Integrated Impact Assessment

Report:

The Mayor's Draft Municipal Waste Management Strategy and Business Waste Strategy

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Non technical summary

Integrated Impact Assessment (IIA) of the Mayor's Draft Municipal Waste Management Strategy (MWS) and Draft Business Waste Management Strategy (BWS)

The Greater London Authority commissioned Levett-Therivel llP with Ben Cave Associates, Zahno Rao and Huddersfield University to carry out an independent Integrated Impact Assessment during the preparation of the Mayor of London's Municipal and Business Waste Management Strategies. This document is the report of that assessment. It reports the results of a Sustainability Appraisal, a Strategic Environment Assessment and health, equalities and community safety appraisals of both Strategies. This report contains an environmental report for the purposes of the SEA Regulations[1]. This report represents the views of the consultants and not necessarily those of the Greater London Authority or the Mayor of London.

Overview of purpose and contents

The Mayor of London has a legal duty to produce a municipal waste management strategy (MWS), containing his proposals and policies for the recovery, treatment and disposal of municipal waste, which accounts for about 20% of London's waste. He has also opted to produce a business waste management strategy (BWS) to guide the management of business waste – from commerce, industry, construction and demolition – which accounts for the other 80% of London's waste. Although the Mayor does not have a legal duty to develop a strategy for this waste, he believes we should look at all of London's waste in order to gain the greatest benefits for London economically and have a real impact in climate change terms.

The Mayor's vision for municipal waste management in London is '*To become a world leader in municipal waste management'.* This is supported by four objectives:

(1) To provide Londoners with the knowledge, infrastructure and incentives to change the way we manage municipal waste: to reduce the amount of waste generated, encourage the repair and reuse of items that are currently thrown away, and to recycle or compost as much material as possible.

(2) To minimise the impact of municipal waste management on our environment including reducing the carbon footprint of London's municipal waste.

(3) To unlock the massive economic value of London's municipal waste through increased levels of reuse, recycling, composting and the generation of clean energy from waste.

(4) To manage the bulk of London's municipal waste within London's boundary, through investment in new waste infrastructure.

… and six policies:

(1) Informing producers and consumers of the value of reducing, reusing and recycling municipal waste;

(2) Setting a CO2 equivalent emissions performance standard for municipal waste management activities to reduce their impact on climate change;

(3) Capturing the economic benefits of waste management.

[1] The Environmental Assessment of Plans and Programmes Regulations 2004, S.I.2004 No.1633

(4) Achieving high recycling or composting rates resulting in the greatest environmental and financial benefits.

(5) Catalysing waste infrastructure, particularly low-carbon technologies; and

(6) Achieving high levels of street cleanliness.

The Mayor's objectives for business waste management in London are to:

(1) work towards zero waste direct to landfill by 2031;

(2) focus on waste reduction and the more efficient management of resources to enable London to benefit from the environmental and economic benefits of managing its own waste.

(3) manage as much of London's waste within its boundaries as practicable by taking a strategic approach to developing new capacity; and

(4) promote waste management methods that achieve the greatest possible environmental benefits in terms of climate change.

The policies in the BWS are:

(1) promoting the economic value of a resource-efficient business;

(2) boosting re-use and recycling participation in the commercial and industrial sector;

(3) supporting the waste infrastructure market in London to grow and to deliver for businesses; and

(4) drive improvements in resource efficiency in the construction and demolition sector, whilst continuing to maintain good levels of re-use and recycling performance already being achieved.

Integrated Impact Assessment (IIA)

Impact assessment is the process of predicting and reporting on a plan or strategy's effects on a defined set of goals or objectives, and suggesting improvements.

In preparing the MWS, the Mayor is required to have regard to the effect it would have on health, health inequalities, equality of opportunity, climate change and its consequences, and sustainable development. The Mayor is legally required to prepare and publish an environmental report on the likely significant environmental effects of the policies and proposals contained in the MWS (see paragraph 1.3 below). This legal requirement does not apply to the preparation of the BWS as the BWS is not a statutory document. However the Mayor has opted to prepare an integrated impact assessment of the BWS (which includes a strategic environmental assessment of its policies and proposals) for good practice. This IIA report has formed part of the process of policy construction and evaluation for both strategies.

Separate assessments of the MWS and BWS have been undertaken contained in this report covering sustainability, environment, health, equalities and community safety. This approach has the benefit of avoiding duplication of producing two separate IIA reports, and provides the opportunity to understand how the two strategies align with each other and how they align with other related Mayoral strategies. This approach for combining the assessments of both strategies into a single report is consistent with the SEA Regulations.

The assessments for the MWS and BWS were carried out in parallel with assessments of the Mayor's Draft Air Quality Strategy and his Draft Climate Change Mitigation and Energy

Strategy. Carrying out these assessments at the same time has helped achieve policy consistency across the three strategies.

The IIA process involves five stages:

A. setting the context, establishing the baseline and setting the scope of the assessment including defining assessment objectives;
B. developing and refining policy options and assessing the effects of the strategies on the assessment objectives;
C. preparing the environmental report within the IIA report (of which this section is the non-technical summary);
D. consulting on the draft strategies and this report; and
E. monitoring of the strategies' significant effects.

This section is the non-technical summary of the report prepared for Stage C. The consultation on this report is Stage D.

How were the MWS and BWS assessed?

The consultants assessed the MWS – both formally and through informal commentary – several times throughout its period of preparation, from Spring 2009 until August 2010. Only one round of assessment was possible for the BWS because it was prepared later. The assessments sought to identify the likely significant impacts of the emerging policies in meeting the assessment objectives and suggest possible improvements. These were discussed with Greater London Authority (GLA) officers.

The strategies were assessed against 15 'IIA objectives', which are as follows.

IIA objectives
1 Health and Well-Being: To maximise the mental and physical health and well-being of the population and reduce inequalities in health
2 Community Safety: To enhance community safety by reducing crime and the fear of crime, anti-social behaviour and misuse of drugs, alcohol and other substances
3 Equality and Diversity: To ensure equitable outcomes for all communities and celebrate the unique ethnic and cultural diversity of London's citizens as London's key strength
4 Housing: To ensure that all Londoners have access to good quality, well-located, affordable housing
5 Liveability: To create and sustain liveable environments that promote social cohesion, sustainable lifestyles and a sense of place
6 Historical and Cultural Environment: To enhance and protect the built, historic and cultural environment
7 Governance, Participation, Education and Awareness: To ensure and encourage a transparent and participative decision making process over the long-term, following a good evidence base and in an integrated manner, facilitating participation, engagement and raising awareness
8 Accessibility: To maximise accessibility to housing, key services and amenities and increase the proportion of journeys made by public transport, by bicycle and by foot

9 Economy, Jobs and Skills: To encourage a strong, diverse and prosperous economy, so that all Londoner's can enjoy a good quality of life, to reduce worklessness, improve skills, and improve the resilience of businesses and organisations and their environmental, social and economic performance
10 Biodiversity: To conserve and enhance local and global natural habitats and wildlife and bring nature closer to people
11 Water Quality and Resources: To conserve and enhance the supply and quality of water resources
12 Air Quality: To improve local, national and international air quality
13 Climate Change Mitigation and Energy: To minimise energy use and greenhouse gas emissions
14 Climate Change Adaptation: To ensure that London is prepared for the impacts of climate change
15 Resource Use and Waste: To use resources efficiently, minimise the production of waste across all sectors, and maximise useful recovery of materials and energy

What is the current state of the environment regarding waste in London

Much information about the current state of the environment is presented in a separate scoping report, which is available at Annex 6.

London produces about 20 million tonnes of waste each year. Municipal waste, which accounts for 20% of this total (3,975,000 tonnes), is collected by waste authorities from homes and small businesses. The remaining 80% (16,249,000 tonnes) is C&I waste (34%), and CDE waste (47%). This waste is collected by waste management companies under contract with the businesses that generate the waste.

Overall, 57% of London's waste is re-used, recycled or composted, 31% is disposed at landfill, 6% is incinerated and a further 6% managed by other means. However, London's overall re-use, recycling and composting rate is skewed by the relatively high performance for CDE waste (82%). Approximately 42 per cent of commercial and industrial (C&I) waste is reused or recycled. Only 25 per cent of London's municipal waste is re-used, or recycled, making London the worst performing region in the UK on municipal waste. This performance also compares poorly to other international cities like Los Angeles (42 per cent), Berlin (41 per cent) and Sydney (29 per cent). Furthermore, 18% of CDE waste and 39% of C&I waste is disposed to landfill.

Of the total amount of London's waste that is sent to landfill, it is estimated that only 23% is managed within the Capital. The remaining 80% is disposed at sites outside of London where capacity is declining. London's two municipal waste landfill sites at Rainham and Beddington are expected to close by 2018 and 2021 respectively. There are currently no plans for more landfill capacity in London, and regions outside London are increasingly reluctant to accept London's waste for disposal.

What strategic options were considered?

A range of options were considered during the writing of the MWS and BWS. Two separate strategies were developed because, although the Mayor has a legal duty to prepare a MWS, he is not obliged to prepare a BWS; it was felt that this could be a problem legally if both strategies were set out in one document

In preparing the MWS the GLA considered ten different waste management scenarios which were independently modelled on their economic performance. The ten scenarios were compared against an 11th "Do nothing new" baseline scenario to see how each could help London to improve its waste position and make an effective contribution towards meeting the UK's commitments under the Landfill Directive 1999. The modelling considered various options for managing London's municipal waste, including landfill, recycling, composting, anaerobic digestion, incineration and new waste to energy technologies. Judging the outcomes of the model against a number of criteria and sensitivities, a preferred approach (the Mayor's preferred approach) has been selected. More detail on the modelling undertaken can be found in Chapter 3 and Appendix 4a of the MWS.

The alternatives to the MWS considered were:

Preferred alternative (policy/proposal)	**Alternative considered**
Aim towards waste management self-sufficiency for London	Status quo – continue to allow more of London's waste to be managed outside London
Municipal recycling targets set at 45% by 2015 and 50% by 2020, aspiring to achieve 60% by 2031	set higher or lower recycling targets
Setting zero growth in household waste reduction target; include waste reduction target	Set targets in terms of reducing waste going to landfill
Give preference to technologies that use both heat and electricity generated (combined heat and power) ahead of technologies that use either heat or electricity	Maintain a generic energy recovery step in the waste hierarchy.
Promote waste treatment activities and technologies based on their greenhouse gas performance, and set minimum greenhouse gas performance levels	Specify technologies such as anaerobic digestion, gasification and incineration to treat waste
Fund regional campaigns such as Recycle for London to raise awareness on the importance of reduction, reuse and recycling	Support borough-specific awareness campaigns only; support awareness campaigns focused on equality and other deprived groups
Work with boroughs, Third Sector and businesses to promote and deliver waste reduction and reuse, and recycling	Work only with boroughs and Third Sector, not businesses
Encouraging boroughs to focus on recycling collection services achieving the greatest greenhouse gas savings and cost saving benefits	Prescribe minimum levels of waste and recycling collection services
Encourage boroughs to provide more "on the go" recycling services (including 'bring' sites) for separated recyclables	Prescribe source-separated recycling collection services
Promote incentive schemes such as Recyclebank to reward people for recycling	Require boroughs to impose compulsory recycling schemes or alternate weekly refuse collections.
Local authorities should offer waste and recycling collection services to small enterprises, on par with households	Small enterprises should be treated like large ones for waste management purposes
Undertake a Best Practice Review of revenue-sharing opportunities in waste management contracts	Maintain status quo of supporting different waste contracts across London boroughs

The preferred alternatives for the MWS were generally chosen on grounds of economic efficiency, likely effectiveness on the ground (given the Mayor's powers and different existing practices in different boroughs), or their environmental benefits. The MWS targets also match those set out in the draft London Plan, currently out for public consultation.

The alternatives to the BWS considered were:

Preferred alternative (policy/proposal)	Alternative considered
95% re-use, recycling and composting target for CDE waste by 2020, maintaining performance to 2031	No targets or set higher or lower recycling targets
70% re-use, recycling and composting target for C&I waste by 2020, maintaining performance to 2031	No targets or set higher or lower recycling targets

The Mayor has no statutory responsibilities for the management of London's business waste. The BWS is intended to act as a guide to help businesses manage their waste more effectively. The Mayor does however have planning powers under the GLA Act 2007 for all waste planning applications referred to him via the London Plan. The preferred alternatives for the BWS align with the business waste targets set in the draft London Plan.

What are the significant effects of the MWS and BWS?

Overall, this IIA report predicts that the MWS and BWS will:

- Be highly beneficial for encouraging efficient use resources, minimising the production of waste, and maximising useful recovery of materials and energy;
- Be highly beneficial for climate change mitigation and energy, by virtue of the emphasis it gives to maximising energy recovery from waste;
- Contribute to climate change adaptation, both by developing waste as an alternative to fossil fuel energy and by reducing transport of waste and its impacts;
- Be good for the economy, by seeking to develop jobs and business opportunities within the waste sector and by reducing waste and therefore the costs of dealing with it; and
- Have few, small, but generally positive effects on other IIA objectives.

The following tables summarise the impacts of the policies of the MWS and BWS.

ASSESSMENT OF THE MWS POLICIES

Objective	Policy						
	1	2	3	4	5	6	Over all
1 Health, well-being		+/-			+	+	(+)
2 Community Safety						+	(+)
3 Equality and diversity	+	+	?	+	?	+	+
4 Housing				+			(+)
5 Liveability					+?	+	(+)
6 Historical and Cultural							
7 Governance, participation etc	+	+		+		+	+
8 Accessibility				+			(+)
9 Economy, jobs, skills	+	+	++	+	+		+
10 Biodiversity							
11 Water Quality and Resources							
12 Air Quality		+/-			+		?
13 Climate Chg Mitigation, Energy		++?	+		+		+
14 Climate Chg Adaptation					+		+
15 Resource use and Waste	+	++	++	++	+	+	++

ASSESSMENT OF THE BWS POLICIES

Objective	Policy				
	1	2	3	4	Overall
1 Health, well-being		+			(+)
2 Community Safety		+			(+)
3 Equality and diversity	?	+	+		(+)
4 Housing					
5 Liveability			+		(+)
6 Historical and Cultural					
7 Governance, participation etc	+	+			(+)
8 Accessibility		+			(+)
9 Economy, jobs, skills	+	+	+	+	+
10 Biodiversity					
11 Water Quality and Resources					
12 Air Quality		+	+	+	+
13 Climate Chg Mitigation, Energy	+	+	+		+
14 Climate Chg Adaptation					
15 Resource use and Waste	++	+	?+	+	++

What recommendations does the IIA report make?

