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Low Emissions Strategies

using the planning system to reduce transport emissions

Good Practice Guidance

January 2010



Low Emission
Strategies

Building on Good Practice



defra

Department for Environment
Food and Rural Affairs

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Foreword

Defra and the Low Emissions Strategies Partnership (LES) share a common vision to secure vibrant and sustainable communities where everyone has a say in shaping their environment. Public Service Agreement (PSA) 28 enshrines this commitment to a healthy, natural environment for today and the future. A simple enough statement, but one that can only be achieved with political and social willpower at the national and local level.

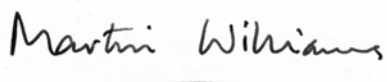
This new guidance on Low Emission Strategies (using the planning system to reduce emissions) uses real-life examples from Beacon Councils to guide and encourage other authorities to do the same, and perhaps become environmental exemplars themselves.

All development, through construction, operation and decommissioning, can involve emissions to air, which can in turn lead to adverse impacts on health and/or to protected species and habitats. Key to the LES Guidance is its focus on reducing harmful emissions and improving the quality of the air we breathe through effective planning and transport policies. Its integrated approach can also help to reduce emissions of greenhouse gases which contribute to climate change.

Above all, this guidance seeks to stress that economic growth does not have to come at the expense of the environment. On the contrary, effective planning controls can, and often do, improve the area we live in, and make for a positive difference in people lives – building new eco homes, jobs and opportunities, while enhancing the community. The Greenwich Peninsula is an example of regeneration and renewal that can achieve strong and developed communities living in a clean and healthy environment, and that also promotes local business and investment opportunities.

We hope this guidance is motivational and will embolden its readers to view air quality not as a stand-alone policy but one which is inherently linked with where we live and work, with the roads we drive on, and the transport we use.

Dr Martin Williams
(LES Champion)



Martin Williams

John Paterson
(Chair of the LES Partnership)



John Paterson

Executive summary

About this Guidance

This guidance is principally for local authorities in England to refer to when carrying out local air quality management. It is intended to help demonstrate how the planning system may be used to reduce air emissions from transport. In doing so, it encourages authorities to take a joined up approach, tackling toxic air pollutants and greenhouse gases together. The guidance explains the underlying principles of Low Emission Strategies and outlines how they can be deployed. It also describes typical measures included in Low Emission Strategies and presents a number of current practice examples.

The need for change

Climate change is the greatest long-term challenge facing the world today. At the same time, air pollution causes major harm to health and the environment. The problems arise from similar emission sources. Joined up policies are particularly important for the transport sector, which is by far the most common cause for the declaration of air quality management areas and is the only sector where carbon dioxide emissions continue to increase. Spatial planning has a pivotal role in helping to secure enduring progress against the UK's emission targets.

Low emission strategies

Low emission strategies provide a package of measures to help mitigate the transport impacts of development. They complement other design and mitigation options, such as travel planning and the provision of public transport infrastructure. Strategies are often secured through a combination of planning conditions and planning obligations. They may incorporate policy measures and/or require financial investments and contributions to the delivery of low emission transport projects and plans, including strategic monitoring and assessment activities.

Some authorities are already making effective use of low emission strategies. This guidance is intended to support wider adoption of the approach, and to encourage the use of both well established and more innovative measures. It is intended for use by local authority planners and those who work closely with them such as environmental health, transport planning and sustainable development teams. The report outlines the underlying principles of low emission strategies, presents current good practice and introduces some ideas on how to link this approach with transport assessments. Supporting information and examples are provided as an annexe to the main text.

The main benefit of low emission strategies is to reduce transport emissions by accelerating the uptake of low emission fuels and technologies in and around a new development, and to promote modal shift away from car travel. The approach may also contribute towards achieving local government performance targets; provide local economic benefits; help to streamline planning decisions; and contribute to wider sustainable development goals.

Measures and funding

Low emission strategies enable a broad package of measures to be assembled, which work together to reduce transport emissions. These may address both construction and

operational phases of a development. Typical operational phase measures include parking policies, investment in low emission infrastructure, fleet emission improvement, emission based tolling, procurement and supply chain initiatives and contributions to local transport projects and strategic monitoring.

A practical approach for mitigating the cumulative impacts of transport emissions from development is to require contributions to a central low emission fund (separate from the Community Infrastructure Levy) to assist the implementation of air quality action plans, climate change action plans and local transport plans. The 'Greenwich Formula' is presented as one example of a pragmatic funding approach.

Transport assessment

Transport assessment provides the logical mechanism for integrating the development of low emission strategies with wider planning processes. There is scope to enhance the existing approach to make a more positive contribution to reducing the impact of new developments on air quality. This will be considered for future versions of these guidelines.

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Part 1: Introduction

Purpose of this Guidance Document

This guidance is principally for local authorities in England to refer to when carrying out their local air quality management (often shortened to LAQM) duties under Part IV of the Environment Act 1995. It is intended to provide ideas to local authorities on how the planning system may be used to reduce air emissions from transport.

The guidance enables authorities to take a joined up approach, tackling toxic air pollutants and greenhouse gases together. This is particularly important for the transport sector, which is by far the most common cause for the declaration of air quality management areas and also the only sector where carbon dioxide emissions continue to increase.

The guidance explains the underlying principles of Low Emission Strategies and outlines how they can be deployed. It describes typical measures included in Low Emission Strategies and presents a number of good practice examples.

Background to the guidance

This guidance complements a number of national planning policy and transport planning documents, in particular: Planning Policy Statement 23: Planning and Pollution Control, Guidance on planning obligations and the Government's New Approach to Transport Appraisal (NATA), delivered via the web-based Transport Analysis Guidance (webTAG) <http://www.dft.gov.uk/webtag/>

Where Low Emissions Strategies are introduced these must be consistent with national planning policy statements and reference should be made to the documents listed above

How should the guidance be used?

The guidance is advisory, not mandatory. Local authorities that have declared Air Quality Management Areas (AQMAs) should refer to the guidance when developing their Air Quality Action Plans. However, the guidance is also suitable and recommended for those other local authorities that are considering implementing measures to improve local air quality and reducing greenhouse gas emissions.

Local authorities should use this guidance in conjunction with other relevant guidance with regard to LAQM duties. These guidance documents are as follows: Local Air Quality Management Technical Guidance 2009 and Local Air Quality Management Policy Guidance 2009, including: Practice Guidance on the Economic Principles for the assessment of local measures to improve air quality, Practice Guidance relating to measures to encourage the uptake of Low Emission Vehicles (LEVs), Practice Guidance relating to measures to encourage the uptake of retrofit abatement equipment in existing vehicles, and Practice Guidance relating to implementation of Low Emission Zones.

Local authorities should refer to all Practice Guidance documents on local air quality measures; not just this one. Authorities are also strongly recommended to follow the general guidance on the economic principles of local air quality assessments regardless of the measure being considered.

The specific measures in the guidance are not the only measures that local authorities should examine when considering how to improve local air quality. The relevant Policy Guidance is clear that local authorities should be prepared to consider all possible measures, if relevant. There is now an increasing amount of experience in implementing these particular measures in the UK and in other countries.

Further help on the guidance can be obtained from Defra (air.quality@defra.gsi.gov.uk); by contacting the Local Authority Air Quality Action Plan Helpdesk (Telephone:0870 190 6050, Email: lasupport@aeat.co.uk); and by consulting the Low Emission Strategies website (www.lowemissionstrategies.org).

