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Black Country Joint Core Strategy

Stage 2: Infrastructure and Deliverability Study

Technical Note 11: Climate Change and Local Air Quality

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1 Environmental Capacity – Climate Change

1.1 Introduction

Climate change is one of the greatest challenges facing society today, both for the international community and the UK¹. While much is being done to reduce and eventually minimise the impact of climate change, some change is nevertheless inevitable. This is because greenhouse gas emissions (Carbon Dioxide (CO₂), Methane and Nitrous Oxide) since the industrial revolution have set in place change which will take place over the following decades. For the UK as a whole this would mean adapting to a warmer, wetter climate.

1.2 Local Area Agreements

To ensure that communities, economies, individuals and the environment are protected from the negative impacts of climatic change, Local Authorities are in the strongest position to manage the impact of climate change, and ensure that any benefits and opportunities these changes may present can be seized and harnessed. This can be achieved by setting climate change priorities in Local Area Agreements (LAAs). LAAs are three-year agreements between County Councils and Central Government to deliver improved outcomes across a range of priorities (National Indicators). Climate change priorities are summarised below.

National Indicator 185

This Indicator aims to measure Local Authority progress in reducing CO₂ emissions under their direct control.

National Indicator 186

This Indicator relates specifically to mitigating the impacts of climate change. It is defined as 'percentage reduction of the per capita CO₂ emissions in the Local Authority area' and provides a mechanism for assessing, understanding and acting upon local level CO₂ emissions. A 2007 Analysis by the Department for Environment, Food and Rural Affairs (DEFRA) suggests that most local areas could be expected to achieve a reduction in Carbon emissions of between 11 – 13 %, relative to a 2004 baseline, by 2010. Table 1 shows the current available estimates of CO₂ emissions for the Black Country by end-user type².

¹ DEFRA (2008) 'Adapting to Climate Change in England: A Framework for Action' (accessed at: www.defra.gov.uk/environment/climatechange/adapt/pdf/adapting-to-climate-change.pdf)

² AEA (2008) 'Local and Regional CO₂ Emissions Estimates for 2005-2006' (accessed at: www.defra.gov.uk/environment/statistics/globalatmos/download/regionalrpt/local-regionalco2-ni186indicator.xls)

Table 1: Carbon Dioxide Emissions Estimates in the Black Country by End User, 2006

Local Authority Area	Carbon Dioxide Emissions				Population (mid-year estimate 2006)	Per Capita Emissions (t)
	Industry and Commercial	Domestic	Road Transport	Total		
Dudley	683.84	731.18	348.85	1763.87	305.30	5.78
Sandwell	1085.66	649.29	310.32	2045.27	287.60	7.11
Walsall	754.20	610.07	317.65	1681.91	254.50	6.61
Wolverhampton	642.79	568.65	263.27	1474.72	236.60	6.23
West Midlands Total	16190	13140	8594	37923	5367	7.07
UK Total	194860	153605	102840	451305	60588	7.45

National Indicator 188

The development of adaptive and management mechanisms for climate change is supported in National Performance Indication 188 on adapting to climate change.

The Nottingham Declaration on Climate Change

An important way in which Councils can both show their commitment to reducing CO₂ and share tools and resources in the field is by signing The Nottingham Declaration on Climate Change which was launched in 2000. By signing the Declaration, Councils pledge to actively tackle climate change in their Local Authority area and work with others to reduce emissions countrywide.

1.3 Climate Change Assessment for the West Midlands

The following assessment provides an overview of the changes that are projected to be experienced in the West Midlands as a result of climate change³:

- The central estimate of **increase in winter mean temperature** is **1.3°C**; it is very unlikely to be less than 0.6°C and is very unlikely to be more than 2.1°C. A wider range of uncertainty is from 0.5°C to 2.1°C.
- The central estimate of **increase in summer mean temperature** is **1.5°C**; it is very unlikely to be less than 0.5°C and is very unlikely to be more than 2.6°C. A wider range of uncertainty is from 0.5°C to 2.6°C.
- The central estimate of **increase in summer mean daily maximum temperature** is **2°C**; it is very unlikely to be less than 0.5°C and is very unlikely to be more than 3.8°C. A wider range of uncertainty is from 0.5°C to 3.8°C.