The IIA identifies various ways that positive benefits could be enhanced and further opportunities taken. **For the MWS the priorities are:**

- Give the greatest possible support to reducing and avoiding waste
- Advance MWS objectives by prioritising projects as far up the waste hierarchy as possible, such as anaerobic digestion.
- Further support home composting, for instance through an explicit policy and by supporting Master Composter scheme
- Clarify how the CO_{2eq} emissions performance standard would be applied to waste management decisions, and ensure the carbon intensity floor for energy generated from London's residual municipal waste is not set too low.

For the BWS the priorities are:

- more emphasis on the behavioural, perceptual, institutional factors hampering uptake, e.g. the scarcity of management time, higher priorities
- any further practical actions the Mayor could take: we recognise that lack of statutory powers means the policy must rely largely on persuasion and encouragement, but hard measures where possible will increase its effectiveness
- targeting minority owned businesses through their networks and targeting particular sectors known to have a high proportion of minority owned businesses
- being ready for possible changes in the composition of waste resulting for changes in London's economy (for example a possible resurgence in manufacturing.

The IIA report also makes various more detailed recommendations on individual policies for both strategies. These are set out in the IIAs undertaken for each strategy in Chapters 5-8 and Annex 3.

How will the MWS and BWS effects be monitored?

Monitoring the actual impacts of the MWS and BWS will help to determine whether the strategies are achieving their objectives and providing other benefits. The following aspects of the strategies will be monitored:

Proposed monitoring

Proposed monitoring indicator	BWS	MWS
Levels of street cleanliness		✓
Recycling and composting rates by borough		✓
Effectiveness of waste campaigns in reaching people and changing behaviour	✓	✓
Jobs resulting from London Waste and Recycling Board (LWARB) funding in waste management projects in London	✓	✓
Economic value of waste managed in London	✓	✓
LWARB funds plus any leveraged external funds (e.g. Green Fund, JESSICA scheme etc) used for waste management in London	✓	✓
Proportion of waste transported by different modes	✓	✓
Waste arising: total and by type of waste	✓	✓
Waste processing: amount processed in different ways	✓	✓
Waste managed within London and outside London	✓	✓
Waste sent to landfill within London and outside London	✓	✓
Number and capacity of new waste management facilities built, by type of facility	✓	✓
Greenhouse gas performance of activities associated with the collection, treatment, and final disposal of London's municipal waste		✓

The IIA report recommends also monitoring:

- Recycling and composting rates by housing tenure, socioeconomic group and equalities group;
- Amount of food distributed by Foodshare and similar organisations.
- Effectiveness of waste and recycling campaigns reaching equality groups and people in poorer communities
- Air quality near waste management facilities

From Spring 2009 to the publication of the IIA report, the consultants wrote informal commentaries on successive working documents that aimed to identify major significant impacts on the assessment objectives and suggest possible improvements. These were discussed with GLA officers. When the Mayor adopts the final MWS and BWS, he will publish a post adoption statement alongside these documents identifying what he has included from this IIA report.

How to comment

This IIA report is being issued for public consultation, alongside the draft MWS and draft BWS until 14 January 2011. In addition to seeking views from statutory consultees, this IIA Report is available for comment to all organisations and individuals that have an interest in the Mayor's Municipal and Business Waste Strategies. Comments on the IIA report should be sent by e-mail to viewsonwaste@London.gov.uk or by post to:

GLA Waste Team
Post Point 19 B
City Hall
The Queen's Walk
LONDON SE1 2AA

1 Introduction

Integrated impact assessment

1.1 The Greater London Authority (GLA) commissioned Levett-Therivel llp with Ben Cave Associates, Zahno Rao Associates and Huddersfield University to carry out an independent Integrated Impact Assessment (IIA) report during the preparation of the Mayor of London's Draft Municipal Waste Management Strategy (MWS) and Draft Business Waste Management Strategy (BWS).

1.2 The IIA combines Sustainability Appraisal (SA); Strategic Environmental Assessment (SEA), including consideration of human health; Equalities Impact Assessment; Health Impact Assessment; and Community Safety Impact Assessment. This approach has the benefit of avoiding duplication, providing a more rounded assessment of policies, and helping develop solutions that help achieve multiple objectives together. The IIA meets the requirements of Environmental Assessment of Plans and Programmes Regulations 2004 (referred to as 'the SEA Regulations'), which transpose EU Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (usually referred to as 'the SEA Directive). It also follows the Practical Guide to the SEA Directive (ODPM 2005).

1.3 The MWS is a plan or programme to which the SEA Directive and Regulations apply. As a result the Mayor is required to prepare and publish an "environmental report" that identifies the likely significant environment effects of the policies and proposals contained in the Draft MWS and provides the information required by the SEA Regulations (in particular Schedule 2). The SEA Regulations do not apply to the BWS as that strategy is not a statutorily required document. However, the Mayor considers it good practice to publish a report that provides the same information that an environmental report under the SEA Regulations would provide in relation to the policies and proposals it contains. Therefore, this IIA Report concerns both proposed Strategies, includes information in relation to the BWS that conforms to the requirements of an environmental report under the SEA Regulations, and also encompasses information about a range of wider potential impacts, as described above[2].

1.4 This IIA report presents separate assessments of the environmental, social and economic performance of the draft MWS and draft BWS against a set of objectives (set out in Chapter 4). This approach has the benefit of avoiding duplication of producing two separate IIA reports, and provides the opportunity to understand how the two strategies align with each other and with other related Mayoral strategies. This approach for presenting separate assessments for each strategy within a single IIA report is consistent with the SEA Regulations.

1.5 The GLA has prepared a separate Habitat Regulation Assessment on both strategies. This can be found at http://www.london.gov.uk/consultation/waste-strategy.

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[2] For the purposes of the SEA Regulations the "environmental report" (i.e. the information required by Schedule 2 of those Regulations) relating to the policies and proposals contained in the Draft MWS and BWS consists of the following parts of this IIA Report: chapters 1, 2, 3 (excluding issues A, C-H, L and N in table 2 and the first 3 indents of para 3.11) 4, 5, 6a and b, 7a and b, 8 (excluding the 4th and 5th indicators in table 13 and the first three in table 14), and annexes 1, 2, 4 and 5.

Consultation and stakeholder engagement

1.6 This IIA report is being issued for public consultation, alongside the draft MWS and draft BWS until 14 January 2011. In addition to seeking views from statutory consultees on its content, this IIA Report is available for comment from all organisations and individuals that have an interest in the MWS and BWS. Comments on this IIA report should be sent by e-mail to mws@London.gov.uk or by post to:

GLA Municipal Waste Team
Post Point 19 B
City Hall
The Queen's Walk
LONDON SE1 2AA.

Structure of this report

1.7 Schedule 2 to the SEA Regulations specifies information which environmental reports must contain. Much of the early, evidence-gathering information was already presented in a separate scoping report, which is available at http://www.london.gov.uk/sites/default/files/IIA_Scoping_report.pdf .

1.8 Table 1 says where the additional requirements are met in this IIA report.

Table 1: where information required by Schedule 2 of the SEA Regulations is set out

SEA Regulations Schedule 2 requirement	Where covered: MWS	Where covered: BWS
1 An outline of the contents and main objectives of the plan or programme,	Chapter 2	
And of its relationship with other relevant plans and programmes.	Chapter 2 and scoping report	
2. The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.	Chapter 3 and scoping report	
3. The environmental characteristics of areas likely to be significantly affected.	Scoping report	
4. Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds and the Habitats Directive.	Chapter 3 and scoping report	
5. The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation.	Chapter 3 and scoping report	
6. The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects,	Chapter 6(a) (overview), Annex 4(detail)	Chapter 6(b)(overview), Annex 5(detail)
7. The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme.	Chapter 7(a)	Chapter 7(b)
8. An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information.	Chapters 4 & 5	Chapters 4 &5
9. A description of the measures envisaged concerning monitoring in accordance with regulation 17.	Chapter 8	Chapter 8
10. A non-technical summary of the information provided under paragraphs 1 to 9.	Non-technical summary	Non-technical summary

In addition, separate equalities impact assessment for the MWS and BWS are set out in Annex 3 to this report. These assessments form part of the IIA process that considers a

range of goals or objectives together, providing a more rounded view of policies, and helping develop solutions that help achieve multiple objectives. The IIA process covers sustainability, environment, health, equalities and community safety. It is imperative that this Annex is not treated as a stand-alone document, but is read in conjunction with the IIA report as a whole, since there are cross-cutting impacts, for example concerning health inequality.

2 The Mayor's Municipal Waste Strategy, Business Waste Strategy, and their relationship to other plans and programmes

SEA Regulations schedule 2 requirement 1: *An outline of the contents and main objectives of the plan or programme, and of its relationship with other relevant plans and programmes.*

Legal requirements

2.1 Section 354 of the Greater London Authority Act 1999 (the "GLA Act", as amended) requires the Mayor to prepare and publish a municipal waste management strategy. It must contain the Mayor's proposals and policies for the recovery, treatment and disposal of municipal waste, and may contain such other proposals and policies relating to municipal waste as the Mayor considers appropriate. In preparing the MWS the Mayor is to have regard to the London waste collection authorities' recycling plans, the Government's national waste strategy), and any relevant guidance given to him by the Secretary of State. In preparing or revising the MWS the Mayor must consult the Environment Agency, Waste Collection Authorities, Waste Disposal Authorities in Greater London and neighbouring areas, local authorities where London's waste is, or is proposed to be, disposed of, and any other body which is concerned with the minimisation, recovery, treatment or disposal of municipal waste and which the Mayor considers it appropriate to consult.

2.2 In producing and revising the MWS the Mayor is required to have regard to the principal purposes of the GLA, namely the promotion of environmental improvement, social development and wealth creation and economic development in Greater London. He must also have regard to the resources available for the implementation of the MWS; the need to ensure that it is consistent with national policies and with such international obligations which the Secretary of State may notify to him; and to the consistency of the strategy with the Mayor's other statutory strategies.

2.3 The Mayor must, in addition, have regard to the effect the MWS would have on the following four interests, and must include policies and proposals available to him as he considers are best calculated to address these interests (unless not reasonably practicable):

- the health of persons in Greater London;
- the promotion of the reduction of health inequalities between persons living in Greater London;
- the contribution to the achievement of sustainable development in the UK; and
- the contribution to the mitigation of, or adaptation to, climate change in the UK.

2.4 The Mayor, in producing and revising the MWS must also have due regard to the principle that there should be equality of opportunity for all people, including the need to promote equality of opportunity for all persons irrespective of their race, sex, disability, age, sexual orientation or religion; and to its effect on crime and disorder, and to the need to reduce it.

2.5 The first London Municipal Waste Management Strategy, *Rethinking Rubbish in London,* was published in 2003. Incoming Mayor Boris Johnson initiated production of a new municipal waste strategy in May 2008. The Mayor published a draft of the strategy for consultation with the London Assembly and functional bodies in January 2010 called *London's Wasted Resource: The Mayor's draft municipal waste*

management strategy. References to 'MWS' in this report are to this document unless the context indicates otherwise.

2.6 The Mayor is not required to produce a strategy for London's business waste but has chosen to do so in order to gain the greatest benefits from all of London's waste economically and have a real impact in climate change terms The Mayor has adhered to the same responsibilities set out in paragraphs 2.2 and 2.4 above in developing his BWS.

Objectives of the MWS

2.7 The Mayor's vision for municipal waste management in London (Introduction to the MWS) is '*To become a world leader in municipal waste management'.* This is supported by four objectives:

1) To provide Londoners with the knowledge, infrastructure and incentives to change the way we manage municipal waste: to reduce the amount of waste generated, encourage the repair and reuse of items that are currently thrown away, and to recycle or compost as much material as possible.
2) To minimise the impact of municipal waste management on our environment including reducing the carbon footprint of London's municipal waste.
3) To unlock the massive economic value of London's municipal waste through increased levels of reuse, recycling, composting and the generation of clean energy from waste.
4) To manage the bulk of London's municipal waste within London's boundary, through investment in new waste infrastructure.

… and six overall targets:

1) To achieve zero municipal waste direct to landfill by 2025.
2) To reduce the amount of household waste produced from 970kg per household in 2008/09 to 790kg per household by 2031. This is equivalent to a 20 per cent reduction per household.
3) To increase London's capacity to reuse or repair municipal waste from approximately 6,000 tonnes each year in 2008 to 40,000 tonnes a year in 2015 and 120,000 tonnes a year in 2031.
4) To recycle or compost at least 45 per cent of municipal waste by 2015, 50 per cent by 2020 and 60 per cent by 2031.
5) The management of London's municipal waste to achieve annual greenhouse gas emissions savings of approximately:
   - 1.2 million tonnes of CO_2eg in 2015
   - 1.4 million tonnes of CO_2eg in 2020
   - 1.6 million tonnes of CO_2eg in 2031
6) To generate as much energy as possible from London's organic and non-recyclable waste in the most environmentally beneficial way. This is estimated to represent about 40 per cent of London's municipal waste after recycling or composting targets are achieved by 2031.

2.8 Chapter 5 of the MWS sets out its six policies and related proposals:

1) Informing producers and consumers of the value of reducing, reusing and recycling municipal waste.
2) Setting a CO_2 equivalent emissions performance standard for municipal waste management activities to reduce their impact on climate change.
3) Capturing the economic benefits of waste management.
4) Achieving high recycling or composting rates resulting in the greatest environmental and financial benefits.
5) Catalysing waste infrastructure, particularly low-carbon technologies.
6) Improving Londoners' quality of life.

Objectives of the BWS

2.9 The Mayor's strategy for business waste has been developed on the basis of three strategic objectives:

- Objective 1: Turn London's waste from a burden into an opportunity.
- Objective 2: Change London's waste management from a carbon emitting to a carbon saving activity.
- Objective 3: To manage all of London's waste in London

2.10 The BWS also refers to the Draft Replacement London Plan's) key policies and proposals for waste management:

- Work towards zero waste to landfill by 2031.
- Encourage reduction in use of materials and use of re-used materials.
- Set new recycling and composting targets.
- Promote waste management activities achieving the greatest possible environmental benefits in terms of climate change.
- Manage as much of London's waste within London as practicable.
- Enable London to benefit from the environmental and economic benefits of managing its own waste.