Climate change and air quality

Climate change is the greatest long-term challenge facing the world today. There is strong and indisputable evidence that climate change is happening and that man-made emissions are its main cause. If left unchecked, climate change will have profound impacts on our societies and way of life. Action is needed now.

Air pollution still harms health and the environment: it is currently estimated to reduce the life expectancy of every person in the UK by an average of 7-8 months, with estimated equivalent health costs of up to £20 billion each year. There are significant benefits to be gained from further improvements.

Air pollution and climate change both arise from the emission to atmosphere of the products of combustion. They are intrinsically linked. National policy advises local authorities to *'bear in mind the synergies between air quality and climate change, and the added benefits to the local, regional and global environment of having an integrated approach to tackling both climate change and air quality goals.'*¹

Joined up policies are particularly important for the transport sector, which is by far the most common cause for the declaration of air quality management areas² and is the only sector where carbon dioxide emissions continue to increase.³

The role of planning

Used positively, spatial planning has a pivotal and significant role in helping to secure enduring progress against the UK's emissions targets, by direct influence on energy use and emissions, and in bringing together and encouraging action by others.

The planning systems across the UK for land use and transport are an important part of an integrated approach to air quality improvements.

Regional planning bodies, and all planning authorities must prepare and deliver spatial strategies that deliver patterns of urban growth that help secure the fullest possible use of sustainable transport for moving freight, public transport, cycling and walking, and overall, reduce the need to travel, especially by car. The main spatial plans at both regional and local level are legally required to undergo Sustainability Appraisal, incorporating a strategic environmental assessment, and this provides the opportunity to predict both the potential

¹ The Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 (HMG, June 2007, Foreword by Jonathan Shaw, Parliamentary Under Secretary of State and Minister for the South East), paragraph 104

² *ibid.*, paragraph 58

³ Climate Change The UK Programme (HMG March 2006, Executive Summary)

effects of these strategies on air and climate, and ways in which these effects can be mitigated. Local Development Frameworks should contain air quality policies, setting a strategic framework to deal with air quality in the local planning system.

An Environmental Impact Assessment (EIA) is a procedure that must be followed for certain types of development before planning permission can be granted. EIA applies to types of development likely to have significant effects on the environment, including major housing, industrial developments and roads. Predicted effects on air and climate, including those from vehicle emissions resulting from the development, must be taken into account by the planning authority when considering whether to grant planning permission, and these can be assessed in relation to the authority's air quality policies and objectives. In addition to the EIA a local planning authority may require other studies to accompany the application (where appropriate), for example: Transport Assessment and Retail Impact Study. A list of important, national policy and guidance documents is provided in Annex 2.

Planning obligations

Planning conditions and planning obligations, which are agreements made between local authorities and developers, are intended to make acceptable development which would otherwise be unacceptable in planning terms. Where there is a choice between imposing conditions and entering into a planning obligation, the imposition of a condition is preferable. The Government's policies on the use of planning conditions are set out in DoE Circular 11/95⁴.

The Government's policies on planning obligations under Section 106 of the Town and Country Planning Act 1990 are set out in ODPM Circular 05/05⁵ and local authorities must have reason for departing from it. The policy requires, amongst other factors, that planning obligations are only sought where they meet all of the following five policy tests: (i) relevant to planning; (ii) necessary to make the proposed development acceptable in planning terms; (iii) directly related to the proposed development; (iv) fairly and reasonably related in scale and kind to the proposed development; and (v) reasonable in all other respects."

PPS23 outlines national policy on planning and pollution control, including the basis for applying a combination of planning conditions and legal obligations to address the environmental impacts of proposed developments. In particular, it notes that *'Section 106 Agreements can be used to improve air quality, make other environmental improvements [...] or offset the subsequent environmental impact of a proposed development.'*⁶

It is important to note that the Community Infrastructure Levy (CIL) exists separately from 106 agreements. The CIL will be a new charge (to be introduced in 2010) in which local authorities in England and Wales will be empowered, but not required, to charge on most types of new development in their area. CIL charges will be based on simple formulae which relate the size of the charge to the size and character of the development paying it. The proceeds of the levy will be spent on local and sub-regional infrastructure to support the development of the area.

⁴ Circular DoE 11/95 : The Use of Conditions in Planning Permissions - <http://www.communities.gov.uk/publications/planningandbuilding/circularuse>

⁵ Circular 05/05: Planning Obligations. <http://www.communities.gov.uk/publications/planningandbuilding/circularplanningobligations>

⁶ PPS23 Annex 1: Pollution Control, Air and Water Quality (2004), paragraph 1.50

Planning conditions and planning obligations have been successfully employed to help mitigate the transport impacts of development by stimulating and accelerating the uptake of low emission fuels and technologies. They are also widely used to support the implementation of air quality action plans, and to support strategic monitoring activities. The table below lists a number of examples.⁷

Ref	Development	Authority	Agreed	Operational Phase Measures	CP ¹
1	The Post Office	Greenwich	2000	Fleet emission improvement	No
2	Greenwich Peninsular	Greenwich	2004	Parking policies & fleet improvement	Yes
3	Greenwich Millennium Village	Greenwich	2006	Parking policies	Yes
4	The Warren	Greenwich	2006	Parking policies & fleet improvement	Yes
5	Tripcock Point	Greenwich	2006	Site travel plan and coordinator	Yes
6	Love Lane	Greenwich	2007	Raft of transport (and non-transport) measures	Yes
7	2012 Olympics	FBG ²	2004	Access policy and low emission fleet procurement	Yes
8	Queens Hospital	Croydon	2005	Contributions to local projects	No
9	Broadmead	Bristol	2002	Contributions to monitoring and local mitigation measures	No
10	AQ monitoring Contributions	York	2002	Contributions to air quality monitoring	No

Table 1: Examples of Planning based Low Emission Strategies

1: CP: Agreement also includes construction phase measures

2: FBG - the 'Five Boroughs Group' (Greenwich, Newham, Tower Hamlets, Hackney and Waltham Forest)

⁷ See also Annexe 3 of this document for examples of low emission strategies and measures

Part 2: Low Emission Strategies

Definition

A *Low Emission Strategy* provides a package of measures to help mitigate the transport impacts of development. The primary aim is to accelerate the uptake of low emission fuels and technologies in and around the development site.

Low emission strategies complement other design and mitigation options, such as travel planning and the provision of public transport infrastructure.

Strategies are often secured through a combination of planning conditions and legal obligations. They may incorporate policy measures and/or require financial investments in and contributions to the delivery of low emission transport projects and plans, including strategic monitoring and assessment activities.

A low emission zone refers to a geographic area within which a low emission strategy applies.⁸

Underlying principles

Transport associated with the construction, occupation and use of new developments may result in the generation of harmful transport emissions (and/or an increase in human exposure to transport related air pollutants). In contrast, well designed developments may actively help to enhance air quality, manage exposure and reduce overall emissions.

Low Emission Strategies provide an important mechanism for mitigating transport impacts. In order to realise their full benefits it is important that their aims and principles are embedded appropriately within the local development framework.

