for developing Local Energy Networks</p> <ul style="list-style-type: none"> Sunderland Arc sites (except Farringdon Row), with potential carbon savings of 13,000 tonnes CO₂ Ryhope Hospital . Cherry Knowle development site, with potential carbon savings of 4,800 tonnes CO₂ <p>While none of these are expected to come forward before 2012, much of the planning work must occur between 2008 to 2012.</p> <p>Feasibility work must be included as part of master planning process.</p>					
Funding	Other Local Energy Networks being developed in the UK are being funded from private investment, since they constitute a viable business venture in their own right.					
Project partners	<ul style="list-style-type: none"> LEAD: Sunderland City Council, Planning and Environment Service Supported by: Sunderland ARC, Sunderland Hospitals NHS Trust, English Partnerships 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
			-1,814	-1,814	-1,121	-8,692
Assumptions and support	<ul style="list-style-type: none"> All Sunderland Arc sites (except Farringdon Row, which is already advanced) may be suitable for local energy networks Outside Sunderland Arc sites, Ryhope offers only other opportunity where significant housing numbers are co-located with commercial developments Local Energy Networks offer, on average, 50% reduction in development carbon emissions 					

Action PC4.	Sustainable Construction	Status: planning requirement (definite)				
Details						

	<p>New planning policy from the Regional Spatial Strategy and Sunderland's Local Development Framework requires all major new development to have 10% of its energy needs supplied from on-site renewable energy installations.</p> <p>There are also government plans to introduce stricter carbon reduction targets for non-domestic development, similar to the Code for Sustainable Homes, but no details are available at this time.</p>					
Funding	To come from private developers					
Project partners	<ul style="list-style-type: none"> • LEAD: Sunderland City Council, Planning and Environment Service • Support: Private developers 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
	-887	-1,032	-1,032	-716	-4,806	-887
Assumptions and support	Currently, the savings are estimated from the impact of enforcing the 10% renewable energy rule in all new, non domestic developments from 2008.					

TRANSPORT ACTIONS

Action T1	Tyne and Wear Local Transport Plan	Status: target (probable)				
Details	<p>Traffic levels in Tyne and Wear are forecast to rise by 24% between 2006 and 2021. These increases are expected largely due to the increasing levels car ownership in the region, and people travelling further on each journey. The Tyne and Wear Local Transport Plan aims to manage these increases, and major capital schemes, such as the second Tyne crossing, are planned to ease congestion.</p> <p>While the LTP will deliver many non-car transport improvements, to public transport, walking and cycling infrastructure, modelling suggests that this will only slow the decline in public transport usage, not reverse the decline, and the growth in car ownership will still prevail in causing road traffic to increase.</p> <p>LTP improvements in Sunderland between 2006 and 2011 will include the following:</p> <ul style="list-style-type: none"> • Road expansion, through the Southern Radial Route, Sunderland Strategic Transport Corridor, Central Route. • A new road crossing of the River Wear • Improving bus priority routes along Chester Rd, at the Wheatsheaf gyratory, and Durham Rd. <p>While these will enable the road systems to better cope with the expected increase in traffic, due to increasing car ownership in the North East, there are no significant reductions in carbon emissions expected to arise from the 2006 to 2011 LTP.</p>					
Funding	Tyne and Wear Local Transport Plan budget					
Project partners	<ul style="list-style-type: none"> • LEAD: All Tyne and Wear authorities 					
	2008	2009	2010	2011	2012	2013 to 2022
Traffic volume (million vehicle km, % increase from 2006)	2,042 (4%)	2,089 (6%)	2,137 (9%)	2,179 (11%)	2,201 (12%)	2,431 (24%)
Assumptions and support	<ul style="list-style-type: none"> • All assumption taken from the Tyne and Wear Local Transport Plan. • Congestion reduction will not greatly alter the carbon emissions from transport 					

Action T2	Travel Plans	Status: target (probable)				
Details	<p>Travel plans can be effective at increasing sustainable transport for organisations, key employment locations or other trip generators.</p> <p>The City Council has supported development of travel plans for Doxford Park, Sunderland Enterprise Park, to help resolve transport issues at those sites. The Council also will soon adopt its own travel plan for buildings and services. All new, major developments are also required to provide a travel plan, as a requirement of planning permission. And the resource exists for the City Council to continue supporting travel plan development for significant sites, where the need arises.</p>					