Spatial and temporal scope

2.11 The MWS and BWS are strategies for the Greater London Authority area (comprising the London boroughs plus the City of London.) Most of their actions are within London, however they also affect areas elsewhere particularly in the East and South of England which currently accept a lot off waste from London. Achievement of both strategies' objectives also depends on national and international policies, and on action elsewhere in the UK.

2.12 Both strategies are concerned with achievement of waste management targets up to 2031.

2.13 Neither the MWS nor BWS contain policy actions that are specific to the management of London's hazardous waste. Municipal, as well as C&I and CDE, waste streams will consist of waste that may be classified as hazardous, non-hazardous or inert. The classification of the waste, in the context of both the MWS and BWS, is considered to be of less relevance than the overarching principles that form a part of the Mayor's vision for sustainable resource and waste management in London. For example, waste reduction principles would be just as applicable to hazardous CDE waste management as to non-hazardous CDE waste management. Policy 5.19 of the Mayor's spatial development strategy for London, the London Plan, requires the Mayor to work in partnership with the London boroughs, the Environment Agency, industry and neighbouring authorities to identify the capacity gap for dealing with hazardous waste and to provide and maintain direction on need for hazardous waste management capacity.

Relationship of the MWS and BWS to other plans and programmes

2.14 The GLA is a regional government organisation responsible for the strategic administration of Greater London. London wide public services are delivered through a number of GLA Group delivery agencies, notably Transport for London, the Metropolitan Police Authority, the London Fire and Emergency Planning Authority and the London Development Agency.

2.15 The day to day municipal waste services are delivered by the London boroughs comprising 32 local authorities, the City of London and four waste disposal authorities. Non-municipal waste services are provided under private contracts.

2.16 The MWS is one of 12 statutory strategies the Mayor of London is required by law to publish and keep up to date. Other strategies relevant to waste management are:

- The Spatial Development Strategy (the London Plan);
- The Climate Change Mitigation and Energy Strategy; and
- The Economic Development Strategy.

2.17 The Mayor's Vision for London's Waste was also published in January 2010. Its aim is 'to reduce the amount of waste generated by the capital, repair and reuse what we can, significantly increase recycling and composting performance, and to generate energy in the most environmentally friendly way possible from rubbish that cannot be reused, recycled or composted'. The other principal relationships the MWS and BWS have with other relevant plans and programmes are:

2.18 The Mayor has a duty of consistency: the MWS must be consistent with other Mayoral strategies and with government policies and notified international obligations. The Government can direct the Mayor as to the contents of the MWS where it considers that

it does not properly implement legal requirements or would be detrimental to areas outside Greater London. The London Plan is concerned with London's spatial structure and built development. It includes important policies for all London's waste. The Mayor's Economic Development Strategy affects development of green business sectors. Boroughs are required to develop certain strategies and programmes of their own in general conformity with relevant Mayoral strategies, particularly the Mayor's MWS and the London Plan.

2.19 As a non statutory strategy, the BWS is not subject to regulatory requirements to be consistent with Mayoral strategies or government policies. For good practice and consistency, the BWS has been developed to align with other Mayor strategies and government policies mentioned above.

2.20 From Spring 2009 to the publication of this IIA report, the consultants wrote informal commentaries on successive working documents that aimed to identify major significant impacts on the assessment objectives and suggest possible improvements. These were discussed with GLA officers. When the Mayor adopts the final MWS and BWS, he will publish a post adoption statement alongside these documents identifying what he has included from the IIA report.

3. Baseline environment and issues

SEA Regulations schedule 2 requirement 2: *The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme.*

Current and likely future state of the environment

3.1 The IIA scoping report, which is available in full at http://www.london.gov.uk/sites/default/files/IIA_Scoping_report.pdf, presents information about the current and likely future state of London's environment.

London's waste arisings

3.2 Chapter 2 of the MWS presents statistics on London's municipal waste and its management. The most significant points are as follows. Figures are for 2008/9 unless otherwise stated. As to arisings:

- Total MSS production was 3,975,000 tonnes, ie roughly half a tonne per Londoner;
- The largest fractions of this were organic material (largely food and garden waste) at 32% (by weight) and paper and card 23%. Plastics accounted for 10% of municipal waste, glass for 7%, wood for 5% and metals for 3%. The remaining 16% was 'mixed' waste.
- 79% of this total was from households, 21% from councils (including parks) and small businesses;
- This municipal waste, in turn, forms only 20% of London's total waste arisings.

3.3 Chapter 3 of the BWS presents statistics on London's business waste. Total business waste arisings in 2010 were estimated to be 16,249,000 tonnes, of which 6,496,000 were commercial and industrial waste and 9,753,000 were construction, demolition and excavation waste.

3.4 As to management:

- About half of London's municipal waste is landfilled, a quarter recycled or composted, and just under a quarter incinerated.
- London's municipal recycling rate is lower than any other English region, and worse than several comparable international cities;
- London incinerates a larger proportion of MSS than any other English region except for the West Midlands (though much less than many continental cities);
- In 2010, 42% of London's commercial and industrial waste was recycled, as was about 82% of its construction, demolition and excavation waste;
- London's mass burn incinerators generate power but do not make use of the heat also produced; and
- 77% of the landfilled municipal waste goes to sites outside London,

3.5 As to the future:

- Chapter 2 of the MWS reports that 'London's municipal waste arisings in 2008/09 were about five per cent lower than in 2007/08. However, they are expected to rise slightly again as London's population increases and London comes out of the recession, albeit at a slower rate than previously expected.
- London currently has two incineration facilities, SELCHP Energy Recovery Facility in Lewisham and the Edmonton Energy Centre, the latter of which is expected to close by 2020. A third incinerator for London, the Riverside Resource Recovery

Facility at Belvedere, will start operating in 2011. No more incineration capacity is being planned.

- London's own two landfill sites at Rainham and Beddington are expected to be at capacity by 2018 and 2021 respectively and there are no plans for further landfill capacity within London.
- Chapter 4 of the MWS reports an infrastructure capacity gap of about 1.8 million tonnes to be filled using public and private investment in order to implement the MWS and meet London plan waste policy to manage increasing amounts of London's municipal waste within London.
- Landfill sites outside London, currently accepting London's municipal waste, are expected to be full by 2025.
- Regions outside London are increasingly reluctant to accept London's waste, and landfill tax rises are making it more expensive every year
- London is the worst performing UK region on recycling or composting, placing pressure on the UK's ability to meet its landfill diversion targets set by the Landfill Directive 1999.

3.6 Taken together, these factors mean that disposal of London waste to landfill will become increasingly environmentally intrusive and expensive. The Mayor's MWS is necessary to provide an effective policy framework for diverting more waste from landfill and to develop the necessary waste infrastructure for London to become more self-sufficient. Implementing the MWS will also allow London to make an effective contribution towards meeting the UK's commitments under the Landfill Directive.

Areas likely to be significantly affected by the implementation of the MWS and BWS

SEA Regulations Schedule 2 requirement 3: *The environmental characteristics of areas likely to be significantly affected.*

3.6 This IIA report does not consider the impacts of individual waste management facilities because the MWS and BWS are at a strategic, London-wide level and do not propose sites for these facilities. Neither does the IIA report consider the impacts of non-infrastructure programmes to be delivered as part of the implementation of the two strategies.

3.7. All waste management facilities have the potential to impact upon the environment, in both a negative and positive way, depending upon the type of processing operations undertaken, the types of waste handled, the management of wastes and potential environmental impacts on-site, and the mitigation measures employed to reduce potential effects on the environment.

3.8. Both the MWS and BWS aim to reduce London's reliance on landfill, which can potentially impact upon the environment as a result of leachate, methane gas, odour, dust, litter, birds and vermin associated with their operation. Landfill can also result in significant changes in land form. Energy recovery facilities may impact upon the environment through emissions to air. Noise, visual amenity and transport impacts are associated with all waste management facilities to some extent.

3.9 The MWS and BWS also aim to reduce reliance on management of London's waste outside of the Greater London region, ensuring that London has adequate facilities to manage waste that deliver the best environmental performance, particularly in relation to greenhouse gas emissions. To this end, the Mayor is proposing in his MWS a CO_2 equivalent (CO_2eq) emissions performance standard (EPS) that will apply to activities associated with the collection, treatment, and final disposal of London's municipal

waste. In addition to the EPS, the Mayor is proposing a carbon intensity floor for London's residual municipal waste used to generate energy to be no more polluting in carbon terms than the energy source it is replacing. This approach will support those waste activities achieving the greatest possible climate change mitigation benefits. It is intended that the EPS and carbon intensity floor will be applied to waste planning applications referred to the Mayor through the development of the London Plan, currently out for pubic consultation.

SEA Regulations schedule 2 requirement 4: *Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds and the Habitats Directive.*

3.10 The IIA of the draft revised London Plan includes a list of key sustainability (including environmental issues for London and states that 'They have been informed by the review of plans and programmes … the consideration of key baseline information … a review of the key issues identified in previous assessments for London and through consultation with statutory consultees'. They represent a set of issues that has been refined during the preparation of the revised Plan.' The environmental issues are listed as B,I,J,K, M,O,P This list[3] provides helpful context for appraising the sustainability (including environmental) performance of the MWS and BWS, and is reproduced unchanged as Table 2:.

Table 2: Key Sustainability Issues for London

A. Development and Regeneration. The sustainable development and regeneration of London, including addressing areas of deprivation and generating a lasting and sustainable legacy from the Olympic Games, particularly for East London communities.

B. Protecting Biodiversity. Biodiversity needs to be conserved and enhanced across London (from the central urban core through suburbia to the surrounding green belt) in ways that restore and promote its ecological function.

C. Managing Continued Population Growth. London's population is expected to continue to grow which means new homes jobs, and infrastructure need to be planned for in a sustainable way.

D. Improving and Protecting Health and Wellbeing. Poor health outcomes and a widening disparity of relative wellbeing across London, and the relative impacts on the capacity of Londoners' to engage economically and socially.

E. Equalities. The increasing disparity in quality of life across social groups and the impact of poverty on access to key social, environmental and economic infrastructure (for example: housing, transport, heath care and education). There is also increasing polarisation of certain socio-economic groups within London.

F. Delivering Appropriate Housing. Affordability, level of provision, quality, sustainable design and location of housing in London, and its impacts on access, mobility, sense of place and resource use.

G. The Changing Economy. London will be impacted by the current global recession. London's unemployment rate has risen to 8%, the highest of any Government Office Region and the employment rate has remained on a downward trend over the last year. How

London responds to the current recession will have long term impacts on the region and the UK.

H. London's World City Status. The need to ensure London maintains its attractiveness to business and tourism to the benefit of all Londoners.

I. Responding to Climate Change. London's impact on the global climate, and the threat of current and expected climate change on London's population, biodiversity, built and natural

[3] Table 3.2, Integrated Impact Assessment of consultation draft replacement London Plan, Entec, October 2009

environment.

J. Protecting Water Quality and Resources. Population growth, lifestyle choices and climate change are all placing increasing demands on London's water quality and supplies. At the same time existing water resources need to be managed more effectively.

K. Managing Waste. Due to the volume of waste generated and put to landfill there is need for an integrated sustainable approach to managing waste in London, from reduction through to re-use, recycling and reprocessing.

L. Increasing Transport Accessibility. The need to reduce congestion and increase accessibility for all Londoners. There is a continued emphasis on travel by car rather than more sustainable modes of transport such as public transport, walking and cycling. There is also a need to reduce emissions from vehicles (to be addressed in the Mayor's Transport Strategy).

M. Safeguarding (and enhancing) Heritage and the Historic Environment. Due to competing land uses the quality of the cityscape and preservation of the historic environment may come under increasing pressure.

N. Promoting Safety and Security. Levels of crime and perceptions of safety from the perceptions of crime and its relationship to sense of place and community.

O. Improving Access to Nature and Open Space. There is need to improve the public realm and increase people's opportunity for Contact with nature and London's rivers and open spaces.

P. Improving Air Quality. London's air is still polluted and is the worst of any city in the UK and amongst the worst in Europe. The primary cause of poor air quality in London is emissions from road traffic, although emissions from residential and workplace heating are also substantial.

3.11 The IIA scoping report lists additional issues that are specific to the waste strategies, including:

Health inequalities: waste industry's poor track record of health and safety of its workers; lack of proven links between waste management facilities and health problems

Liveability, governance, housing, community safety: particular needs of elderly, frail and disabled people, people who struggle to pay for waste services, small businesses, people with language or literacy problems which could require special measures when promoting composting, recycling etc.; possible need for special measures to support recycling amongst younger households, low income households, minority ethnic households, households in flats and rented accommodation, and recent in-movers; need for greater consistency in waste services between London boroughs; possible use of open spaces for community based waste management projects; use of recycled furniture in open spaces; and importance of local charity shops or community groups in promoting reuse and supporting disadvantaged members of the community

Economic development and skills, diversity: income from recycled materials and energy sales; savings on landfill disposal costs from recycling and energy recovery and the need for new waste management facilities to do this; possibilities for revenue sharing and economy of scale benefits from cross-borough procurement of waste collection and services; support for education and awareness initiatives; provision of training and skills development in waste management; and the need to ensure that all Londoners are able to participate in the green industries sector

Biodiversity: opportunities for improving biodiversity through landfill site restoration and increased levels of composting, where the compost can be used for landscaping and green maintenance

Water quality and water resources: possible leachate from landfill; use of water in waste management processing; effect of hazardous waste; and impact of fly tipping and litter on rivers and waterways

Air quality and transport: air quality issues caused by waste incineration, although this is minimised by strict emission controls; emissions from transport of waste and recyclables; and possibility of specifying emission standards or fuel types (e.g. biofuel) for waste transport vehicles

Climate change mitigation and energy, fuel poverty: climate change impacts of methane generated at landfill sites; energy efficiencies from re-use and recycling of materials; energy recovery from waste; provision of cheap energy by using London's waste as feedstock; and Government's heat feed-in tariff which is likely to increase the number of combined heat and power waste facilities

Climate change adaptation: possible effect of warmer summers and wetter winters on the composition of waste produced; and effect of rising sea levels on waste transport and

Sustainable design and construction, historic environment, sustainable development: reuse of materials and use of recycled materials in construction; dissemination of best practice; promotion of regional self-sufficiency, so that as much of London's waste is managed within London as practicable and the associated resources and benefits are kept within London.