The development and delivery of low emission strategies is enhanced by the provision of clear, concise and locally relevant operational guidance. It may be appropriate to develop a dedicated low emission strategy supplementary planning document. Alternatively, the relevant information may be presented as part of a broader document (e.g. supplementary planning document covering: air quality and climate change, sustainable transport or planning obligations).⁹

In some situations a planning authority may consider emission impacts to be serious enough that they justify either planning refusal or the major re-design of a project. In other cases, it may be more appropriate to request design modification and/or mitigation measures in order to make the development acceptable.

Low emission strategies place the onus on developers to demonstrate how they can take all reasonable efforts to reduce the transport related emission impacts of a proposed development. This may be achieved through appropriate design features, and by implementation of agreed mitigation. Where site specific mitigation is not possible, financial contributions, which are proportionate to the unmitigated impacts, may be pursued to fund local low emission plans and measures, thereby directly offsetting the residual impacts of the development.

⁸ Low emission zones may apply directly to the road network (e.g. the London Low Emission Zone), or to areas of development land (e.g. Greenwich Peninsula scheme)

⁹ See Annexe 3 for examples of local guidance, which supports the development and implementation of low emissions strategies

For all developments over a set threshold, it may be practical to request a standardised contribution calculated using a transparent methodology, which contributes to a general fund for low emission projects and related activities. For larger developments, it is also good practice to request a detailed emissions assessment and to agree a detailed site specific low emission strategy.¹⁰

Under the Planning Act 2008, the Community Infrastructure Levy (CIL) will be introduced, which will be a capital cost payable by developers towards the cost of local and sub-regional infrastructure to support development. Implementation of CIL is due to commence in April 2010. Local authorities will be able to put a CIL on new developments to support infrastructure delivery (including transport, social and environmental infrastructure, schools and parks). Local planning authorities will be empowered – but not required – to levy a charge on most types of new development within their area. They will also be able to continue to enter into Section 106 agreements in the usual way to secure planning obligations for on-site contributions.

It is common practice for developers to pay the legal costs for developing and negotiating a low emission agreement. Similarly, it is justified to seek contributions to cover the cost of relevant monitoring and compliance checks carried out by environment officers to ensure effective implementation of measures contained within an LES agreement.¹¹

Benefits – contributing to sustainable development

A key benefit of low emission strategies is to accelerate the uptake of low emission fuels and technologies in and around a new development, thereby complementing other design and mitigation options, such as travel planning and the provision of public transport infrastructure (encouraging, for example, modal shift away from cars). Since vehicles may travel considerable distances, these benefits will also be felt beyond the immediate vicinity of the development. Low emission strategies may also contribute towards local authority performance indicators and targets for climate change mitigation and air quality (i.e. NI 185, 186 and 194).¹²

The approach has potential to provide local economic benefits. Agreements may be tailored to support the development of local low emission supply chains (e.g. fuel and vehicle supply, local renewable energy resources, vehicle leasing/maintenance services, battery recycling) and to take advantage more generally of the wider societal shift towards a low emission and low carbon economy.

Transparent and well executed low emissions planning policies ensure that developers are clear as to what is expected of them. This in turn helps to streamline the planning process and speed up decisions.

Good quality low emission development contributes to public health and sustainable development goals and helps to create the attractive environments and vibrant communities, which are vital for continued wellbeing and local prosperity.

¹⁰ See Annexe 3 for examples. See also Part 3 of this report for further discussion on pursuing combined emissions assessment as part of transport assessment. Emissions assessment may also feed directly into air quality assessment

¹¹ See Annexe 3 for specific examples

¹² National Indicators for Local Authorities and Local Authority Partnerships: Handbook of definitions – Draft for Consultation (CLG November 2007)

Benefits – market stimulation

Fleet operators and vehicle purchasers are often more comfortable opting for well established and well proven technologies. This can create barriers to the adoption of new low emission systems, even where the combined environmental and economic case is strong.

Low emission strategies provide a mechanism for helping to overcome market barriers for new technologies. They do this by catalysing early adoption, helping to bring down unit costs and by raising customer confidence. This stimulation can influence local, regional, national and even international markets. This potential for catalysing future emission reductions may be very significant.

When considering options for inclusion in a low emission strategy, three levels of significance with regard to technological innovation may be considered:

Basic: accelerate the adoption of established and readily available technologies (e.g. purchase of standard hybrid passenger cars). Measures are probably significant only at the local level.

Advanced: Support adoption of innovative technologies (e.g. local demonstration of near-commercial technologies). Measures may be significant at the local and regional level.

Pioneer: Major initiatives with potential to shift markets for new fuels and technologies and to drive uptake and penetration (e.g. significant investment in new technologies through forward commitment or supply chain intervention). Measures may be significant nationally and even internationally.

Annexe 4 provides direction to further advice regarding technology trends and benefits assessment.

Typical measures

Low emission strategies enable a broad package of measures to be assembled which work together to reduce transport emissions. The following table provides a selection of typical low emission measures.

Measure	Comments and examples
Construction phase	Refer to the London Code ¹³
On-site parking	Graduated price parking permit schemes (e.g. graduation based on VED emission bands/ Euro Standards)
	Residential parking space set aside (e.g. for car clubs and/or low emission vehicles)
	Customer parking allocation for low emission vehicles (e.g. supermarkets)
Low emission infrastructure	Public transport fleet improvements (e.g. technology demonstration, fleet scale trials). Bus/minibus, guided bus, ultra-light rail, light rail vehicles Public service vehicles (e.g. waste services)
	Provision of electric charging bays or low emission fuelling points
	Car clubs – development and promotion (incl. provision of low emission vehicles or electric charging bays)
	Bike/e-bike rental schemes
	Enabling measures (e.g. waste segregation to support Anaerobic Digestion)
Fleet emission improvement	Fleet improvement agreements
	Fleet transport emission strategies (e.g. towards deployment of gas/bio-methane, hybrid and electric vehicles)
Emission based differential tolling	Toll rates based upon emission performance of vehicles (e.g. tunnels and bridges)
Innovative ideas	Creative and opportunistic measures. For example: Low emission travel incentives <i>via</i> store loyalty card Local ESCO addressing transport issues Inter-authority partnership (e.g. rural-urban anaerobic digestion green gas/green electricity)

¹³ The control of dust and emissions from construction and demolition. Best Practice Guidance (GLA, November 2006).

	initiative)
Procurement & Supply chains	Forward commitment procurement
	Use of (aggregated) procurement potential to help accelerate market entry for low emission technologies
	Low emission procurement strategies
Contributions to local plans / projects	see section entitled 'funding strategies' (over page)

Table 2 should not be considered exhaustive, nor are all the measures deliverable solely through spatial planning. There is considerable potential for applying the principles of low emission strategies in new, creative and opportunistic ways.

Funding strategies

A practical approach for mitigating the cumulative impacts of transport emissions from development is to require standardised contributions from all developments over a certain threshold. Contributions secured in this way are most usefully allocated to a general low emission strategy fund, which is used to reduce transport emissions in the local area.

Use of standard charges for Section 106 agreements applied to each development should reflect the actual impacts of development and should comply with the five policy tests set out in Circular 05/05. In addition, where authorities decide to use standard charging, they should publish their levels in advance in a public document such as a Local Development Framework or a supplementary planning document.

The fund may be used to support a variety of local plans and projects (including the full range of measures listed in the table of paragraph 40), as well as for assisting the implementation of air quality action plans, climate change action plans, local transport plans, strategic monitoring/assessment activities and relevant enforcement/compliance work. Projects may support, for example, enhancements to the emissions performance of the local authority's own fleet.