³ UKCIP09: Key findings for the West Midlands. Medium emissions scenario, 2020's (accessed at: <http://ukclimateprojections.defra.gov.uk/content/view/2158/528/index.html>)

- The central estimate of **increase in summer mean daily minimum temperature** is **1.5°C**; it is very unlikely to be less than 0.5°C and is very unlikely to be more than 2.8°C. A wider range of uncertainty is from 0.5°C to 2.8°C.
- The central estimate of **change in annual mean precipitation** is **0%**; it is very unlikely to be less than –4% and is very unlikely to be more than 6%. A wider range of uncertainty is from –4% to 6%.
- The central estimate of **change in winter mean precipitation** is **5%**; it is very unlikely to be less than –2% and is very unlikely to be more than 15%. A wider range of uncertainty is from –2% to 15%.
- The central estimate of **change in summer mean precipitation** is **–6%**; it is very unlikely to be less than –22% and is very unlikely to be more than 12%. A wider range of uncertainty is from –22% to 15%.

1.4 Climate Change Adaptation

Climate change impacts imply the need for responses in planning, housing, health, transport, economic, international development and agricultural policies. The UK also has adaptation obligations under the Kyoto Protocol introduced in 2005. Policies which may be required include:⁴

- Increased investment in flood defences;
- Changes to planning to take account of greater flood risk; and
- Changes in building regulations to take account of higher temperatures.

In order to cope with the impacts of climate change adaptation is required – this action is complementary to efforts to reduce emissions to avoid dangerous levels of climate change. The Government has stated that it will take action to:⁵

- Develop a comprehensive and robust approach to adaptation in the UK through the Adaptation Policy Framework;
- Publish revised and expanded climate change scenarios for the UK in 2008; and
- Monitor and develop the knowledge base on climate change impacts and adaptation through the UK Climate Impacts Programme (UKCIP).

Adaptation strategies vary considerably between different types of organisation and will be undertaken at a range of scales, from central government policy to individual projects. There are two main approaches to adaptation:

- Building adaptive capacity – this involves creating the information and conditions (regulatory, institutional, managerial) that enable adaptation actions to be undertaken; and
- Delivering adaptation actions – this involves taking actions that will help to reduce vulnerability to climate risks, or exploit opportunities.

⁴ DEFRA website (www.defra.gov.uk/environment/climatechange/uk/adapt/policyframe.htm)

⁵ HM Government, Climate Change: The UK Programme 2006 – Tomorrow's Climate, Today's Challenge, March 2006 (www.defra.gov.uk/environment/climatechange/uk/ukccp/pdf/ukccp06-all.pdf)

Under the United Nations Framework Convention on Climate Change (UNFCCC), the UK not only has a commitment to mitigate emissions, but also to make progress in adaptation. Article 4 (1(b)) states that all Parties to the Convention shall...

“...formulate, implement, publish and regularly update national and where appropriate, regional programmes containing measures to mitigate climate change by addressing anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol, and measures to facilitate adequate adaptation to climate change.”

Adapting to Climate Change in the United Kingdom – The Adaptation Policy Framework

The Government is developing a climate change Adaptation Policy Framework, which will set out the appropriate responsibilities and activities across a range of organisations in a sector-by-sector approach. A consultation exercise was completed in January 2006. This work contributes to the strategic outcome in DEFRA’s Five Year Strategy, published in 2004 under its climate change and energy strategic priority on the “UK successfully adapting to unavoidable climate change”.

UK Climate Impacts Programme (UKCIP)

The UK Government set up the UKCIP in 1997 to provide essential information to help decision-makers plan their response to the impacts of climate change. DEFRA funds UKCIP on behalf of the UK Government and the devolved administrations.

From an initial focus on impacts research studies, there has been a progression towards developing stakeholder partnerships that share information, identify research needs and pursue work on climate impacts and adaptation in their regions and sectors. UKCIP is modular in structure, with individual studies funded by stakeholder partnerships in two main categories:

- Regional studies that consider multiple sectors within a given region and deliver information that is relevant to local decision-making; and
- Sectoral studies that are typically undertaken at the national level, which tend to be quantitative in nature, and inform decision-making on climate impacts and adaptation at the local, regional and national scale for given sectors. More recently, UKCIP has played an increasing role in helping stakeholders to build adaptive capacity.