Relevant environmental protection objectives: MWS and BWS

SEA Regulations schedule 2 requirement 5: *The environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation.*

3.12. The IIA scoping report, Chapter 1 and Appendix 1 of the draft MWS summarise the relevant policy and legislation applicable to the management of London's municipal waste. The key legislation driver is the 1999 EU Landfill Directive, which sets EU wide targets for the reduction and management of biodegradable municipal waste. The UK received derogation from these targets, and its current biodegradable waste targets are that:

- by 2010 the biodegradable waste landfilled must be reduced to 75% of that produced in 1995;
- by 2013 the biodegradable waste landfilled must be reduced to 50% of that produced in 1995; and
- by 2020 the biodegradable waste landfilled must be reduced to 35% of that produced in 1995 (if by 2016 the target can be reached the derogation will not be used for this target.)

3.13 The revised Waste Framework Directive 2008[4] sets as targets for Member States (of which the UK is one) that they must recycle or prepare for reuse 50% of household waste by 2020; reuse, recycle or recover 70% of non-hazardous construction and demolition waste by 2020; and set up separate collection of "at least the following: paper, metal, plastic and glass", from the household waste stream by 2015. It also encourages Member states to "set up separate collections of waste where technically, environmentally and economically practicable and appropriate to meet the necessary quality standards for the relevant recycling sectors". In July 2010, DEFRA published a consultation paper on how to implement these requirements[5]

3.14 Most regulatory requirements for non-municipal waste have been in the form of producer responsibility legislation by European Member states. Appendix 1 of the BWS sets out all the relevant legislation applicable to the management of London's non-municipal waste in developing the BWS.

A new national approach

3.15 As of June 2010, Government is conducting a further review of UK waste policy and management delivery in England for both households and businesses. This review forms a key part of the Government's Structural Reform Plan through which it aims to support a strong and sustainable green economy that is resilient to climate change.[6] Its overarching aim is to work towards a zero waste agenda that will:

- Explore how to maximise the contribution of the waste and recycling industries to the UK economically and environmentally, including setting out steps to promote increased energy from waste through anaerobic digestion and changes to the planning system to assist with the development of waste infrastructure;
- Ultimately reduce the amount of waste created and valuable resources sent to landfill, looking at the entire process from source to end of life; and
- Investigate new approaches to dealing with commercial waste, including, voluntary responsibility deals on waste among businesses (particularly for food waste and packaging), incentives for business waste recycling, and an emphasis on cost saving and corporate reputation.

3.16 Findings of the Government's waste policy review are due to be published in April 2011, with further actions to follow by the end of the year. Government has also committed to retain the landfill tax escalator increasing £8 per tonne each year to £80 per tonne in 2014 and to set a floor price at £80 per tonne thereafter. This will provide improved certainty for investment in new waste treatment infrastructure.

3.17 Changes in public sector finances and future government reorganisation may affect many of the delivery organisations referred to in the strategy, such as the London Development Agency (LAD) and the Waste & Resources Action Programme (WRAP). This could, in turn, affect the ability to implement the policies of the MWS and BWS.

[4] Directive 2008/98/EC on Waste and Repealing Certain Directive, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0003:EN:PDF
[5] http://ww2.defra.gov.uk/2010/07/08/wfd-consultation/
[6] Department for Environment, Food and Rural Affairs (2010) Draft Structural Reform Plan [Online] available at http://ww2.defra.gov.uk/about/our-priorities/ (accessed 22 July 2010).

4. The assessment method

SEA Regulations Schedule 2 requirement 8: *… a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information.*

How the assessment was undertaken

4.1 The approach adopted in preparing this IIA report followed Government guidance contained in 'A Practical Guide to the Strategic Environmental Assessment Directive 2005, which specifies five stages for producing an Environmental Report[7]:

A) Setting the context and objectives, establishing the baseline and deciding on the scope
B) Developing and refining alternatives and assessing effects
C) Preparing the Environmental Report
D) Consulting on the draft plan or programme and the Environmental Report and decision making
E) Monitoring the significant effects of implementing the plan or programme on the environment

4.2 Stage A was carried out in house and is recorded in the Scoping Report. This report constitutes Stages B and C of the process. Consultation on this report alongside the draft MWS and BWS will be part of Stage D. Chapter 8 of this report includes proposals for stage E, monitoring the effects of the MWS and BWS.

4.3 The IIA report has been carried out mainly through desk assessments by the consultant team, through discussions within the team and then with GLA officers. In Spring 2009 a list of assessment objectives covering the full range of assessment topics was provisionally agreed between the consultants and GLA officers. Over the following year, the consultants wrote informal commentaries on successive working documents of the MWS which sought to identify the likely significant impacts of the emerging policies in meeting the assessment objectives and suggest possible improvements. These were discussed with GLA officers. In early 2010 the assessment objectives were finalised, reflecting the latest policy developments, and a draft IIA was produced on *London's wasted Resource: The Mayor's draft municipal waste management strategy* published in January 2010 for consultation with the London Assembly and Functional Bodies. These exercises were supplemented by a workshop in April 2010 to which experts and stakeholders on health, equalities and community safety in London were invited to comment on both the draft MWS and BWS from their own perspectives. Despite addressing the Climate Change Mitigation and Energy Strategy, Air Quality Strategy and MWS and BWS, attendance was sparse (albeit high quality). This IIA report is an appraisal of the October 2010 version of the MWS released for public consultation, but also refers to the earlier rounds of appraisal. Chapters 5-8 of this report sets out the IIA and recommendations for the MWS. More detail on the consultant's commentary for improving the MWS is set out in Annex 4.

4.4 The BWS was developed later than the MWS, so has been subject only to one round of IIA informal feedback and appraisal to date. Chapters 5-8 of this report sets out the IIA and recommendations for the BWS. Annex 5 sets out in more detail the consultant's commentaries for improving the BWS.

[7] Office of the Deputy Prime Minister, 2005

Assessment objectives

4.5 The strategies were appraised against the 15 objectives set out in Table 3. The objectives draw on previous assessments in London and elsewhere, relevant regulations, published guidance and good practice. The detailed assessment questions were used to amplify the objectives and prompt the assessors to consider all relevant aspects.

Table 3: IIA objectives

Objective	Assessment Questions: will the strategy help to …
1 Health and well-being To maximise the mental and physical health and well-being of the population and reduce inequalities in health.	Improve mental health? Improve physical health? Reduce health inequalities? Improve health equity? Encourage active lifestyles (including cultural, leisure, sporting and recreational activities for all)? Reduce exposure to pollution, noise, damp, cold and heat? Improve access to health services and information?
2 Community Safety To enhance community safety by reducing crime and the fear of crime, anti-social behaviour and misuse of drugs, alcohol and other substances	Reduce opportunities and motivation for involvement in crime, disorder and anti-social behaviour? Reduce the risk of victimisation and exposure to crime, disorder and anti-social behaviour? Reduce the likelihood that people will move due to both experiences of crime, anti-social behaviour and levels of fear of crime?
3 Equality and diversity To ensure equitable outcomes for all communities and celebrate the unique ethnic and cultural diversity of London's citizens as London's key strength	Impact positively on Equality Target Groups and those living in deprived areas and communities? Reduce inequalities and poverty? Avoid disadvantaging any social group or sector of society? Improve access to services and employment opportunities?
4 Housing To ensure that all Londoners have access to good quality, well-located, affordable housing.	Reduce homelessness and overcrowding? Reduce the number of unfit homes? Increase the range and affordability of housing (taking into account different requirements and preferences of size, location, type and tenure)? Promote lifetime homes?
5 Liveability To create and sustain liveable environments that promote social cohesion, sustainable lifestyles and a sense of place	Improve the quality of the built environment, open space and the public realm? Improve access to open space and the public realm? Regenerate and improve run down areas Promote community engagement and help to make people feel positive about the area where they live?
6 Historical and Cultural Environment To enhance and protect the built, historic and cultural environment	Protect and enhance sites, features and areas of historical, archaeological and cultural value/potential? Conserve and enhance the townscape/cityscape character, including historical, archaeological and cultural value/potential?
7 Governance, participation, education and awareness To ensure and encourage a transparent and	Involve relevant stakeholders and organisations in decisions and implementation? Support and enable individuals, organisations and businesses to make pro-environmental changes to their

Objective	Assessment Questions: will the strategy help to …
participative decision making process over the long-term, following a good evidence base and in an integrated manner, facilitating participation, engagement and raising awareness	behaviour? Improve the provision of information about the environment? Provide educational opportunities so that new generations can understand environmental, social and economic issues
8 Accessibility To maximise accessibility to housing, key services and amenities and increase the proportion of journeys made by public transport, by bicycle and by foot	Reduce the need for travel? Encourage a modal shift to more sustainable forms of travel? Get more benefit from travel services e.g. through car sharing?
9 Economy, jobs and skills To encourage a strong, diverse and prosperous economy, so that all Londoner's can enjoy a good quality of life, to reduce worklessness, improve skills, and improve the resilience of businesses and organisations and their environmental, social and economic performance	Provide secure, satisfying employment to all who want it? Enable people to earn enough to live how they wish without stress or overwork? Enable people to opt for voluntary, cooperative and community activity outside the paid economy? Increase the proportion of business income spent and reinvested locally, especially in poorer areas? Improve the resilience of business and the economy? Improve opportunities and facilities for formal, informal and vocational learning (including volunteering) for all ages? Raise skills and meet skills shortages? Equip Londoner's with the skills they need to live a low environmental impact and low carbon lifestyle? Improve access to jobs and training? Encourage ethical and responsible investment in London?
10 Biodiversity To conserve and enhance local and global natural habitats and wildlife and bring nature closer to people	Conserve and enhance habitats and wildlife? Enhance the resilience of priority habitats and species? Encourage the replacement of valuable lost habitat?
11 Water Quality and Resources To conserve and enhance the supply and quality of water resources	Reduce water consumption and waste water load? Maintain and improve the quality of water and water bodies (surface and groundwater)? Promote the re-use of water?
12 Air Quality To improve local, national and international air quality	Reduce the emissions of pollutants including PM10, NOx and ozone depleting substances? Comply with relevant local, national, EU and international standards (limit values) for air quality?
13 Climate Change Mitigation and Energy To minimise energy use and greenhouse gas emissions	Reduce the emissions of greenhouse gases in and caused by London? Reduce consumption of energy at source? Raise energy efficiency? Reduce reliance on fossil fuels? Increase the proportion of decentralised and renewable energy used in London?
14 Climate Change Adaptation To ensure that London is prepared for the impacts of climate change	Reduce vulnerability to extreme weather and changed climate including heat, cold, wind, drought, rain, flood, pests and diseases? Reduce dependence on long distance transport and trade? Reduce vulnerability to sea level rise?

Objective	Assessment Questions: will the strategy help to …
15 Resource use and Waste To use resources efficiently, minimise the production of waste across all sectors, and maximise useful recovery of materials and energy	Minimise waste generation? Increase re-use, recycling, and reduce waste going to landfill? Dispose of remaining waste safely and with least environmental impact? Promote the proximity principal by managing London's waste as close to source as practicable? Reduce resource use and consumption?

4.6 The list of IIA objectives sought to make the assessment legible by grouping closely related objectives together. They fell roughly into three groupings of society / quality of life (1-6), economy (7-9) and environment (10-15) though these are fuzzy and overlapping categories. The list was designed to be appropriate for IIA of a range of Mayoral strategies. While it was not tailored specifically to the assessment of the significant effects of the MWS and BWS, it has proved valuable and effective in identifying them.

4.7 Schedule 2 paragraph (a) to (m) of the SEA Regulations specifies a list of 'issues' in respect of which the assessment was required to identify the Strategy's 'likely significant effects'. Table 4 shows how the IIA objectives included these issues.

Table 4: The likely significant environmental effects assessed for the purpose of compiling the environmental report under the SEA Regulations 'issues' and how the IIA objectives cover them

SEA Regulations Schedule 2 paragraph (6) issue	Corresponding IIA objective(s)
(a) Biodiversity	10
(b) Population	2, 3, 7, 8, 9
(c) Human health	1, 2, 5
(d) Fauna	10
(e) Flora	10
(f) Soil	10, 15
(g) Water	11
(h) Air	12
(i) Climatic factors	13, 14
(j) Material assets	4, 9, 15
(k) Cultural heritage	5, 6
(l) Landscape	5
(m) The inter-relationship between the issues referred to in sub-paragraphs (a) to (l).	Not covered by an objective, but by the assessment process, especially the secondary, cumulative and synergistic impacts sections of chapters 6a and 6b and chapters 7a and 7b.

Assessment of the MWS and BWS against the IIA objectives

4.8 The MWS and BWS objectives and policies were assessed against the IIA objectives using assessment matrices. Matrices are not a formal requirement for assessment but are included to provide evidence that all relevant issues had been considered. The matrices for the MWS and BWS are included at Annexes 4 and 5 respectively.

4.9 These matrices used the following scores:

++	MWS/BWS objective/policy strongly supports this IIA objective
+	MWS/BWS objective/policy supports this IIA objective
Blank	MWS/BWS objective/policy has no significant impact on this IIA objective
+-	MWS/BWS objective/policy both supports and goes against this IIA objective
-	MWS/BWS objective/policy goes against this IIA objective
--	MWS/BWS objective/policy goes strongly against this IIA objective
?	MWS/BWS objective/policy's effects on the IIA objective uncertain or dependent on how implemented

4.10 More than one symbol was used where necessary. In some cases, some proposals or components of a policy scored differently from the rest. The comments in the last column of each matrix explain these, and give reasons for the scores.

4.11 To help bring out the most important impacts clearly we have refrained from cluttering the matrices with potential impacts which we judge to be trivial or speculative, and have given definite scores where ever possible: ie we have used scores of 'blank' liberally and '?' sparingly. However the effect of policies always depend on the details of how they are implemented and on the effects of future developments which cannot be known for sure. Scoring is therefore always to some extent a matter of judgement.

4.12 The question of what are the baseline conditions against which the implementation of the MWS and BWS policies is being compared with is complex. The matrices generally compare the impact of the implementation of the strategies' policies with what would happen without that implementation. This has some important consequences:

A 'good' score does not necessarily mean 'good enough'. For example the policies almost universally score + or ++ for resource use and waste (and it would be odd for a waste management strategy to include many that did not) but actions by the Mayor alone are unlikely to be sufficient to achieve his waste management targets in the MWS and BWS.

A policy should have a neutral score if it is going to happen anyway.

4.13. For each policy we give a commentary which seeks to give a rounded assessment of the policy's likely effects, good and bad, on the objectives, and any recommendations for changes to strengthen the positive impacts and/or reduce or avoid negative ones. These policy by policy assessments form the basis of the overall findings reported in Sections 6-8. Section 9 lists proposed measures to avoid, reduce or enhance the strategies' impacts.