One example of an appropriate funding formula is that adopted by Greenwich Council and presented in Box 1 below. Other authorities, who have developed similar approaches include Croydon, York and Bristol.¹⁴

Contributions could be set at a level which enables full mitigation or offsetting of the residual transport derived emissions impacts of a new development. They could, for example, be derived by estimating the emission damage costs.^{15 16} In this context, the Greenwich Formula equates to a relatively modest level of mitigation and should be recognised as just one element of the authority's broader approach to the mitigation and management of emissions.

The size of contribution, how it is calculated and the manner in which the approach is applied, are all important. The overall effect must be to encourage low emission

¹⁴ For further information see Annexe 3

¹⁵ Damage costs – Carbon dioxide: Transport Analysis Guidance (TAG) Unit 3.3.5 (<http://www.webtag.org.uk>)

¹⁶ Damage costs – Air Quality: Damage Costs for air Pollution (AEA Technology, March 2006)

development rather than to provide an easy option for developers simply to buy the right to pollute.

A flexible approach is likely to improve the ease and effectiveness of implementation. For example, a local authority may decide to use low emission strategy funding to work in partnership with a progressive developer on a low emission project associated with a specific development. Equally, for a particularly innovative and advanced development it may be appropriate to waive the flat rate in recognition.

The purpose for which developer contributions are secured must be defined carefully. This should be broad enough to provide flexibility to direct the money where it is most useful and effective. At the same time, it must not be so broad as to risk diversion to unrelated activities. Some authorities have adopted the terminology: ‘for the implementation of low emission strategies and measures.’

Box 1: Low emission funding

– ‘The Greenwich Formula’

Contributions will be sought for all residential schemes of 10 dwellings and above, and mixed use and commercial schemes of 500 m² and above.

It is clearly important for the integrity of the scheme that the fund be administered transparently and for the money to be spent wisely and effectively for the purposes for which it is obtained. Appropriate financial management and scrutiny (including, for example, ante- and post- implementation assessment of outcomes and cost effectiveness) are vital for ensuring that this is the case.

The LES Partnership is working with local authorities to develop the funding formula approach and to improve methods for assessment of benefits. Visit www.lowemissionstrategies.org for further details (further details of the partnership and its work may be found in Annexe 1).

Setting low emission standards

The European vehicle emission standards (Euro standards) provide a strong driver for reducing air pollution from transport. Their progressive introduction ensures that almost any fleet renewal activity works to the benefit of air quality. The current increasing focus on lower carbon transport has potential to provide further gains. These may arise as co-benefits of new technologies or simply by accelerating fleet renewal and so encouraging the market penetration of more stringent Euro vehicles.

In some instances, there are trade-offs to be made between toxic emissions and carbon dioxide. For example, small diesel passenger cars may be highly fuel efficient, but their use can be detrimental to air quality in urban centres, compared to a petrol equivalent. Advanced after-treatment systems help to mitigate these concerns, enabling low carbon benefits to be realised without adverse effects on public health. An integrated approach on air quality and climate change helps to ensure that the win-win benefits are maximised and that trade-offs are actively managed through well informed policy decisions.

The A-G energy labelling for passenger cars goes some way to providing emission standards for carbon dioxide. However, even where these standards exist, it can be difficult to compare options and understand the likely impact on real world emissions (for

example, hybrid and multi-fuel vehicles will perform differently depending upon how they are operated). The task is harder within the commercial vehicles sector, where there are no recognised standards and where performance is highly dependent on the application and duty cycles involved.

During the construction phase, emissions from non-road mobile machinery (NRMM) may cause increased emissions. A low emission strategy may usefully specify NRMM emissions standards.¹⁷

A range of professional services and assessment tools are available to support green fleet improvement. These may also be used to inform the development and negotiation of low emission strategies.¹⁸

Future proofing

Development build times can span decades. It is important that agreements remain effective during both the construction phase and on into the operational phase. They should take account of technological progress, social trends and the effects of climate change. It is important that agreements are based upon best available knowledge and make all efforts to avoid simply reflecting a 'business as usual' progression. Where developments take place over long timeframes, the low emission strategy agreement should establish periodic review dates to update the agreement as appropriate at that time.¹⁹

While low emission strategies are primarily concerned with reducing transport emissions, it is important to recognise the importance of climate change adaptation within the planning context. Local authorities should ensure that their approach on low emission strategies is well integrated with their wider approach on adaptation.

¹⁷ European Directive – measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non-road mobile machinery (97/68/EC, 2002/88/EC, 2004/26/EC).

¹⁸ Annexe 5 provides direction to useful sources of information

¹⁹ See Annexe 3 for typical wording

Part 3: Linking Low Emission Strategies with Transport Assessment

Current guidance

Planning Policy Guidance Note 13: Transport (PPG13)²⁰ indicates that Transport Assessments (TA) should be prepared for any new development, which is 'likely to have significant transport implications.' Where the implications are more limited a simplified assessment in the form of a Transport Statement (TS) can be produced. In cases where the implications are very limited, then no formal assessment is required. The Department for Transport published 'Guidance on Transport Assessment' (GTA)²¹ in March 2007. The note is intended to assist stakeholders in determining whether an assessment may be required and, if so, what the level and scope of that assessment should be.

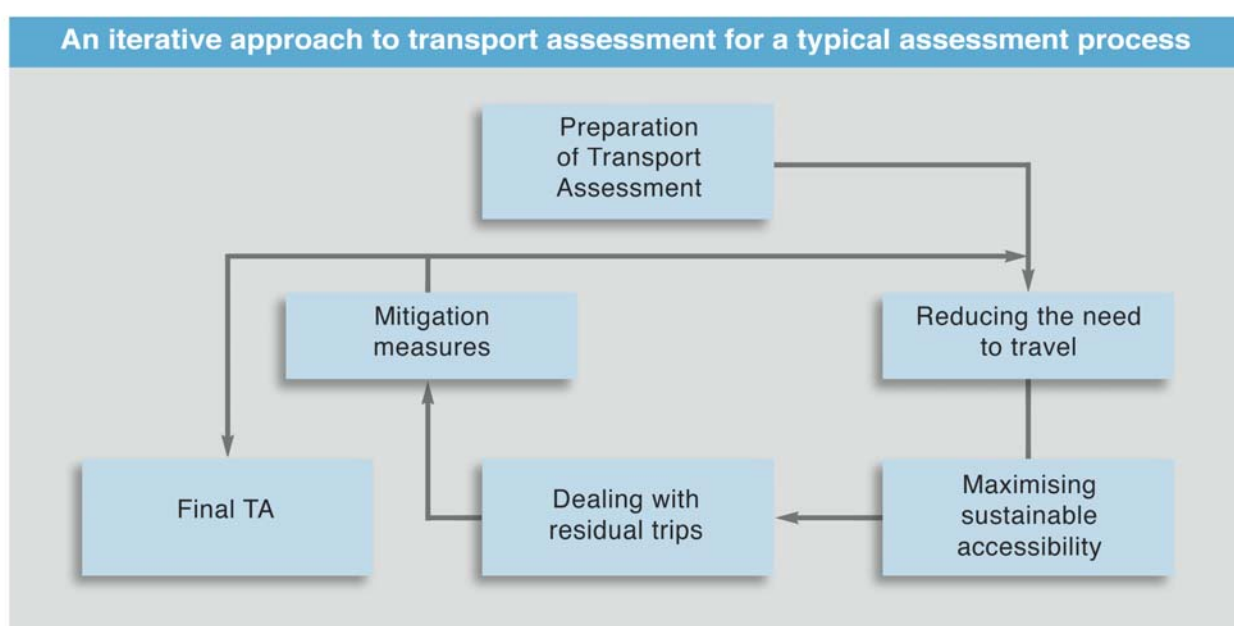


Fig 1: Iterative approach to transport assessment for a typical assessment process
(Source: adapted from GTA, DfT, 2007)