	The impacts of travel plans are harder to quantify, and there is a future need to assess the impact travel plans are having on overall transport reduction, or modal shifts away from car-only travel.					
Funding	Tyne and Wear Local Transport Plan budget, developers, business park operators					
Project partners	<ul style="list-style-type: none"> LEAD: All Tyne and Wear authorities 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
Assumptions and support	<ul style="list-style-type: none"> No assumption made currently, since data does not exist to assess impact of travel plans in Sunderland. 					

Action T3	Improving Vehicle Emissions	Status: National target (probable)				
Details	<p>Natural vehicle replacement should gradually improve vehicle efficiencies, but only if trends in personal choices or economic growth do not lead to residents bigger and more powerful vehicles.</p> <p>This action relies on local uptake of more efficient vehicles, stimulate by national and regional awareness campaign (e.g. ACT on CO₂, Vehicle Excise Duty emissions bands, Company Car Tax emission bands).</p> <p>Road transport emissions from 2001 to 2006 do not appear to have risen in Sunderland, from published statistic, despite a 10% increase in road traffic during this period, which is an indicator that vehicle efficiencies are increasing.</p>					
Funding	Any campaign funding would need to come from LTP sources, otherwise vehicle replacement funded by road users.					
Project partners	<ul style="list-style-type: none"> LEAD: private motorists Supported by: Tyne and Wear local authorities 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
	-4,531	-4,590	-4,646	-4,692	-4,692	-49,057
Assumptions and support	<p>That vehicle efficiencies have increased between 2001 – 2005, by 1-2% per year, and that this is set to continue. An ongoing 1% per year improvement in vehicle efficiency is assumed in estimating these emission savings.</p> <p>This reflects both the replacement of older vehicles, with newer more efficient ones, but also the impact of car manufacturers building cars to higher emissions standards</p>					

Action T4	Renewable Transport Fuel Obligations	Status: EU and National target (probable)				
Details	The EU has set targets that 10% of all transport fuels are to come from renewable sources by 2020. However, due to growing concerns that biofuels were impacting food prices, and cause other environmental and social impacts, these targets have been reviewed, to ensure not all biofuels come from food-crop sources.					

	<p>For the UK, through the Renewable Transport Fuel Obligations, the likely impact is that all garage forecourts will be required to sell road fuel containing at least 5% biofuel by 2015 (not 2010 as first thought), and 10% by 2020.</p> <p>However, policy on biofuels is changing rapidly, and these targets may well change again, and so are included now for indicative purposes.</p>					
Funding	None required – national scheme					
Project partners	<ul style="list-style-type: none"> • LEAD: Dept for Transport • Supported by all road users 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
					-11,612	-34,788
Assumptions and support	<p>That the roll out of biofuels occurs as</p> <ul style="list-style-type: none"> • 2.5% by 2012 • 5% by 2015 • 10% by 2020 					

Action T5	Smarter Choices	Status: requirement (definite)				
Details	<p>Smarter Choices is a programme run by Nexus, which is aimed at influencing people's travel behaviour towards more sustainable options such as encouraging school, workplace and individualised travel planning. They also seek to improve public transport and marketing services such as travel awareness campaigns, setting up websites for car share schemes, supporting car clubs and encouraging teleworking.</p> <p>Funding exists to run Smarter Choices across Tyne and Wear as a pilot for 3 years from its launch in 2008. It has two key objectives:</p> <ul style="list-style-type: none"> • To run a public campaign across Tyne and Wear, to develop the Smarter Choices brand, and to try to change people's travel behaviour • To begin individualised travel planning – households will be contacted in a few pilot areas, and tailored travel plans offered around a household's particular transport needs. <p>Pilots in the UK have shown that Smarter Choices can reduce car travel by 5-15%, but is a costly approach. The success of the pilot programme will be monitored in Tyne and Wear, and impact on travel, and emissions, factored into future revisions of the Climate Change Action Plan.</p>					
Funding	Tyne and Wear Local Transport Plan budget					
Project partners	<ul style="list-style-type: none"> • LEAD: Nexus • Supported by all Tyne and Wear Authorities 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
Assumptions and support	<ul style="list-style-type: none"> • No data yet available on potential emissions reduction. 					