Limitations and problems with the assessment

4.14 The MWS has been in development since April 2009, with multiple iterations and multiple rounds of IIA comments. In some cases, the timescale for appraisal was constrained, but overall there were few limitations, and many of the recommendations of earlier rounds of IIA appraisal were integrated into later versions of the MWS. The BWS was developed later. Alternatives to the BWS were less explicitly considered than for the MWS. The strategic, London-wide, long-term nature of the two strategies and uncertainties about future Government funding and organisations limit the precision with which impacts can be predicted.

5 Consideration of alternatives: MWS and BWS

SEA Regulations schedule 2 requirement 8: *… An outline of the reasons for selecting the alternatives dealt with …*

5.1 The availability of 'reasonable alternatives" as required by the SEA regulations to the MWS and BWS was constrained by

- The statutory requirement for the Mayor to produce only a municipal waste strategy with specified contents (as outlined in Section 2);The requirement for consistency with national regulations and policies, including those implementing international agreements;
- The Mayor's limited role and powers, given the leading role of the local authorities in waste collection and disposal of municipal waste, and his consequent need to rely in many areas on persuasion, advocacy and enabling action by others with direct powers and duties and (potentially) access to resources;
- The Mayor's limited powers with respect to the management of London's business waste; and
- The way important policies for waste management are decided by the Mayor's spatial development strategy for London, the London Plan, with its own decision and appraisal processes.

5.2 Several types and levels of alternatives were considered during the preparation of the MWS and BWS:

Whether to have joint or separate MWS and BWS;

The amount of waste to be managed in different ways

The breadth of the strategies and technologies that they should promote.

5.3 These alternatives are considered in further detail below.

Joint or separate MWS and BWS

5.4 It was decided to produce two separate strategies because of legal advice that the Mayor could not include matters for which he had no legal duty in a document meeting his statutory duties to produce a municipal waste strategy.

Amounts of waste managed in different ways: MWS

5.5 The MWS provides a range of strategic explicit and implicit choices about amounts of waste to be handled in different ways. The 'headline' decisions – to reduce London's reliance on landfill, significantly boost recycling rates, and to generate energy from non-recycled waste by moving away from traditional mass burn incineration techniques[8],– are highly consistent with the Mayor's Vision and with the IIA objectives affected.

5.6 Chapter 3 of the MWS sets out the modelling used to inform the Mayor's preferred approach for managing London's municipal waste to 2031. Chapter 3 concludes that "The Mayor's targets in this strategy have been set based on a combination of the

[8] For the purpose of developing the MWS, BWS, and this IIA report, "traditional mass burn incineration techniques" refers to the combustion of untreated or unsorted waste with high proportions of carbon-rich materials (e.g. plastics and textiles) that produce electricity only.

economically appraised scenarios, and the environmental performance of waste management options, including their impact on climate change." The Mayor's preferred approach is a combination of the scenarios assessed demonstrating flexibility.

Alternative policies and proposals: MWS

5.7 A range of alternative policies and proposals were considered during the development of the MWS are summarised in Table 5 below The main alternatives considered in developing the MWS; their significant impacts; and the reasons given by plan authors for choosing the preferred alternative are set out in more detail in Annex 1.

Table: 5 The alternatives to the MWS considered were:

Preferred alternative (policy/proposal)	**Alternative considered**
Aim towards waste management self-sufficiency for London	Status quo – continue to allow more of London's waste to be managed outside London
Municipal recycling targets set at 45% by 2015 and 50% by 2020, aspiring to achieve 60% by 2031	set higher or lower recycling targets
Setting zero growth in household waste reduction target; include waste reduction target	Set targets in terms of reducing waste going to landfill
Give preference to technologies that use both heat and electricity generated (combined heat and power) ahead of technologies that use either heat or electricity	Maintain a generic energy recovery step in the waste hierarchy.
Promote waste treatment activities and technologies based on their greenhouse gas performance, and set minimum greenhouse gas performance levels	Specify technologies such as anaerobic digestion, gasification and incineration to treat waste
Fund regional campaigns such as Recycle for London to raise awareness on the importance of reduction, reuse and recycling	Support borough-specific awareness campaigns only; support awareness campaigns focused on equality and other deprived groups
Work with boroughs, Third Sector and businesses to promote and deliver waste reduction and reuse, and recycling	Work only with boroughs and Third Sector, not businesses
Encouraging boroughs to focus on recycling collection services achieving the greatest greenhouse gas savings and cost saving benefits	Prescribe minimum levels of waste and recycling collection services
Encourage boroughs to provide more "on the go" recycling services (including 'bring' sites) for separated recyclables	Prescribe source-separated recycling collection services
Promote incentive schemes such as Recyclebank to reward people for recycling	Require boroughs to impose compulsory recycling schemes or alternate weekly refuse collections.
Local authorities should offer waste and recycling collection services to small enterprises, on par with households	Small enterprises should be treated like large ones for waste management purposes

Preferred alternative (policy/proposal)	Alternative considered
Undertake a Best Practice Review of revenue-sharing opportunities in waste management contracts	Maintain status quo of supporting different waste contracts across London boroughs

5.8. The preferred alternatives for the MWS were generally chosen on grounds of economic efficiency, likely effectiveness on the ground (given the Mayor's powers and different existing practices in different boroughs), or their environmental benefits. The MWS targets also match those set out in the draft London Plan, currently out for public consultation.

Amounts of waste managed in different ways: BWS

5.9. As a non-statutory strategy, the BWS can only promote management of business waste in accordance with the waste hierarchy and according to the best environmental outcome (in carbon terms). The Mayor does not have powers to dictate exactly how business waste should be managed.

Alternative policies and proposals: BWS

5.10 The alternative policies and proposals considered during the development of the BWS are summarised in Table 6 below The main alternatives considered in developing the BWS; their significant impacts; and the reasons given by plan authors for choosing the preferred alternative are set out in more detail in Annex 2.

Table 6: The alternatives to the BWS considered were:

Preferred alternative (policy/proposal)	Alternative considered
95% re-use, recycling and composting target for CDE waste by 2020, maintaining performance to 2031	No targets or set higher or lower recycling targets
70% re-use, recycling and composting target for C&I waste by 2020, maintaining performance to 2031	No targets or set higher or lower recycling targets

5.11 The Mayor has no statutory responsibilities for London's business waste. The BWS is supposed to act as a guide to help businesses manage their waste more effectively. The Mayor does however have planning powers for London's business waste via the London Plan. The preferred alternatives for the BWS align with the business waste targets set in the draft London Plan.

6a. Main findings of the IIA: MWS

SEA Regulations schedule 2 requirement 6: *The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects…*

Impacts of MWS objectives

6a1. Table 7 shows the impacts with respect to the IIA objectives of Table 3 of the four MWS objectives. Table 7 should be cross-referenced with Table 4 to understand the relationship between the SEA Regulations "issues" and the IIA objectives

Four MWS objectives

1. To provide Londoners with the knowledge, infrastructure and incentives to change the way we manage municipal waste: to reduce the amount of waste generated, encourage the repair and reuse of items that are currently thrown away, and to recycle or compost as much material as possible.
2. To minimise the impact of municipal waste management on our environment including reducing the carbon footprint of London's municipal waste.
3. To unlock the massive economic value of London's municipal waste through increased levels of reuse, recycling, composting and the generation of clean energy from waste.
4. To manage the bulk of London's municipal waste within London's boundary, through investment in new waste infrastructure.

Table 7: Assessment of the MWS objectives

	MWS objective			
IIA Objective	**1**	**2**	**3**	**4**
1 Health, well-being		+		
2 Community Safety				
3 Equality and diversity	?			
4 Housing				
5 Liveability		+		
6 Historical and Cultural				
7 Governance, participation etc	+			
8 Accessibility				+
9 Economy, jobs, skills	+		++	+
10 Biodiversity				
11 Water Quality and Resources				
12 Air Quality		+		
13 Climate Chg Mitigation, Energy	+	+	+	
14 Climate Chg Adaptation				+
15 Resource use and Waste	++	+	+	

6a2 Table 7 indicates that the MWS objectives are supportive of several IIA objectives (especially 15 resource use and waste, 13 climate change mitigation and energy and 9 (economy, jobs and skills) and do not clash with any of them.

Impacts of MWS policies

6a3 Chapter 5 of the MWS sets out its six broad policies:

1. Informing producers and consumers of the value of reducing, reusing and recycling municipal waste
2. Setting a greenhouse gas standard for municipal waste management activities to reduce their impact on climate change
3. Capturing the economic benefits of waste management
4. Achieving high recycling and composting rates
5. Catalysing waste infrastructure, particularly low-carbon technologies
6. Achieving high levels of street cleanliness

6a4 Table 8 summarises how each of the six MWS policies scores on the 15 IIA objectives. Annex 4 of this IIA report provides a detailed assessment of each of these policies.

Table 8: Assessment of the MWS policies

Objective	Policy						
	1	**2**	**3**	**4**	**5**	**6**	**Over all**
1 Health, well-being		+/-			+	+	(+)
2 Community Safety						+	(+)
3 Equality and diversity	+	+	?	+	?	+	+
4 Housing				+			(+)
5 Liveability					+?	+	(+)
6 Historical and Cultural							
7 Governance, participation etc	+	+		+		+	+
8 Accessibility				+			(+)
9 Economy, jobs, skills	+	+	++	+	+		+
10 Biodiversity							
11 Water Quality and Resources							
12 Air Quality		+/-			+		?
13 Climate Chg Mitigation, Energy		++?	+		+		+
14 Climate Chg Adaptation					+		+
15 Resource use and Waste	+	++	++	++	+	+	++

6a5. The overall score (last column) is not based on a mechanical totting-up of the individual policy scores, but takes account of the overall picture. Scores in brackets indicate a small overall effect.

6a6 Tables 7 and 8 show that overall, the IIA report predicts that the MWS will:

- Be highly beneficial for its main aim of using resources efficiently, minimising the production of waste, and maximising useful recovery of materials and energy (the full version of objective 15 as set out in Table 3);
- Be highly beneficial for climate change mitigation and energy, by virtue of the emphasis it gives to maximising energy recovery from waste, including promotion of anaerobic digestion;
- Contribute to climate change adaptation, both by developing waste as an alternative to fossil energy and by reducing transport of waste;

- Be good for the economy, by seeking to develop jobs and business opportunities from more sustainable waste management and by reducing waste and therefore the costs of dealing with it; and
- Have few, small, but generally positive effects on other IIA objectives. Most of the effects on the social / quality of life objectives (objectives 1 – 8) are due to just one of the six policies (policy 6) which deals with litter.)

6a7 There is very little in the MWS that is negative in terms of the IIA objectives, though there are many detailed recommendations about implementation identified in the assessments of individual policies. However there are some areas where the MWS could go further. Recommendations on these are made in Chapter 7(a) and Annex 4.

Secondary, cumulative and synergistic effects.

6a8 The MWS is mainly concerned with actions and meeting targets up to 2031, and they prioritise measures that will deliver significant benefits within this timescale. However it aims to help achieve a major transition in how London's waste is treated: from being largely a problem costing money to be disposed of to being an opportunity to recover both economic and environmental value (including climate change mitigation.) So far as it succeeds; this will provide benefits well into the future.

6a9 *Secondary effects:* The Practical Guide describes secondary effects as ones which 'are not a direct result of the plan, but occur away from the original effect or as a result of a complex pathway'. Significant secondary effects of the MWS are likely to include:

- Reductions in traffic and its impacts (including noise, air pollution and danger) as a result of smaller volumes of waste being transported, and shifts to less environmentally damaging modes;

- MWS policy 6 and a possible deposit scheme for cans and bottles are likely to reduce litter and improve the quality of the public realm. There is research evidence that this is likely to help discourage crime and antisocial behaviour.

- Reduced emissions of greenhouse gases through use of waste as energy (e.g. biofuel). Generating low carbon energy from London's municipal waste avoids emissions associated with energy that would have otherwise been generated using fossil fuels (e.g. coal and gas).

6a10 *Cumulative and synergistic effects:* The Practical Guide to the SEA Directive explains cumulative effects as follows: 'cumulative effects arise, for instance, where several developments each have insignificant effects but together have a significant effect; or where several individual effects of the plan (e.g. noise, dust and visual) have a combined effect '. It also suggests a 'focus on identifying the total effect of both direct and indirect effects on receptors' as a way to deal with them. It defines synergistic effects as ones which 'interact to produce a total effect greater than the sum of the individual effects.'

6a11 Table 9 shows the cumulative and synergistic effects of the MWS

Table 9. Cumulative impact assessment

IIA Objective	MWS
1 Health, well-being	+
2 Community Safety	(+)
3 Equality and diversity	+
4 Housing	(+)
5 Liveability	(+)
6 Historical and Cultural	
7 Governance, participation etc	+
8 Accessibility	(+)
9 Economy, jobs, skills	+
10 Biodiversity	
11 Water Quality and Resources	
12 Air Quality	?
13 Climate Chg Mitigation, Energy	+
14 Climate Chg Adaptation	+
15 Resource use and Waste	++

6b. Main findings of the IIA: BWS

SEA Regulations schedule 2 requirement 6: *The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects*…

Impacts of BWS objectives

6b1 Table 10 shows the impacts with respect to the IIA objectives of Table 3 of the three BWS objectives. Table 10 should be cross-referenced with Table 4 to understand the relationship between the SEA Regulations "issues" and the IIA objectives

6b2 **Objectives of the BWS:**

- Objective 1: Turn London's waste from a burden into an opportunity.
- Objective 2: Change London's waste management from a carbon emitting to a carbon saving activity.
- Objective 3: To manage all of London's waste in London

Table 10: Assessment of the BWS objectives

	BWS objective		
IIA Objective	**1**	**2**	**3**
1 Health, well-being			
2 Community Safety			
3 Equality and diversity	+?		
4 Housing			
5 Liveability			+
6 Historical and Cultural			
7 Governance, participation etc			
8 Accessibility			+
9 Economy, jobs, skills	+		
10 Biodiversity			+
11 Water Quality and Resources			+
12 Air Quality			+
13 Climate Chg Mitigation, Energy		++	
14 Climate Chg Adaptation			+
15 Resource use and Waste	++		

6b3 Table 10 indicates that the BWS objectives are supportive of the IIA objectives, with no conflicts in principle.

Impacts of BWS policies

6b4 The policies in the BWS are:

1) Promoting the economic value of a resource-efficient business;
2) Boosting re-use and recycling participation in the commercial and industrial sector;

3) Supporting the waste infrastructure market in London to grow and to deliver for businesses; and

4) Drive improvements in resource efficiency in the construction and demolition sector, whilst continuing to maintain good levels of re-use and recycling performance already being achieved.