Transport Assessment is promoted as 'a comprehensive and systematic process that sets out transport issues relating to a proposed development.' It proposes measures both to deal with anticipated impacts and to improve accessibility and safety for all modes of travel, particularly for alternatives to the car such as walking, cycling and public transport. In doing so, it helps the local planning authority assess the development's compatibility with planning policy and the relevant transport strategy (usually the Local Transport Plan) and, where appropriate, identify measures to achieve a more sustainable and environmentally sound outcome.

GTA recommends an iterative approach for completing a transport assessment, which is laid out in Figure 1. Initial analysis leads into a hierarchy of impact management options: Reducing the need to travel, maximising 'sustainable access' (i.e. access for all modes, but in particular public transport, cycling and walking) and dealing with residual trips.

²⁰ Planning Policy Guidance 13: Transport (CLG [formerly ODPM], March 2001)

²¹ Guidance on Transport Assessment (CLG and DfT, March 2007)

Together these lead to a package of mitigation measures. This cycle may be repeated until adequate mitigation is achieved.

Environmental assessment

GTA emphasises the need to address the environmental impacts of any significant development. The guidance recognises air quality and climate change impacts as important transport related concerns (although it makes no explicit link between the two). It also advises that Transport Assessment requires '*accurate quantitative and qualitative analyses of the predicted impacts of residual trips from the proposed development.*'²²

GTA recognises that while exceedence (or risk of exceedence) of statutory thresholds is an important consideration within transport assessment, it is not the determining factor in identifying the need for and extent of mitigation.²³ Unfortunately, in practice it is often difficult to argue that impacts are significant without some reference to a statutory threshold. This practical emphasis on thresholds creates difficulties for both air quality and climate change:

For air quality, the relevant statutory thresholds are the air quality objectives set out in the national air quality strategy and EU Directive 2008/50/EC. Impact modelling is expensive, complex and beset with uncertainties. Results are heavily confounded by meteorology and pollution backgrounds. It is rare for the air quality impacts of a single development to be considered significant. However, this is not to say that such developments are necessarily non-polluting or non-detrimental to health.

For carbon dioxide, the emphasis is on emissions rather than concentrations. There is an established methodology, but no statutory threshold to provide a basis for assessment. Consequently, it is rare for the impacts of a given site or indeed the cumulative effects of multiple sites to be considered significant.

Local Authorities may choose to assess air quality and climate change together, and on an emissions basis, and to require full mitigation from prospective developers. This move makes sense not only to improve the usefulness of the assessment, but also because we now know that all emissions of PM and NO_x are harmful to public health and the environment.²⁴

A range of professional services and assessment tools are available or under development, which may be applied for the combined assessment of the emissions impacts of development.²⁵

Enhanced Transport Assessment

Transport Assessment provides a logical mechanism for integrating the development of low emission strategies with wider assessment. The Low Emissions Strategies Partnership is working with a number of authorities around the country to explore how this can be achieved and to demonstrate the advantages. Specific areas of interest are listed below. It is intended for these to form the basis of future guidance and case studies: Combined emission-based assessment for Climate Change (CO₂) and Air Quality (PM,

²² Guidance on Transport Assessment: para – 4.3 (fourth bullet point) <http://www.dft.gov.uk/pgr/regional/transportassessments/guidanceonta?page=4>

²³ GTA notes that the aim of the assessment is to identify 'potential breaches of statutory thresholds and mitigation measures to address such impacts'. Elsewhere it adds that '...it is likely that the developer would be required to provide mitigation measures to address any adverse environmental impacts...and not simply those where breaches of statutory limits may be likely to occur'.

²⁴ Reference 2, paragraph 24/table 1 (PM₁₀ is considered a non-threshold pollutant). PM₁₀ comprises primary and secondary particles. NO_x emissions contribute to formation of secondary particles (NO_x emissions also contribute to acidification and eutrophication of sensitive eco-systems).

²⁵ See Annexe 4 for information on emission assessment tools and technical support

NOX); Adoption of emission-based thresholds for assessing significant of impacts; and Use of Low Emission Strategies to supplement trip-focussed mitigation options

Note: The Department for Transport (DfT) recently published a consultation²⁶ on proposals for 'refreshing' the New Approach to Transport Assessment (NATA). GTA draws heavily on NATA principles. So the refresh is likely to have implications for future development of transport assessment within the planning systems.

²⁶ The NATA Refresh: Reviewing the New Approach to Appraisal (DfT Consultation, October 2007).

Annexe 1: The Low Emission Strategies Partnership

An original draft of this guidance was produced in 2008 by the Beacons Low Emission Strategies Working Group. The group was a fore-runner to the Low Emission Strategies Partnership (www.lowemissionstrategies.org). The partnership supports adoption and implementation of LES by local authorities. It builds on momentum generated during the Air Quality Beacons Year (2007/8), when Greenwich Council received recognition for its pioneering work in this area.

Underlying the partnership is a practical programme of work centred on a nationally funded performance improvement scheme. In 2008 it established a peer group of fifteen local authorities working together to support local implementation of LES and to demonstrate good practice. The LES Programme moves into a second phase from January 2010. This aims to 'strengthen the impact of the LES partnership and demonstrate continued progress in helping local authorities to reduce transport emissions'.

On-the-ground delivery will be focussed around three regional hubs under the Regional Groups Initiative. The Partnership will also let a contract to develop a 'Low Emission Toolkit', and aims to draft a second guidance document, with the working title of 'Reducing emissions through procurement'. The Phase II Programme includes the establishment of a 'Low Emissions Forum', which will hold several events throughout the year to provide opportunities for the wider Low Emissions Community to review and discuss progress on the development and delivery of low emission strategies and related initiatives.

Defra and CLG have provided significant funding to support the Partnership. The partnership has also benefitted from important financial and in-kind contributions from local authorities and Cenex. A management Board provides oversight of partnership activities. In 2010, this includes representatives from Greenwich, Hillingdon, Sefton, Sheffield, Wigan, Mid-Devon and Leeds Councils and Cenex (www.cenex.co.uk). The board also works in close communication with LACORS (www.lacors.co.uk) and Defra.

Annexe 2: National Policy and Guidance

National policy and guidance of relevance to the development and deployment of Low Emission Strategies (not an exhaustive list).