An integrated summary of findings from studies carried out for the UKCIP was published in 2005.⁶

⁶ A comprehensive synthesis of the work achieved under the UK Climate Impacts Programme is provided in UKCIP (2005) *Measuring Progress: Preparing for climate change through the UK Climate Impacts Programme* (www.ukcip.org.uk)

2 Environmental Capacity – Local Air Quality

2.1 Introduction

The Government and the devolved administrations for Scotland and Wales are required to produce a National Air Quality Strategy under Part IV of the Environment Act 1995, containing standards and objectives for improving ambient air quality. The Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Volume 1 (July 2007) gives details of the legislative and policy framework for air quality; air quality standards and objectives; actions plans for the future concerning improved air quality; and information about the main air pollutants as described by the Government and devolved administrations, these being⁷:

- Particulates (PM₁₀ and PM_{2.5})
- Nitrogen Dioxide (NO₂)
- Ozone (O₃)
- Sulphur Dioxide (SO₂)
- Polycyclic Aromatic Hydrocarbons (PAHs)
- Benzene
- 1,3-Butadiene
- Carbon Monoxide (CO)
- Lead (Pb)

These pollutants have been identified as they are of greatest concern for public health. As part of their statutory duty to work towards meeting the National Air Quality Objectives, as set out in the National Air Quality Strategy, Local Authorities have undertaken a review and assessment of the air quality in their areas since 1997. Any areas which are found to fall short of meeting the Objectives must be declared an Air Quality Management Area (AQMA) by the Local Authority.

2.2 Local Air Quality and Air Quality Management Areas in the Black Country

The following provides a brief summary of the current air quality conditions within the Black Country:⁸

- All four Black Country Authorities have declared AQMAs for NO₂;
- Wolverhampton City Council has also declared the City as an AQMA for PM₁₀;
- Nitrogen dioxide from traffic is the main reason for failure of standards in the Black Country; and
- Pollution was moderate or higher on 30 days in Wolverhampton in 2006

⁷ Source: DEFRA (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland: Volume 1

⁸ Source: Environment Agency website: www.environment-agency.gov.uk

The West Midlands Local Transport Plan 2 (LTP2) provides further details of the AQMAs and areas of exceedence within the Black Country Boroughs as follows:

- **Dudley – AQMAs:**
 - In the High Street and surrounding Roads, Brierley Hill
 - At the Bull Ring traffic Island and surrounding roads, Sedgley
- **Sandwell – Areas of Exceedence:**
 - Area in and around the A457 Birmingham Road, Oldbury
 - Area to the north of M6 Junction 8, Yew Tree
 - Area to the north-west of M6 Junction 7, Great Barr
 - Area to the south of M6 Junction 8, Great Barr
 - Area to the south-east of M6 Junction 7, Great Barr
 - Area to the south-west of M6 Junction 7, Great Barr
 - Area around the junction between Oldbury Road and Birmingham Road, Blackheath
 - Area around the junction between High Street and Powke Lane, Blackheath
 - Alongside Dudley Road East and the area around the junction with Roway Lane, Oldbury
 - Alongside Bearwood Road and around the junctions with the Three Shires Oak Road and Hagley Road West, Smethwick
 - Area around the junction between Newton Road and Birmingham Road, Great Barr
 - Alongside the M5 between Junctions 1 and 2, West Bromwich
- **Walsall – AQMAs:**
 - Alongside the M6 motorway (2 separate AQMAs)
 - Alongside A454 Wolverhampton Road
 - Alongside A454/A461 Lichfield Street junction
 - Alongside A461, Rushall
- **Wolverhampton – AQMAs:**
 - A significant area of the City Centre within the Ring Road
 - At the ‘Grapevine’ Island A449 Stafford Road
 - At the junctions of A4123/A4039 and A454/Neachells Lane
 - Alongside A41 Lichfield Street, Bilston (Heritage Area)

2.3 Air Quality by Regeneration Corridor

Figure 1 illustrates the 2005 annual mean concentrations of NO₂ in the Black Country. Of particular importance are Regeneration Corridors 7: Bloxwich–Birchills–Bescot, 8: Hill Top, 9: Tipton–Dudley Port–Brades Village and 12: Oldbury–West Bromwich–Smethwick. Parts of these corridors show the highest emissions of NO₂ for the Black Country which could be further exacerbated through the growth initiatives planned for the Black Country.

3 Conclusions

The significant numbers of new dwellings that have been forecast for the growth of the sub-region will have implications on climate change and local air quality both during the construction phase and after completion. An action plan of how to mitigate or minimise the impacts is required through pro-active planning and sustainable policies.

A joined up approach from key stakeholders in delivering the growth strategy for the sub-region is also a key element of this action plan.