6b5 Table 11 summarises how each of the five BWS policies scores on the 15 IIA objectives. Annex 5 provides a detailed assessment of each of these policies.

Table 11: Assessment of the BWS policies

Objective	**Policy**				
	1	**2**	**3**	**4**	**Overall**
1 Health, well-being		+			(+)
2 Community Safety		+			(+)
3 Equality and diversity	?	+	+		(+)
4 Housing					
5 Liveability			+		(+)
6 Historical and Cultural					
7 Governance, participation etc	+	+			(+)
8 Accessibility		+			(+)
9 Economy, jobs, skills	+	+	+	+	+
10 Biodiversity					
11 Water Quality and Resources					
12 Air Quality		+	+	+	+
13 Climate Chg Mitigation, Energy	+	+	+		+
14 Climate Chg Adaptation					
15 Resource use and Waste	++	+	?+	+	++

6b6 Tables 10 and 11 show that overall, the IIA predicts that the BWS will:

- Be highly beneficial for its main aim of using resources efficiently, minimising the production of waste, and maximising useful recovery of materials and energy;
- Be beneficial for climate change mitigation and energy, by virtue of the emphasis it gives to maximising energy recovery from waste, including promotion of anaerobic digestion;
- Be good for the economy, by seeking to develop jobs and business opportunities from more sustainable waste management and by reducing waste and therefore the costs of dealing with it; and
- Have small but generally positive effects on most other IIA objectives.

6b7 There is very little in the BWS that is negative in terms of the IIA objectives, though there are many detailed recommendations about implementation identified in the assessments of individual policies. However there are some areas where the BWS could go further. Recommendations on these are made in Chapter 7(b) and Annex 5.

Secondary, cumulative and synergistic effects

6b8 The BWS is mainly concerned with actions and meeting targets up to 2031, and they prioritise measures that will deliver significant benefits within this timescale. However they aim to help achieve a major transition in how London's waste is treated: from being largely a problem costing money to be disposed of to being an opportunity to recover both economic and environmental value (including climate change mitigation.) So far as it succeeds; this will provide benefits well into the future.

6b9 *Secondary effects:* The Practical Guide describes secondary effects as ones which 'are not a direct result of the plan, but occur away from the original effect or as a result of a complex pathway'. Significant secondary effects of the BWS are likely to include:

- Reductions in traffic and its impacts (including noise, air pollution and danger) as a result of smaller volumes of waste being transported, and shifts to less environmentally damaging modes;
- Improvements in the competitiveness of London's businesses through reducing waste disposal costs.
- Reduced emissions of greenhouse gases through use of waste as energy (e.g. biofuel).

6b10 *Cumulative and synergistic effects:* The Practical Guide to the SEA Directive explains cumulative effects as follows: 'cumulative effects arise, for instance, where several developments each have insignificant effects but together have a significant effect; or where several individual effects of the plan (e.g. noise, dust and visual) have a combined effect '. It also suggests a 'focus on identifying the total effect of both direct and indirect effects on receptors' as a way to deal with them. It defines synergistic effects as ones which 'interact to produce a total effect greater than the sum of the individual effects.'

6b11 Table 12 shows the cumulative and synergistic effects of the BWS.

Table 12. Cumulative impact assessment

IIA Objective	**BWS**
1 Health, well-being	
2 Community Safety	
3 Equality and diversity	(+)
4 Housing	
5 Liveability	
6 Historical and Cultural	
7 Governance, participation etc	
8 Accessibility	
9 Economy, jobs, skills	+
10 Biodiversity	
11 Water Quality and Resources	
12 Air Quality	
13 Climate Chg Mitigation, Energy	(+)
14 Climate Chg Adaptation	
15 Resource use and Waste	++

7a. Measures to prevent, reduce and offset adverse effects: MWS

SEA Regulations schedule 2 requirement 7: *The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme.*

7a1 The Practical Guide to the SEA Directive explains that

'Mitigation can take a wide range of forms, including:

- *Changes to the alternative concerned, or to the plan or programme as a whole*
- *Changes to a specific proposal within the plan or programme*
- *Inclusion of new provisions within the plan or programme*
- *Technical measures to be applied during the implementation stage, e.g. buffer zones, application of design principles*
- *Identifying issues to be addressed in project EIAs*
- *Proposals for changing other plans and programmes'*

7a2 As was noted in Chapter 6, the MWS has no significant negative effects on IIA objectives. However the IIA identifies various ways that positive benefits could be enhanced and further opportunities taken.

(1) ***Give the greatest possible support to reducing and avoiding waste*** The strategies rightly recognise that avoiding waste in the first place is best. The Mayor has limited powers to influence this. The persuasive measures in the strategy need to be combined and coordinated with 'hard' interventions to ensure that the behaviours encouraged are easy and cost effective.

(2) ***Advance MWS objectives by prioritising projects as far up the waste hierarchy as possible, such as anaerobic digestion***. . At the time of writing, a number of projects for waste processing high up the waste hierarchy have been included in the LWARB's 'pool' for funding. They now need to demonstrate a full business case. The effectiveness of this policy – and indeed of the strategy – will depend on how much capacity for 'higher' treatment options secures funding and is brought into operation.

(3) ***Further support home composting***, for instance through an explicit policy and by supporting Master Composter scheme[9]. This could include indicators and targets to recognise and give credit for options (including home composting).

(4) ***Clarify how the CO_{2eq} emissions performance standard would be applied to waste management decisions, and ensure the carbon intensity floor is not set too low***. The concept of a 'floor' is excellent, but as the UK's energy generation becomes less carbon intense, a floor based on fossil fuel generation is likely to become over-generous.

[9] See, for instance, Warwickshire's scheme at http://www.warwickshire.gov.uk/Web/corporate/pages.nsf/Links/05AE3ABC84CDEC748025766C0043966E/$file/Master+Composter+&+Master+Gardner+Scheme.pdf

7b. Measures to prevent, reduce and offset adverse effects: BWS

7b1 As was noted in Chapter 6b, the BWS has no significant negative effects on IIA objectives. Its effectiveness will depend on how much capacity for 'higher' treatment options secures funding and is brought into operation. The assessment of policies in Annex 5 suggests some possibilities to further enhance the strategy's beneficial effects on IIA objectives, including

- more emphasis on the behavioural, perceptual, institutional factors hampering uptake, e.g. the scarcity of management time, higher priorities
- any further practical actions the Mayor could take: we recognise that lack of statutory powers means the policy must rely largely on persuasion and encouragement, but hard measures where possible will increase its effectiveness
- targeting minority owned businesses through their networks and targeting particular sectors known to have a high proportion of minority owned businesses
- being ready for possible changes in the composition of waste resulting for changes in London's economy (for example a possible resurgence in manufacturing.

8. Proposed monitoring measures for the MWS and BWS

SEA Regulations schedule 2 requirement 9. *A description of the measures envisaged concerning monitoring*

8.1 The purpose of monitoring is to answer questions about the effectiveness of the strategy in delivering desired results. Table 13 below lists indicators which the Mayor is committed to monitoring which will provide valuable information relevant to the achievement of the IIA objectives.

Table 13: GLA Proposed monitoring indicators

Proposed monitoring indicator	BWS	MWS
Levels of street cleanliness		✓
Recycling and composting rates by borough		✓
Effectiveness of waste campaigns in reaching people and changing behaviour	✓	✓
Jobs resulting from London Waste and Recycling Board (LWARB) funding in waste management projects in London	✓	✓
Economic value of waste managed in London	✓	✓
LWARB funds plus any leveraged external funds (e.g. Green Fund, JESSICA scheme etc) used for waste management in London	✓	✓
Proportion of waste transported by different modes	✓	✓
Waste arising: total and by type of waste	✓	✓
Waste processing: amount processed in different ways	✓	✓
Waste managed within London and outside London	✓	✓
Waste sent to landfill within London and outside London	✓	✓
Number and capacity of new waste management facilities built, by type of facility	✓	✓
Greenhouse gas performance of activities associated with the collection, treatment, and final disposal of London's municipal waste		✓

8.2 Two caveats must always be kept in mind in monitoring:

- The complexities of the relationships between actions and results limit the reliability and practicability of measuring many of the things that matter most; and
- Resources committed to monitoring should be proportionate to the potential benefits and should not divert effort from action.

8.3 However with these caveats we suggest the following additions to monitoring the MWS and BWS in table 14:

Table 14: IIA suggested additional monitoring indicators

Suggested monitoring indicator	BWS	MWS
Recycling and composting rates by housing tenure, socio-economic group and equalities group		✓
Amount of food distributed by Foodshare and similar organisations.	✓	✓
▪ Effectiveness of waste and recycling campaigns reaching equality groups and people in poorer communities	✓	✓
Air quality near waste management facilities	✓	✓

Annex 1: Main policy/proposal alternatives considered: MWS

Preferred alternative (policy/proposal)	Alternative considered	Significant impacts of the alternative	Reason for choosing the preferred alternative
Aim towards waste management self-sufficiency for London	Status quo – continue allowing more of London's waste to be managed outside London	Transport of wastes to other locations with associated CO2 and air pollution emissions; impacts of waste management facilities are felt outside rather than inside London; jobs and economic benefits of waste management are not retained in London	Managing more of London's waste within London implements self-sufficiency requirements under PPS10 and allows London to recover value from its waste for London
Municipal recycling targets set at 45% by 2015 and 50% by 2020, aspiring to achieve 60% by 2031 Include waste reduction target	Set targets in terms of reducing waste going to landfill	Recycling is a means, not an end in itself. This alternative would explicitly help to achieve the requirements of the Landfill Directive	The Mayor has limited influence on reducing the amount of waste produced, and to set realistic and measurable reduction targets
	Set overall waste reduction targets	This alternative would focus on the highest level of the waste hierarchy.	
	Set higher or lower recycling targets		West London Waste Authority and the South London Partnership, making up a third of London boroughs, have set 50% MSW recycling targets by 2020. WRAP estimate at least 60% of MSW is recyclable[10].
Split the "energy recovery" step in the waste hierarchy to give preference to technologies that use both heat and electricity generated (CHP) ahead of technologies that use either heat or electricity generated	Maintain a generic energy recovery step in the waste hierarchy.	Technologies operating in CHP mode achieve greater energy efficiency levels and CO2 savings[11], and CHP facilities can provide cheaper heat than through conventional methods.	
Promote waste activities and technologies based on their greenhouse gas performance, and	Specify waste services and technologies for example anaerobic digestion and	Simpler for developers and local authorities to implement; does not account for emerging technologies and variations	The efficiency and environmental performance of waste technologies depend on how they are

[10] WRAP recycling study, 2007

[11] Greenhouse gas balance of waste management scenarios, GLA, January 2008.

Preferred alternative (policy/proposal)	Alternative considered	Significant impacts of the alternative	Reason for choosing the preferred alternative
set minimum greenhouse gas performance levels	gasification	in technology	configured; allows greater flexibility[12].
Provide funding to support regional campaigns such as Recycle for London to raise awareness	Support borough-specific awareness campaigns only	Could improve effectiveness by taking into account unique aspects of each borough, e.g. proportion of flats, existing recycling rates	Economy of scale and consistent message benefits with regional campaigns, supporting local initiatives.
	Support awareness campaigns focused on equality and other deprived groups	Equality and deprived groups overall have lower recycling rates, so a focused campaign could improve the campaign's effectiveness, as well as supporting equality/diversity	
Work with boroughs, Third Sector and businesses to promote and deliver waste reduction and reuse, and recycling programmes	Work only with boroughs and Third Sector, not businesses	Would support the voluntary and not-for-profit sector. These often employ people who might otherwise remain jobless, with associated social benefits. However it could disregard key players in waste management	Waste from businesses makes up a high proportion of London's waste
Promote recycling collection services achieving the greatest possible climate change mitigation benefits and cost savings.	Prescribe minimum levels of waste and recycling collection services	Prescribing minimum levels of service could increase recycling performance and achieve consistency of services across London	Allows greater flexibility for boroughs, recognising local circumstances e.g. difficulties with providing cost-effective recycling services in areas of high density housing.
Encourage boroughs to provide more "on the go" recycling services including 'bring' sites for separated recyclables	Prescribe source-separated recycling collection services	Could lead to delivery of higher quality materials. Could impact positively on equality groups and people living in social housing and thus encourage more recycling amongst those groups. Clearly compliant with the revised Waste Framework Directive	A mix of co-mingled and source separated collections maybe necessary given the different housing stock across London, each with various access implications.

[12] Greenhouse gas balance of waste management scenarios, GLA, January 2008.

Preferred alternative (policy/proposal)	Alternative considered	Significant impacts of the alternative	Reason for choosing the preferred alternative
Promote incentive schemes such as Recyclebank to reward people for recycling	Require boroughs to impose compulsory recycling schemes or alternate weekly refuse collections.	Fortnightly collection can be problematic, especially for poorer households and flat dwellers short of space to store different kinds of waste. It could also raise issues of enforcement and penalties for non-compliance. Fly tipping already costs London authorities approximately £13m each year[13].	There are already inconsistent levels of service across London, making it difficult to enforce minimum levels of service. Compulsory measures may also increase fly-tipping. Introduction of powers to introduce compulsory recycling measures have also been ruled out by Government, whose preferred approach is use of incentives.
Local authorities should offer waste and recycling collection services to small enterprises, on par with households	No specific provision for small enterprises	Small enterprises have many of the characteristics of households (e.g. limited space and resources for waste management).	The Government is changing the definition of municipal waste to include more commercial waste. Boroughs will need to have services in place to manage more commercial waste
Undertake a Best Practice Review of revenue-sharing opportunities in waste management contracts	Maintain status quo of supporting different waste contracts across London boroughs	The status quo has led to varied and inconsistent levels of service and revenue sharing opportunities;	Standardised waste contracts with revenue sharing arrangements will help achieve consistent waste and recycling services across London, further incentives boroughs to improve recycling and landfill diversion rates, and provide the waste industry with consistent waste service specifications

[13] http://www.croydonguardian.co.uk/news/1348737.flytipping_costs_london_13million_a_year/

Annex 2: Main policy/proposal alternatives considered: BWS

Preferred alternative (policy/proposal)	Alternative considered	Significant impacts of the alternative	Reason for choosing the preferred alternative
95% re-use, recycling and composting target for CDE waste by 2020, maintaining performance to 2031	No targets or set higher or lower recycling targets	Realistically, unlikely to achieve greater than 95% re-use, recycling and composting; this is already considered best practice level anyway. Lower targets may encourage management of CDE waste at lower levels of the waste hierarchy.	Performance levels already demonstrated on major infrastructure projects in London (e.g. Heathrow T5 and Olympic Park development). WRAP best practice examples up to 95%.
70% re-use, recycling and composting target for C&I waste by 2020, maintaining performance to 2031	No targets or set higher or lower recycling targets	Lower targets may encourage management of C&I waste at lower levels of the waste hierarchy.	GLA Group members individually achieving performance levels of around 70% and upwards. Study for Westminster Council showed that 70% of waste from each of retail, hospitality and office sectors is potentially recyclable.[14]

[14] WAP (2005) Waste Analysis Project: Final Report [Online] available at http://www3.westminster.gov.uk/docstores/publications_store/WCCWasteAnalysisFinalReport.pdf (accessed 18 June 2010).