Planning

Planning Policy Statement 23: Planning and Pollution Control (2004)

Planning Policy Statement 23 Appendix A: Matters for Consideration in Preparing Local Development Documents and Taking Decisions on Individual Planning Applications

Planning Policy Statement 23 Annex 1: Pollution Control, Air and Water Quality

Planning Policy Statement: Planning and Climate Change - Supplement to Planning Policy Statement 1

(And practice guidance: www.hcaacademy.co.uk/planning-and-climate-change)

PPG13: Transport

Circular 05/05: Planning Obligations (and Planning Obligations: Practice Guidance)

Transport

New Approach to Transport Appraisal (NATA), delivered via the web-based Transport Analysis Guidance (webTAG): www.dft.gov.uk/webtag

Local Air Quality Management

Policy Guidance (PG09),

Technical guidance LAQM.TG(09)

LAQM practice guidance suite

Environmental Protection

Environmental Protection Act 1990: Emission Control via Statutory Nuisance Provisions

Annexe 3: Examples of Low Emission Policies, Strategies and Measures

Local Policies

It is important to identify exactly which policies and objectives in the local development framework low emission strategies will help to deliver. It is also helpful to identify opportunities for improving local policies as opportunities arise to enhance delivery of low emission developments. Two current practice examples are provided, highlighting key policies and objectives within Greenwich and Sheffield development frameworks.

Greenwich Unitary Development Plan (adopted 20 July 2006)

Strategic policies (SE1-SE4) aim to: Encourage environmentally sustainable development; Protect and improve the environment in terms of air and water quality; Reduce the impact of pollution, noise, smell, especially from transport; Protect areas liable to flood; and Reduce generation of waste and encourage recycling. Specific policies have also been adopted which tackle air pollution and support sustainable transport:

Air Pollution (E6): Policy E6 relates specifically to air pollution and aims to ensure that proposals, which would result in the deterioration in air quality, will be resisted unless measures are included to minimise the impact of air pollutants. Assessments of impacts are required to be submitted, and in areas of poor air quality appropriate mitigating design solutions will be required.

Transport Policies (M1-42): Cover a host of transport issues including travel planning and transport assessment.

Sheffield Development Framework (adoption 2008 - 2010)

‘Transformation and Sustainability’: The Sheffield Development Framework (SDF) shares the vision of the Sheffield City Strategy, which aims to create *‘a successful, distinctive city of European significance at the heart of a strong city region, with opportunities for all’*. In order to achieve the SDF vision of transformation and sustainability, five broad aims are laid out in the Core Strategy of the SDF: A strong economy; Opportunities for all; The natural environment conserved; Improved accessibility and connections; Places well designed, distinctive and revitalised. The core strategy recognises possible tensions between these aims and identifies sustainability appraisal as an approach to decision making.

The Core Strategy also identifies high level policy objectives which include:

S10.1: Improvements to public transport supported, and energy-efficient and low-polluting modes of travel given priority.

S11.1: Developments laid out, designed and constructed to minimise carbon emissions and other harmful impacts on the climate and local environment, to reduce obsolescence, to use energy efficiently and to work with natural processes.

S12.3: Air and water quality improved in excess of minimum requirements.

Key Policies (Core Strategy - submitted version Sept 2007)

SE4 - Air quality: Action to protect air quality will be taken in all areas of the city. Action to improve air quality will be taken across the urban area, and particularly where residents are exposed to levels of pollution above national targets.

ST1 - Strategic priorities for transport: The strategic priorities for transport are: promoting choice by developing alternatives to the car, maximising accessibility, containing congestion levels, improving air quality, improving road safety, delivering economic objectives through demand management measures and sustainable travel initiatives.

ST4 - Demand management: Increasing demand for travel in all parts of the city will be managed to meet the different needs of particular areas through:

promoting good quality public transport and routes for walking and cycling to broaden the choice of modes of travel;

making best use of existing road capacity through the use of variable-message signing and Intelligent Transport Systems;

implementing Travel Plans for new developments to maximise the use of sustainable forms of travel and mitigate the negative impacts of transport, particularly congestion and vehicle emissions;

active promotion of more efficient and sustainable use of vehicles through car clubs, car sharing to increase vehicle occupancy and incentives for using alternatively fuelled vehicles. These will be associated with new residential and commercial developments and particularly in the City Centre;

managing public car parking to reduce long-stay commuter parking in favour of short-stay and providing long-stay park-and-ride facilities near the edge of the main urban area;

creating Controlled Parking Zones to manage traffic levels in constrained locations and encourage the use of more sustainable modes of travel [...];

applying maximum parking standards for all new developments to manage the provision of private parking spaces.

Key Policies (City Policies - proposed April 2007, NB: subject to change in final form)

PPO1: Outlines Sheffield approach to Planning Obligations. It identifies (a non-exhaustive) list of objectives for which contributions may be sought. This includes the three objectives listed above.

PR6 Air Quality: Development will not be permitted if it would cause deterioration in air quality that would have an unacceptable impact. Developers will be required to assess the likely impacts of developments on air quality and mitigate any negative impacts. Wherever possible, developments should include measures to improve air quality.

PT1 Travel Plans: The implementation of Travel Plans* will be required for all new developments with significant transport and accessibility implications. Implementation should:

prevent excessive congestion [...];

mitigate any negative environmental and health impacts of transport movements; and maximise sustainable access opportunities for new developments. [...] Developers will be required to contribute to the development and maintenance of sustainable transport measures.

[*note: In the Sheffield documents, a travel plan is described as: '*A document that outlines in detail the processes for managing all travel impacts and maximising accessibility arising from a specific organisation or site.*']

Supplementary Guidance

Supplementary planning guidance helps to strengthen development and delivery of low emission strategies. A key challenge is to integrate the approach with wider planning priorities and processes. Advice may be presented in the form of a dedicated supplementary planning document, or it may be provided within a broader document (e.g. SPD covering: air quality and climate change, sustainable transport or planning obligations). Four examples of current practice are provided below.

Building on these examples, The Low Emission Strategies Partnership suggests three important considerations for an authority developing new guidance: (a) The attraction of moving away from exclusive consideration of pollutant concentrations towards including explicit emission reduction strategies; (b) better integration of air quality and climate change (e.g. taking damage costs of both air quality pollutants and greenhouse emissions into account in a single assessment); and c) The advantages of providing a clear (non-exhaustive) list of mitigation options, which the planning authority actively promotes and encourages the developer to consider in drawing up an application.

GREENWICH (Adopted February 2008)

Further information: environmental.protection@greenwich.gov.uk and link to SPDs: <http://www.greenwich.gov.uk/Greenwich/Strategies/LandAndBuildingDevelopmentPlan/PlanningGuidanceDocuments.htm>.

Greenwich has developed an SPD, which provides detailed guidance on the type and scale of planning obligations for development proposals. It provides advice on how contributions will be assessed and the process by which contributions will be sought. The SPD is a material planning consideration for use in guiding and determining development proposals. This document includes an annex dealing specifically with provisions relating to environmental health and waste management. Provisions relevant to low emission strategies are summarised below:

Section	Relevant text
Purpose	'Guidance for deriving the provision, including planning contributions, towards environmental health and waste management.'
Definitions	'Contributions for the maintenance or improvement of environmental health.'
Justification	'High regard for environmental health is essential in maintaining the well-being of communities.'
Policy context	'UDP Policy E6 seeks to minimise the impact of air pollution and requires appropriate mitigating design solutions.'
Qualifying developments	'All residential schemes of 10 dwellings and above, and mixed use and commercial schemes of 50m ² and above, which may significantly degrade levels of environmental health.'
Methodology	'A standard contribution will be sought of £100 per dwelling for residential development and £10 per m ² for town centre and commercial developments.'
Worked examples	For example: 'the total cost of contributions for a mixed use development of 50 dwellings and 650m ² commercial floor space is £11,500.'