WASTE ACTIONS

Action W1	Landfill Gas Collection	Status: completed (definite)				
Details	<p>In 2006, Sunderland's main landfill site at Houghton Quarry was fitted with a methane capture and combustion unit, to collect and generate electricity from waste landfill gas.</p> <p>This means that all waste going into landfill from now will eventually be capped, and the majority of landfill gas will be collected and burnt, greatly reducing the methane emissions arising from domestic waste disposal.</p>					
Funding	Already funded and installed by landfill site operator					
Project partners	<ul style="list-style-type: none"> LEAD: Biffawaste 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
	-120,475	-1,226	-1,210			
Assumptions and support	<ul style="list-style-type: none"> Estimates produce from waste transfer software, developed by University of East Anglia Methane capture on a landfill site collects approximately 75% of all methane emissions, 25% escapes before the landfill is capped, and sealed. The carbon dioxide produced by burning methane is not counted as a greenhouse gas. This is because the carbon dioxide arises from current, decaying organic matter, and not fossil fuels. Effectively, methane capture and combustion completes the natural oxidation process during decay, which would happen were the waste to compost naturally in air. 					
Action W2	Increasing recycling targets	Status: target (probable)				
Details	<p>Currently, Sunderland has met and exceeded its 18% recycling targets for 2006, and is recycling up to 25% of domestic waste.</p> <p>The South Tyne and Wear Waste Management Strategy has set targets to increase the amount of waste recycled further to: 31% by 2010 45% by 2015</p> <p>This will reduce greenhouse gas emissions in two ways</p> <ul style="list-style-type: none"> It reduces the amount of waste going into landfill, and hence the amount of landfill gas It reduces the energy consumption in manufacturing of products, by reducing the need for energy-intensive production of raw materials (this saving occurs elsewhere in the manufacturing chain, and so is not counted towards Sunderland's carbon budget) <p>In Sunderland, because landfill sites now have methane capture and combustion, the impact of recycling on emissions is less than previously, but still significant none-the-less.</p>					
Funding	Through South Tyne and Wear Joint Waste Management Strategy					
Project partners	<ul style="list-style-type: none"> LEAD: South Tyne and Wear Joint Waste Partnership Supported by Sunderland City Council, Environmental Services 					

	2008	2009	2010	2011	2012	2013 to 2022
Carbon savings (tonnes CO ₂)			-2,710			-10,872
Assumptions and support	<ul style="list-style-type: none"> Estimates produce from waste transfer software, developed by University of East Anglia High scenario assumes recycling rates increase to 31% and 45% by 2010, 2015 These savings do not include indirect savings of a further -26,800 tonnes, but these will occur in Sunderland, rather relate to hypothetical energy savings in manufacturing elsewhere. 					

Action W3	Waste recovery targets	Status: target (probable)				
Details	<p>In addition to the above recycling targets, the South Tyne and Wear Waste Management Partnership has targets to recover at least another 30% waste, and prevent it going to landfill. The partnership has successfully sought private finance initiative (PFI) funding to develop new waste facilities. Based on 10 option for recovering waste that can't be recycled or composted, 2 best options have been put forward to DEFRA. These are:</p> <ul style="list-style-type: none"> Mechanical/biological treatment, through aerobic composting Energy from Waste, to provide heat and electricity <p>However, the tendering process could raise other solution, when private companies are invited to bid on delivering waste recovery solutions,.</p> <p>The emissions savings of either waste recovery method are not as great as compared to landfill alone, because of the recent addition of methane capture plant to existing landfill. But savings are still significant and other environmental and financial benefits will result from these approaches. If an Energy from Waste plant is developed, and located in Sunderland, this could reduce carbon emission by another 77,000 tonnes, from supplying neighbouring local users with low-carbon heat and electricity.</p>					
Funding	Through South Tyne and Wear Joint Waste Management Strategy					
Project partners	<ul style="list-style-type: none"> LEAD: South Tyne and Wear Joint Waste Partnership Supported by Sunderland City Council, Environmental Services 					
Carbon savings (tonnes CO ₂)	2008	2009	2010	2011	2012	2013 to 2022
						-7,970
Assumptions and support	<ul style="list-style-type: none"> Estimates produce from waste transfer software, developed by University of East Anglia Savings are estimated based on recovering at least another 30% of domestic waste, in addition to the 45% recycling targets, by either biological or thermal treatment In terms of carbon emissions, aerobic composting produces less carbon emissions directly than Energy from Waste, since plastics are recovered, rather than burnt. But Energy from Waste saves more carbon emissions overall, by supplying heat and power to neighbouring users, which reduces gas and electricity consumption. 					