Annex 3: Equalities Impact Assessment

1. The Context

The GLA Act requires that the Mayor has due regard to the principle that there should be equality of opportunity for all people, including the need to promote equality of opportunity for all persons irrespective of their race, sex, disability, age, sexual orientation or religion. The Mayor's 'Equal Life Chances for All' equalities framework[15] extends the definition of equalities to include other groups who may face discrimination, disadvantage and social exclusion – for example, due to class or income - whose needs have often been ignored[16]. In assessing the policies in the two Waste Strategies the consultants have not provided a separate assessment of each group, but rather highlighted the effect of each policy on particular equalities groups who are likely to be positively or adversely affected.

2. The Equalities Impact Assessment Process

Equality and Diversity

Equality and Diversity was one of the fifteen assessment objectives considered in this IIA report: *to ensure equitable outcomes for all communities and celebrate the unique ethnic and cultural diversity of London's citizens as London's key strength*. The following assessment questions were used to assess the MWS and BWS from an equalities perspective:

Will the MWS and BWS:

- impact positively on Equality Target Groups and those living in deprived areas and communities?
- reduce inequalities and poverty?
- avoid disadvantaging any social group or sector or society?
- improve access to services and employment opportunities?

The assessment process follows the key stages of an Equalities Impact Assessment, namely:

- **Initial screening:** the consultants have been closely involved in commenting on the MWS and BWS throughout their development and pointed out particular beneficial and negative effects at this stage which have been incorporated into the final IIA report and this equalities assessment.
- **Scoping and defining:** the scoping stage was carried out at the beginning of the process of developing the MWS and BWS and resulted in the equalities objectives and assessment questions detailed above.
- **Evidence base:** Evidence to answer the equalities assessment questions was sourced where appropriate from relevant documents. Professional judgement and qualitative analysis has also necessarily been used to assess the likely impact of new policies.
- **Assessment:** the IIA report and this equalities assessment analyses all policies within the MWS and BWS in respect of their likely equalities impact.
- **Action planning:** the IIA report has recommended changes and amplifications to certain policies with the MWS and BWS which will benefit equalities groups. It is then up to the Mayor to take any of the assessment recommendations on board.

[15] http://www.london.gov.uk/mayor/equalities/framework/

[16] The links from the following webpage give examples of these other groups http://www.london.gov.uk/eqiaguide/target.jsp

- **Publication**: The Mayor will publish a post-adoption report with the final versions of the MWS and BWS in early 2011. This report will include a record of how recommendations from this equalities impact assessment) have been taken into account.
- **Review**: this equalities impact assessment makes specific recommendations about monitoring the implementation of the MWS and BWS, including highlighting key equalities monitoring questions.

2.4 Iterative Process

The main body of this Equalities Annex includes the final comments pertaining to equalities that are in this IIA report, designed to be read in conjunction with the draft MWS and BWS.

3. Evidence

The MWS and BWS are strategic documents and, although the action points give details about implementation, it is often difficult to state the precise impact on equalities groups with certainty, since it will depend on exactly how successful the initiatives are in targeting and reaching equalities groups and low income households. Furthermore in many cases implementation will depend on the actions of others outside of the Mayor's control. These factors mean that the IIA report is of necessity strategic and qualitative in its assessments, and use professional judgement. Evidence to answer the equalities assessment questions was sourced where appropriate from relevant documents and statistics and is evidenced throughout this Annex as footnotes.

4. Consultation

The IIA report has taken account of comments from a stakeholder consultation workshop held in April 2010 which was part of the IIA development for four of the Mayor's strategies: Climate Change Mitigation, Air Quality, Municipal Waste, and Business Waste. The workshop sought to consult specifically on the impact of these strategies on health and wellbeing, equalities, and community safety. Invitees from the equalities sector included members of the HEAR network, a pan London third sector network set up to give mutual support on equalities matters. It also included a number of other specialist organisations with a known interest in the equalities impact of environmental strategies, such as London Friends of the Earth and the London Sustainability Exchange. The workshop was held at the time when all four strategies were far enough advanced that substantive discussions were possible, but still early enough to make a difference. With regard to the MWS and BWS the workshop raised the following points that may have equalities implications:

- SMEs are hard to access and influence
- How will recycling targets be met, given that the rate in inner London boroughs is typically lower than outer London boroughs?

Some of these are detailed implementation issues, but we have addressed more strategic elements as far as possible in our assessment of the Waste Strategies, particularly in relationship to SMEs and behaviour change.

Notes from the workshop have been sent to all those who had originally been invited with an invitation to respond.

The draft BWS and MWS, along with the IIA, are currently out to consultation until 14 January 2011, The GLA will target equality groups identified in the IIA report to ensure the consultation on the BWS, MWS and IIA report is as meaningful and far reaching as possible.

EQUALITIES IMPACT ASSESSMENT OF THE MWS

This section summarises the equalities implications of the Municipal Waste Strategy and its proposed policies from the main IIA report. The main comments and recommendations are also contained within the IIA report, but this Equalities Annex takes the opportunity to further elaborate on how the Mayor could implement some of the policies in order to achieve a positive impact on equalities groups and poorer communities.

Overall: There are no clearly adverse impacts on equalities groups. Many of the policies promote equality but implementation will require targeting of particular groups, for example minority-owned small businesses and people living in high rise accommodation.

Policy 1: Inform producers and consumers of the value of reducing, reusing and recycling

The Policy should be beneficial to equalities groups and poorer communities.

Working with Londonwide campaigns and initiatives to promote municipal waste reduction, reuse and recycling campaigns should have a beneficial effect for equalities groups if the campaigns and initiatives target particular groups. Working with WRAP[17] should be beneficial since it has produced a number of guides and case studies on how to improve recycling in low participation areas and communities.

Working through leading businesses to raise the recycling rate amongst SMEs is a worthy aim. Many retail and catering SMEs[18] are BAME owned and thus a specific campaign to reach these sectors should result in a higher recycling rate amongst BAME owned businesses. There is a lack of reliable data on women's enterprises. Information on the location of women's enterprises within particular sectors is not well documented but the Small Business Service estimated that 48% of women own businesses in the service industries, compared to 36% of male entrepreneurs[19].

Promoting waste reduction and re-use initiatives through partners such as the London Community Recycling Network, should have a positive impact on individuals who receive free recycled goods. The target beneficiaries of particular re-use schemes (e.g. furniture re-use schemes) are usually those in receipt of housing benefit.

Recommendations

- There should be a specific proposal in the Municipal Waste Strategy on how the Mayor proposes to target equalities groups in its campaigns to promote municipal waste reduction, reuse and recycling campaigns.

- Leading businesses should be encouraged to work in conjunction with minority business networks (e.g. Black and Asian business networks, women's enterprise networks etc). The GLA Group may be able to assist in such a campaign.

[17] http://www.wrap.org.uk/local_authorities/research_guidance/communications/low_participation_areas/

[18] *BME Business Owners: a Market Research Perspective* (Barclays, 2005)
(In England and Wales, 25% BAME owned businesses are in the retail and wholesale sector, and 23% in catering)

[19] A Strategic Framework for Women's Enterprise (Small Business Service, 2003)

Policy 2: Setting a CO_{2eq} emissions performance standard for municipal waste management activities to reduce their impact on climate change.

The Policy may have a small beneficial impact on equalities groups and poorer communities benefiting from lower energy costs from heat distribution networks.

Installing heat distribution networks from the South East London CHP incinerator in Lewisham to provide heat to neighbouring residential and commercial developments could have a positive effect on people living on social housing estates served by such plants if any lower energy costs are passed on to them.

Policy 3: Capture the economic benefits of municipal waste management

This has an uncertain impact on equalities groups and disadvantaged people, depending on how the policy is implemented.

The Mayor proposes to work with London Councils and Capital Ambition to develop model municipal waste contracts for waste authorities to use. This could have a beneficial impact on local disadvantaged and/or unemployed people if model local labour clauses were included.

Recommendation

- This policy could make specific reference to working with the GLA Group to explore the possibilities of providing employment opportunities to disadvantaged people in both the collection and sorting recyclable materials, whether at the kerbside or at the waste facility. This may require inserting and monitoring local labour clauses in contracts, or providing contracts for third sector organisations. For example, several years ago Haringey contracted with a local charity providing work for unemployed people under the New Deal programme. However, now recycling is co-mingled the contract is let to a large company who may not be providing work for previously unemployed people from the locality. Contracts also need to ensure that workers were adequately protected while sorting waste and that all other working conditions were high quality.

Policy 4: London to achieve high recycling or composting rates

The Policy should be beneficial to equalities groups and poorer communities.

Proposal 4.3 is to help waste authorities to provide recycling and composting collection services to small businesses comparable to those services provided to households. This may benefit minority owned businesses which tend to be small[20]. However, in order to reach these businesses specific targeting methods may need to be used such as working with minority business networks, forums and agencies, and targeting specific sectors such as the retail and restaurant trades.

Proposal 4.4 to increase recycling rates from flats will benefit people living in social housing. Approximately 40% of municipal waste comes from flats and estates but the recycling proportion from these is 10% or less. Many people living in flats and social housing are from disadvantaged backgrounds and should have the same opportunity for recycling as those living in housing.

Proposal 4.6 to incentivise households to recycle may adversely affect those living in high rise flats, most whom are social housing tenants, as may not have access to their own bins and if so

[20] *BME Business Owners: a Market Research Perspective* (Barclays, 2005)

it will be difficult to measure their recycling rate. Whether the effect will be significant will depend on how the incentive scheme is designed.

Proposal 4.9 may incentivise people on lower incomes to recycle more cans and bottles and this would therefore have a small beneficial impact on them.

It would be helpful to know which boroughs have better rates of recycling in areas of social housing, and how they have tackled this. There are some good examples of research done on improving the recycling rate[21] in flats. Aspects that can help increase the rate include design and placing of bins, retrofitting (which is referred to in this policy), and promotional campaigns, including those that target specific communities.

Policy 5: Catalysing municipal waste infrastructure in London, particularly low-carbon technologies

The Policy will have an uncertain impact on equalities groups and poorer communities.

Developing new catalysing waste infrastructure in London will have an uncertain effect on equalities groups, depending on their location and proximity to equalities groups and poorer communities. Beneficial effects could be the availability of jobs arising from the construction and operation, and the availability of cheaper energy from local heat networks. Adverse effects could be poorer air quality, more noise, greater traffic generation etc.

Retrofitting heat networks to the existing incinerators in Lewisham and Edmonton (considered as part of this policy) may have a beneficial effect if they targeted social housing and if the cheaper cost of energy were passed on to the households.

Under the London Plan the Mayor can request an Equalities Impact Assessment of planning applications and proposals where he feels necessary. This is an important tool for identifying, and seeking to minimise, potential adverse impacts on equalities groups.

Policy 6: Achieving a high level of street cleanliness

The Policy should be beneficial to equalities groups and poorer communities.

The proposals should be beneficial to all Londoners. Poorer communities are more likely to live in degraded environments, so maintaining high standards of cleanliness will benefit them. Ways of clearing up litter and encouraging people not to fly tip, litter or produce graffiti in areas of social housing and would benefit residents living there and improve the sense of civic pride.

[21] http://www.wrap.org.uk/downloads/Case_Study_3_-_Improving_participation_in_multi-occupancy_high-rise_blocks_-_Bristol_CC.6729f5a4.5374.pdf
http://www.letsrecycle.com/do/ecco.py/view_item?listid=37&listcatid=5453&listitemid=54381

EQUALITIES IMPACT ASSESSMENT OF THE BWS

This section summarises the equalities implications of the Business Waste Strategy and its proposed policies from the main IIA report. The main comments and recommendations are also contained within the IIA, but this Equalities Annex takes the opportunity to further elaborate on how the Mayor could implement some of the policies in order to achieve a positive impact on equalities groups and poorer communities.

Overall: There are no clearly adverse impacts on equalities groups. Many of the policies promote equality but implementation will require targeting of particular groups, for example minority-owned small businesses.

Policy 1: Promoting the economic value of a resource-efficient business

The Policy may have a small positive impact on minority owned businesses, but this is uncertain and would depend on specific targeting through the promotional campaigns.

Campaigns and initiatives to promote the economic benefits of business resource efficiency, waste reduction, re-use and recycling have the potential to benefit businesses owned by minority groups.

Awareness raising campaigns on the true cost of waste would need to reach minority business networks and be tailored to specific sectors. Case studies of how a minority owned business has successfully overcome barriers and has gained savings from being resource efficient may help encourage others to follow suit.

Targeting specific sectors has the potential to reach minority owned businesses. For example, the food products, beverages and tobacco industrial sector and the retail sector have the potential to offer the greatest waste-saving opportunity and a high proportion of BAME owned businesses are in these sectors[22]. There is a lack of reliable data on women's enterprises. Information on the location of women's enterprises within particular sectors is not well documented but the Small Business Service estimated that 48% of women own businesses in the service industries, compared to 36% of male entrepreneurs[23].

Recommendation

Such promotional campaigns would need to:

- target minority owned businesses through their networks
- target small businesses, and self employed businesses if possible as large numbers are minority owned
- target particular sectors known to have a high proportion of minority owned businesses

Policy 2: Boosting re-use and recycling participation in the commercial and industrial sector

The Policy has the potential to have a positive impact on minority owned businesses.

Large numbers of smaller businesses are Black, Asian or Minority Ethnic (BAME) owned so helping them reduce waste costs should help safeguard their employment and prosperity.