CROYDON (Air Quality SPG, July 2004)

Further information: pollution@croydon.gov.uk

'The Council will seek to use section 106 agreements and planning conditions to mitigate significant detrimental impacts of development on air quality.' Croydon calculates an air quality contribution of £100 per car parking space for all developments with greater than 50 parking spaces. An accompanying box lists examples of measures which *'can form part of a mitigation scheme and developers should consider including them in their proposals...'* The list includes: The use of clean fuel fleets of vehicles in, and associated with, new developments, and managing the use of parking spaces (for example, giving priority to multiple occupancy vehicles and electric vehicles).

YORK (Draft Air Quality SPG, March 2007)

Further information: environmentalprotection@york.gov.uk

NB: York policy is draft - not yet adopted

Direct impacts: *'Where air quality mitigation measures are required as a direct result of a new development, applicants will be requested to enter a S106 agreement to implement measures to offset any increase in local pollution, and/or make an appropriate financial contribution towards improvement measures or air quality monitoring.'* Developer contributions will be used for one or more of the following: Mitigation measures to help offset any increase in pollution; Air quality improvement measures; Air quality monitoring in the vicinity of the proposed development.

Cumulative impacts: *'Financial contributions may also be appropriate for cumulative developments, particularly where further study is required to assess potential cumulative air quality impacts arising from a number of developments in close vicinity.'* The document

goes on to propose a formula for calculating contributions, which gives weight according to the existing air quality, the likely impacts, and the number of new properties affected. Two examples are provided:

- *Developers were required 'to contribute a certain financial sum towards the Foss Basin Transport Master plan, [... which,] consists of initiatives such as new bus lanes, provision of new bus routes, provision of cycle lanes etc. [...and for] future air quality monitoring...'*
- In another, a process is proposed whereby a number of developments provide 'a financial contribution to the air quality action plan relative to the size (or traffic generating ability) of the development.' The combined pot would be used 'to implement elements of the action plan such as improvements in public transport, encouragement of sustainable modes of travel etc. It is unlikely that any one measure would be directed at the location of any particular development, but instead would be aimed at reducing traffic flows over a wider area.'

SHEFFIELD (SPD Development Plan 2007 - 2010)

Further information: steve.simmons@sheffield.gov.uk

SPDs are proposed for air quality and sustainable transport:

2007: Travel plans, car clubs and other developer contributions (early draft policies): are already being negotiated when deciding about planning applications, for example, where traffic impacts would otherwise be unacceptable. Early informal guidance will help to inform this.)

2008: Air Quality: Guidance is required to help achieve the targets for the new Air Quality Management Area, covering all of the main urban area. An updated proposal is to develop a 'low emission SPD' – which incorporates the planned air quality SPD, and enhances it by integrating air quality and climate change considerations, and reflecting latest guidance on low emission strategies.

2010: Sustainable Transport: The full Sustainable Transport Supplementary Planning Document will incorporate the early draft policies on travel plans, car clubs and other developer contributions, taking account of expected new legislation on planning obligations. It will also include Parking Guidelines to support the City Polices document.

Low Emission Strategies

The earliest examples of low emission strategies are those established by Greenwich City Council. The Council's pioneering work was borne out of an agreement secured as part of the planning agreement with the Post Office for the construction of a new sorting office. Since then, the approach has been extended and applied to a host of developments across the borough, including Greenwich Peninsula and the O2, Greenwich Millennium Village, The Warren and Tripcock Point. Low emission planning policies form a core element of the 2012 Olympics sustainability plan. Further examples are reported from Croydon, Bristol and York.

The table below lists example low emissions strategies, secured through 106 agreements. Summary information on each agreement is provided in the following pages. The table includes contacts who would be happy to provide further information if required. We are keen to compile further examples, please send any information to info@lowemissionstrategies.org.

Ref	Development	Authority	Agreed	Further Information
1	The Post Office	Greenwich	2000	environmental.protection@greenwich.gov.uk
2	Greenwich Peninsular	Greenwich	2004	environmental.protection@greenwich.gov.uk
3	Greenwich Millennium Village	Greenwich	2006	environmental.protection@greenwich.gov.uk
4	The Warren	Greenwich	2006	environmental.protection@greenwich.gov.uk
5	Tripcock Point	Greenwich	2006	environmental.protection@greenwich.gov.uk
6	Love Lane	Greenwich	2007	environmental.protection@greenwich.gov.uk
7	2012 Olympics	FBG*	2004	www.lon2012.com/contact-us.php
8	Queens Hospital	Croydon	2005	pollution@croydon.gov.uk
9	Broadmead	Bristol	2002	environment@bristol.gov.uk
10	AQ monitoring Contributions	York	2002	environmental.protection@york.gov.uk

* FBG - the 'Five Boroughs Group' (Greenwich, Newham, Tower Hamlets, Hackney and Waltham Forest).

The Post Office (Greenwich, 2000)

The development: Construction of a sorting office and vehicle depot in Greenwich.

Low emission strategy: So far as practicable and in order to minimise nitrogen dioxide and sulphur dioxide and particulate emissions to use reasonable endeavours: to ensure the use of low sulphur diesel in the owner's fleet of vehicles at the development;

to fit particle abatement technology to diesel vehicles when it becomes reasonably practicable;
to conform with statutory guidelines and (originally from Department of Environment, Transport and Regions, which no longer exists) recommendations; and
to comply with European Union emissions standard banding stage 3 by the year 2004.
Legal costs: The agreement also requires *'the owner to pay the council's reasonable legal costs in connection with the preparation of this Deed in the sum of £2500.'*

Greenwich Peninsular (Greenwich, 2004)

The development: *‘Over the next 15 years, the new riverside community, with homes for 20,000, and workplaces for 24,000, alongside places to eat, shop, and relax, will attract people from all over the capital.’* (www.GreenwichPeninsula.co.uk)

Low emission strategy: agreed (via 106 agreement) on 23rd Feb 2004. It sets minimum euro-standards for the majority of vehicles entering the development site. The transformation is achieved via a combination of parking controls and low emission agreements as shown in the table below.

Review clause: The agreement includes the following review clause: The developer to *‘at the dates set for periodic review, to submit to the council for approval a review of the operation of the low emission zone, including the low emission zone controls over the preceding period and proposals for the following period shall use all reasonable endeavours to obtain the council’s approval thereto.’*

Sector	Euro	Compliance*	Mechanism
Residential (affordable)	3	2009	Euro based parking charges, with cut off 2013
Residential (private)	4	2009	Euro based parking charges, with cut off 2013
Visitors	n/a	-	No emission based controls
Taxis	3	2010	Reasonable endeavour by developer and TfL
Coaches	Eq. TfL	2010	Reasonable endeavour by developer
Offices	4	2009	Parking charges on tenant parking
Management company	4	2009	Plus reasonable endeavour to attain highest Euro Std
Hotel patrons	2	2010	Plus incentives for meeting Euro 4 by 2009
Waterfront transit	-	-	‘expected to be of the highest Euro Standard’
HGVs/construction	-	-	80% Euro II plus RPC up to 2007

*Compliance by date indicated or 36 months after completion/opening, whichever is the earlier.