SECTION 3

Baseline definitions

The baseline has been set for the year 2001, which is the earliest for which complete records exist.

The baseline includes the following greenhouse gases:

- Carbon dioxide, arising mostly from combustion of natural gas and transport fuels, and indirectly from the consumption of fossil-fuel based electricity
- Methane, arising from landfill gas emissions
- Nitrous oxide, arising as a small component of both combustion products from fossil fuel, and landfill gas

Emissions are reported all as tonnes of carbon dioxide (CO₂) equivalents per year (tonnes CO₂ / yr). This means that the emissions of methane and nitrous oxide are multiplied by their respective 'global warming potential' compared to carbon dioxide, which are 23 and 300 times respectively.

Fluorinated compounds (HFCs, SF₆, PFCs) are not included, as data on local emissions are not available. These will likely comprise less than 2% of total greenhouse gas emissions, and so will not greatly alter the baseline (TWRI)

Baseline sources

The greenhouse gas emissions baseline accounts for emissions from the following different sources. These sources are the most significant and also those that have sufficiently accurate and available data to allow annual reporting on their progress.

- Housing: made up of emissions arising from the burning of natural gas in homes, and the use of national grid electricity, and other solid and liquid fuels (coal, heating oil) burnt in dwellings.
- Public and Commercial: made up of emissions arising from the burning of natural gas and the use of national grid electricity in public organisations, commercial and industrial companies, and other solid and liquid fuels (coal, heating oil) burnt in organisations.
- Transport: includes emissions estimated from the total amount of kilometres travelled by vehicles on Sunderland roads, as measured from road surveys by Department for Transport. Emissions are estimated using national averages of vehicle fuel consumption. This does not include rail or air travel.
- Waste: emissions are calculated from annual domestic waste tonnages of all domestic waste collected and disposed of by Sunderland City Council, taking

into account if its is landfilled or recycled, and average compositions of domestic waste. This does not include emissions from disposal of commercial waste generated by businesses, or emissions from waste disposed in landfill in previous years which will still be releasing methane.

For 2005 and beyond, all data is derived from DEFRA's published National Indicator 186, which reports carbon dioxide emissions from housing, public and commercial sectors, and road transport.

For 2004 and before, data was sourced from BERR records of electricity and gas consumption, at local authority levels, DfT records of road traffic levels. Road traffic emissions were estimated assuming vehicle efficiency has been increasing by 1% per year since 2001.

Where differences exist between the NI186 datasets and BERR and DfT datasets (which arises due to different data collection methods), using the common year of 2005, earlier data has been normalised to the NI186 dataset, to allow comparison over the whole period from 2001 to 2006.

Waste emission were calculated from recorded tonnages of domestic waste collected and disposed to landfill, composted or recycled to estimate amounts of methane emission generated, using waste transfer software developed by the University of East Anglia.

The baseline does not include the following sources of emissions:

- Natural systems, such as emissions from soils, vegetation
- Agricultural systems, such as emissions from farmed soils and livestock. Direct emissions from agricultural lands would be low, due to the low small amount of farming land in Sunderland. Indirect emissions arising from food consumption by Sunderland citizens would be significant, but data is not available to monitor this year on year.
- Aviation, through emissions arising from air travel by Sunderland citizens. No data exists to include this.

Contact Details:
Sustainability Team
Planning Policy Section
Development and Regeneration Directorate
City of Sunderland
Civic Centre, PO Box 100
Burdon Road,
Sunderland
SR2 7DN
Tel. (0191) 561 2434
Fax. (0191) 553 1224