Greenwich Millennium Village (Greenwich, 2006)

The development: Greenwich Millennium Village is the first of the Government’s Millennium Communities. It covers 72 acres of the Greenwich Peninsula, and is grouped into communities arranged around a village green and newly created lake. The

development comprises almost 3000 homes plus significant commercial space (www.greenwich-village.co.uk).

Low emission strategy: The strategy applies to all vehicles using the car parking facilities within Greenwich Millennium Village (sections 1C, 1D and village square). It stipulates emission based parking charges, which incentivise vehicles which are A-banded for CO₂ and also those which are Euro 4 compliant.

The Warren, Royal Arsenal (Greenwich, 2006)

The development: Royal Arsenal, Woolwich, exemplifies a mixed urban development and forms part of an entire regeneration of a historic riverside location in London. Ultimately, the 76 acre site will form a new neighbourhood in London. This mix of commercial, residential and leisure facilities will be complete by 2015 (www.royal-arsenal.co.uk).

Low emission strategy: The agreement requires the developer to submit to the council for approval details of a '*low emission zone*' and '*low emission zone controls*'. The low emission zone must aim '*to prohibit the most polluting vehicles within the development scheme while promoting the use of the cleanest vehicles.*' The agreement goes on to outline more detailed provisions to be included for both construction and operational phases of the development. The latter includes measures to manage emissions from both commercial and residential vehicles using the site.

For the operational phase, '*reasonable endeavours*' are required to ensure that commercial vehicles comply with Euro 5 by 2012 (plus a 'target quota' complying with Euro 6). For residential vehicles, the emphasis is on using parking controls to reduce carbon dioxide emissions. A combination of measures is suggested, which include parking permits, car share schemes, car clubs and information provision. The agreement also includes provision for the developer to purchase, site and operate an air quality monitoring station to operate until 10 years after completion of the last residential property.

Tripcock Point (Greenwich, 2006)

Low emission strategy: The owner is required, prior to implementation, to submit to the council for approval a low emission strategy. The strategy should seek '*by a variety of means to manage construction emissions and to encourage, educate and advise the occupiers of the dwellings with regard to low emission standards from private motor vehicles.*' The strategy is to identify methods of reducing emissions which shall include: use of public transport; and measures to encourage occupiers to purchase motor vehicles that meet low emission standards.

More detailed provisions lay out requirements of the strategy to manage both construction and operational phase emissions. For the operational phase, '*reasonable endeavours*' are required to '*actively promote low emission travel behaviour*' amongst residents, employees, visitors and suppliers entering the site. The prime mechanism of doing this will be the site travel plan with its associated travel plan coordinator. The agreement also includes provision for siting of an air quality monitoring station and for financial contributions to support its installation and operation (£160k).

Love Lane, Woolwich Town centre (Greenwich)

The development: Major mixed use scheme comprising 960 residential accommodation, community and/or offices, retail store, retail, food and drink units, as well as 1,172 parking spaces and cycle parking. The whole borough is an Air Quality Management Area for nitrogen dioxide and particulates. Woolwich town centre has a good Public Transport Accessibility Level of 6 (PTAL=6).

Low emission strategy:

Construction phase measures: approved method statement required, to include: monitoring to targets, regular report, and adherence to available best practice (e.g. Mayor's Best Practice Guidance).

Transport measures: Provision of a car club; emissions based charging for 500 residential parking spaces (annual charge ranging from £0 to £300 depending on VED banding); Controls on parking permits and transfers; Provision of ten electric vehicle charging points within the residential car park, 50% of delivery vehicles and 50% home delivery vehicles to meet Euro 5 rating by store opening and to be using bio-fuel (plus 100% within 5 years).

Additional non-transport emissions measures: 10% renewable energy commitment; BREEAM excellent rating, CHP plant including community heating;

Monitoring contribution: £16,000 per annum for ten years towards Greenwich Council's environmental monitoring;

Reporting: Low emission zone implementation report required at time of store opening and subsequently after five and ten years respectively.

The Olympics (London, 2012)

The plan: A plan has been drawn up to ensure that the 2012 Olympics are as sustainable as possible. It covers five key themes: waste, climate change, biodiversity, inclusion and healthy living. The Sustainability Plan looks at all stages of the project, from preparation for the Games, staging the Games and planning for after 2012. Managing transport impacts is a priority, which runs through all stages.

The Olympic bidding document outlined the following key transport measures:

Key measures:

100% public transport for spectators;

Maximise use of the Channel Tunnel rail link to reduce air travel;

Implementation of a low emission zone for the Olympic Park;

Procurement of a low/zero emission Olympic vehicle fleet;

Active spectator programme for walking and cycling; and

Carbon offset programme for all Olympic travel.

The Low Emission Zone: The Olympic Park will be designated as a Low Emission Zone (LEZ) during the Games: The Olympic Park LEZ will permit entry only to vehicles less than five years old and that meet best practice noise and emission standards; LEZ criteria will also be set for fleet contract specifications, thereby extending the benefits of reduced emissions and noise across all Olympic venues and facilities;

Air and noise pollution impacts of demolition, site remediation and construction will be reduced by following the London Code of Construction Practice. Work is underway to develop and implement these measures. Plans include a stronger focus on carbon dioxide emissions in tandem with air quality (further information: <http://www.london2012.com/contact-us.php>).

Queen's Hospital (Croydon, April 2005)

The development: Redevelopment of Queen's Hospital site to provide 360 dwellings and a meeting hall.

Low emission strategy: Agreed via 106 for the developer to pay £12,600 for 'air quality initiatives within the administrative area of the council, which are of benefit to residents living in the development'.

Monitoring costs: 'Upon completion of this Deed the Owner shall pay the Council the sum of £1000 as a contribution towards the cost of monitoring this agreement.'

Legal costs: 'The owner shall pay the Council's reasonable legal costs for the preparation and completion of this Deed upon the date of this Deed.'

Broadmead Expansion Development (Bristol, April 2004)

Financial contribution secured for *'A programme of air quality mitigation, improvement and monitoring in connection with the Development, to be prepared and implemented by the Council.'*

A sum of £75k was allocated for monitoring work, with a further £400k for mitigation measures.

Air Quality Monitoring Contributions York, 2002)

Site A: A planning application was received for a residential development within an existing technical breach area (AQMA). The air quality impact assessment submitted in support of the application demonstrated that levels of nitrogen dioxide would deteriorate slightly as a direct result of the development. A sum of £5000 was requested for air quality initiatives, which was put towards the cost of operating a new NOx analyser in the vicinity of the proposed development. The wording on the agreements reads: *'To pay the Air Quality Initiative Contribution to the council prior to the occupation of more than 50% of the dwellings developed on the land pursuant to the planning permission.'*

Site B: A planning application was received for a 5 story office block within an existing area of technical breach (AQMA). On the basis of the additional traffic movements generated by the development, a sum of £5000 was requested for air quality initiatives, which was put towards the cost of operating a new NOx analyser in the vicinity of the proposed development. The following restrictions and conditions applied: To apply any payment received to the designated scheme within 5 years of first occupation of any part of the office block comprised in the Development, and to repay this amount to 'The Owner' on demand any sum not applied or utilised in accordance with the conditions in the agreement.

Annexe 4: Low Emission Technologies

The Low Emission Strategies Partnership is working to develop further tools and resources to support the development of low emissions strategies. Please visit www.lowemissionstrategies.org for further information.