[22] *BME Business Owners: a Market Research Perspective* (Barclays, 2005)
[23] A Strategic Framework for Women's Enterprise (Small Business Service, 2003)

The Strategy states that significant new job growth in London is predicted to be in the service industries, in particular the business and finance, hotel and restaurant, and retail sectors. A Westminster study found that 70% of waste from retail, hospitality and office premises is potentially recyclable. However, one of the greatest barriers to recycling for SMEs in these sectors is access to recycling services. Given that 62% of BAME owned businesses are in the retail and wholesale, catering and business and professional sectors[24], compared to 49% in the general business population, Action 2.1.1 to support the development of tools that help businesses find and access business waste re-use and recycling services will should be beneficial to BAME owned businesses.

Action 2.2.1 which will help food waste-producing business sectors to raise awareness and understanding of the food waste chain would benefit the significant proportion of BAME businesses in this sector.

Recommendation

- The Mayor should target SMEs in the retail and wholesale, catering, and business and professional sectors by encouraging local authorities to provide cost effective recycling services, and if possible, to encourage them to reward businesses for recycling, as in the Corporation of London Clean City Awards scheme. Any such schemes should be promoted by the Mayor through borough and London-wide small business networks, forums and support agencies, including those targeting minority owned enterprises (e.g. Black and Asian business networks and women's networks.)

Policy 3: Supporting the waste infrastructure market in London to grow and to deliver for business

The Policy could have a small positive impact on equalities groups and unemployed people, but the impact is uncertain and would depend on access to jobs by equalities groups and unemployed people.

Proposals to maximise the growth potential of the waste infrastructure sector could provide more employment opportunities for Londoners. This could have a beneficial impact on equalities groups and unemployed people, depending on who has access to these jobs. For example the proposal to catalyse the development of waste infrastructure in East London as part of the legacy of the 2012 Olympic Games could bring employment opportunities to the poorer communities in East London.

Policy 4: Drive improvements in resource efficiency in the construction and demolition sector whilst continuing to maintain good levels of re-use and recycling performance already being achieved

This Policy is likely to have a neutral impact on equalities groups.

The majority of actions contained within this Policy are likely to have a neutral equalities impact since there are no particular employment opportunities generated, However, there may be scope to develop training programmes targeting young and unemployed people in any new CDE waste re-use centres that are developed (as in the ReIY Centre). We would suggest that this is done on a larger scale if possible in order to have a more significant beneficial impact on unemployed people.

[24] *BME Business Owners: a Market Research Perspective* (Barclays, 2005) (In England and Wales, 25% BAME owned businesses are in the retail and wholesale sector, 23% in catering and 14% in business and professional sector)

MONITORING THE MWS AND BWS

The purpose of monitoring is to answer questions about the effectiveness of the MWS and BWS in delivering desired results. With respect to equalities groups the following aspects could be monitored:

Municipal Waste Strategy

- Recycling rates by housing tenure (where possible), and borough
- Effectiveness of campaigns in reaching equalities groups and people living in poorer communities

Business Waste Strategy

- Effectiveness of support and awareness raising programmes in reaching BAME businesses

Annex 4: Detailed assessment of MWS policies

Policy 1: Inform producers and consumers of the value of reducing, reusing and recycling

Objective	Score	Comment
1 Health, well-being		
2 Community Safety		
3 Equality and diversity	+	Working with Londonwide campaigns and initiatives to promote municipal waste reduction, reuse and recycling campaigns should have a beneficial effect for equalities groups if the campaigns and initiatives target particular groups. Working through leading businesses to raise the recycling rate amongst SMEs is a worthy aim. Many retail and catering SMEs[25] are BAME owned and a thus a specific campaign to reach these sectors should result in a higher recycling rate amongst BAME owned businesses[26]. Working with WRAP[27] should be beneficial since it has produced a number of guides and case studies on how to improve recycling in low participation areas and communities. Promoting waste reduction and re-use initiatives through partners such as the London Community Recycling Network, should have a positive impact on individuals who receive free recycled goods. The target beneficiaries of particular re-use schemes (e.g. furniture re-use schemes) are usually those in receipt of housing benefit.
4 Housing		
5 Liveability		
6 Historical and Cultural Environment		
7 Governance, participation, education and awareness	+	Policy aims to encourage participation and a sense of responsibility and engagement
8 Accessibility		
9 Economy, jobs, skills	+	Reducing waste will save money Reuse Network will help provide jobs, skills
10 Biodiversity		
11 Water Quality and Resources		
12 Air Quality		
13 Climate Change Mitigation and Energy		Reducing waste would e.g. reduce the need to produce the original material, transport waste etc., with indirect climate change mitigation benefits
14 Climate Change Adaptation		
15 Resource use and Waste	+	Policy should help reduce waste and increase recycling.

[25] *BME Business Owners: a Market Research Perspective* (Barclays, 2005) (In England and Wales, 25% BAME owned businesses are in the retail and wholesale sector, and 23% in catering)
[26] There is a lack of reliable data on women's enterprises. Information on the location of women's enterprises within particular sectors is not well documented but the Small Business Service estimated that 48% of women own businesses in the service industries, compared to 36% of male entrepreneurs (Small Business Service (2003) A Strategic Framework for Women's Enterprise)
[27] http://www.wrap.org.uk/local_authorities/research_guidance/communications/low_participation_areas/

Commentary: This policy is likely to be beneficial for waste reduction which, as the text rightly points out, is preferable to any method of processing waste once it has arisen. However the policy is likely to be limited in its effects because:

- Setting targets does not in itself make anything change;
- There is a long history already of campaigns of information, exhortation and persuasion about waste management, which have often had limited outcomes. How much people can, or will, change their behaviour depends on how easy and convenient it is to do so. Recycling rates go up when collection regimes make it easy to recycle (a point recognised in policy 4: see below.) Exhortations to reduce or avoid waste will have little effect if (for example) food with less or no packaging is only available in special shops and/or at higher prices;
- The funding for reuse infrastructure is welcome and likely to be highly beneficial for the reasons stated. However at about £1 per Londoner it will be stretched thin.

Recommendations: Explain how this policy is going to meet the target in the Mayor's vision of reducing household waste arisings by 20%.

Waste reduction, reuse and recycling campaigns should have a beneficial effect for equalities groups if the campaigns and initiatives target particular groups. There should be a specific proposal in the document to this effect.

Leading businesses should be encouraged to work in conjunction with minority business networks (e.g. Black and Asian business networks, women's enterprise networks etc) to increase recycling rates in SMEs. The LDA (or its successor) may be able to assist in such a campaign

The persuasive measures need to be combined and coordinated with 'hard' interventions to ensure that the behaviours encouraged are easy, sustainable and cost effective. Voluntary measures with businesses need to be backed up with incentives or sanctions (or the threat of them). Other policies in the MWS and BWS will help. However the Mayor has limited powers and action by Government will also be needed.

Policy 2: Setting a CO_{2eq} emissions performance standard (EPS) for municipal waste management activities to reduce their impact on climate change.

Objective	Score	Comment
1 Health, well-being	+/-	Beneficial health impacts from reduced climate change, but possible air pollution and other health impacts from individual waste management projects
2 Community Safety		
3 Equality and diversity	+	Installing heat distribution networks from the South East London CHP incinerator in Lewisham to provide heat to neighbouring residential and commercial developments could have a positive effect on people living on social housing estates served by such plants if any lower energy costs are passed on to them.
4 Housing		
5 Liveability		
6 Historical and Cultural Environment		
7 Governance, participation, education and awareness	+	Increases understanding of the links between waste and climate change
8 Accessibility		

Objective	Score	Comment
9 Economy, jobs, skills	+	Will create business opportunities for more sophisticated waste management options
10 Biodiversity		
11 Water Quality and Resources		
12 Air Quality	+/-	Some carbon efficient waste management options can worsen air pollution (eg incineration). Depending on the waste management projects delivered as a result of this policy, targets for NOx and PM10 may be difficult to achieve in certain parts of London[28]
13 Climate Change Mitigation and Energy	++?	Policy should help to make carbon effects a major consideration in waste decisions. However it is not clear how the standard will be brought to bear on individual decisions, or energy from waste is not always considerably better than the proposed floor based on CCGT -based 'floor'.
14 Climate Change Adaptation		Will increase resilience by reducing fossil fuel dependency.
15 Resource use and Waste	++	Policy will promote more sustainable options and support the waste hierarchy in general (but justifying departures from it where 'lower' options are better for CO_{2eq})

Commentary: An excellent, innovative policy which should help to integrate waste and climate change objectives in London and enable decisions about waste management to take account of climate change consequences in a consistent and rigorous way. Particularly welcome features are:

- The treatment of the relationship between the greenhouse gas standard and the waste hierarchy. The hierarchy is a good 'rule of thumb' for minimising environmental impacts;
- The encouragement for new technologies which have potential to reduce emissions;
- The 'whole life' basis;
- The flexibility offered to waste authorities by the policy, which allows 'lower' options to be used where they achieve overall CO_{2eq} targets more efficiently than 'higher' options
- The acknowledgement that climate change is not the only environmental issue, and that other considerations may sometimes justify a decision other than the best one in climate change terms.

Recommendations: Explain how the standard will be used in decisions. In particular, explain how different levels of performance due to different circumstances will be taken into account, and how responsibility for compliance with the standard will be apportioned between components of waste and different and different times. Explain why WRATE was chosen as the basis, and what (if any?) alternatives were considered. How will the (unavoidable) value-laden judgements about (eg) system boundaries, apportionment of responsibility and baselines for comparison be made transparent and open to scrutiny?

Tighten the CCGT-based 'floor' over time to reflect expected improvements in other forms of energy production.

[28] Eunomia Research & Consulting (2010) Economic Modelling for the Mayor's Municipal Waste Management Strategy

Policy 3: Capture the economic benefits of municipal waste management

Objective	Score	Comment
1 Health, well-being		
2 Community Safety		
3 Equality and diversity	?	Could affect employment of people who are currently working for charities, particularly those who might otherwise be unemployed. If model municipal waste contracts included model local labour clauses, this may have a beneficial impact on local disadvantaged and/or unemployed people.
4 Housing		Proposal 3.4 to achieve efficiencies through cross-boundary contracts and service agreements could benefit people living in high rise flats (mainly social housing tenants) if a joint flats recycling service meant that more recycling facilities were available to those tenants.
5 Liveability		
6 Historical and Cultural Environment		
7 Governance, participation, education and awareness		
8 Accessibility		
9 Economy, jobs, skills	++	Increases jobs in the waste management sector, and the efficiency of the sector
10 Biodiversity		
11 Water Quality and Resources		
12 Air Quality		
13 Climate Change Mitigation and Energy	+	The policy's strong focus on recycling would help to reduce climate change. However greater emphasis on reuse could improve this further.
14 Climate Change Adaptation		
15 Resource use and Waste	++	The policy would help to treat waste as a valuable resource

Commentary: The policy's aim of exploiting the economic opportunities presented by waste management will be good for the economy as well as for waste. The link to the economic (as well as climate change) benefits from more energy recovery of waste is welcome. However there is little reference to the source of investment funding.

Recommendations: Consider giving greater emphasis to reuse, not just recycling.

Policy 3 could make specific reference to working with the GLA Group to explore the possibilities of providing employment opportunities to disadvantaged people in both the collection and sorting recyclable materials, whether at the kerbside or at the waste facility. This may require inserting and monitoring local labour clauses in contracts, or providing contracts for third sector organisations. For example, several years ago Haringey contracted with a local charity providing work for unemployed people under the New Deal programme. However, now recycling is co-mingled the contract is let to a large company who may not be providing work for previously unemployed people from the locality. Contracts also need to ensure that workers were adequately protected while sorting waste and that all other working conditions were high quality.

Policy 4: London to achieve high recycling or composting rates

Objective	Score	Comment
1 Health, well-being		Deposit system for cans and bottles could help to reduce littering, which can be a health hazard
2 Community Safety		
3 Equality and diversity	+	Proposal 4.4 will benefit people living in social housing. Approximately 40% of municipal waste comes from flats and estates but the recycling proportion from these is 10% or less. Many people living in flats and social housing are from disadvantaged backgrounds Incentives for recycling need to be designed not to disadvantage residents of high rise flats, most whom are social housing tenants, who do not have individual bins and whose recycling rates will be hard to measure. However, some boroughs may place separate (rather than co-mingled) communal recycling bins outside flats, and thus recycled waste from these households will be purer and can be made into higher quality products. People who recycle in separated containers will be contributing to such products and should be rewarded. Proposal 4.6 may incentivise people on lower incomes to recycle more cans and bottles.
4 Housing	+	Aims to address problems of waste storage and disposal in flats
5 Liveability		
6 Historical and Cultural Environment		
7 Governance, participation, education and awareness	+	Encourages people to recycle and compost
8 Accessibility	+	Will increase accessibility of recycling facilities
9 Economy, jobs, skills	+	Incentives to recycle will help promote green businesses. However, giving a positive incentive to recycle is less cost effective than providing a disincentive to waste.
10 Biodiversity		
11 Water Quality and Resources		
12 Air Quality		
13 Climate Change Mitigation and Energy		
14 Climate Change Adaptation		
15 Resource use and Waste	++	Will promote more sustainable waste management

Commentary: This is another very beneficial policy. The policy's vision that 'Recycling or composting in London will be a straightforward part of Londoners' lives, to achieve high rates of municipal waste recycling and composting' captures a very important point: that sustainable waste management has to be made easy as part of normal life. The policy is a welcome attempt to identify and tackle the barriers, and its attention to areas that have been problematic, and where London has the greatest untapped opportunities – flats, on-street, food, small businesses - is welcome.

independent research for Government[29] indicates this can save money overall, as well as being consistent with the 'polluter pays principle' and helpful at a time when money is short. With some caveats this concludes that:

- 'Under the assumptions made, charging schemes reduce the quantity of waste collected, though not all of this can be considered waste prevention;
- Charging schemes increase recycling rates by between 6-24 percentage points (depending on the nature of the charging scheme); …
- The deployment of charging schemes, even though they incur administrative costs, can save money. The savings range from close to zero, to around £18 per household per annum. The additional cost of monitoring and clean-up of additional fly tips is included in this figure.'

Recommendations

Promote home composting where practical in preference to centralised composting (though not in preference to anaerobic digestion where use of the biogas results in overall climate change benefits: the EPS (policy 2) will help assess this.

Payment for recycling could be in kind, for instance through recycled paper towels or toilet paper. This would support the market in recycled materials as well as recycling.

In order to reach SMEs, specific targeting methods may need to be used such as working with minority business networks, forums and agencies, and targeting specific sectors such as the retail and restaurant trades.

Policy 5: Catalysing municipal waste infrastructure in London, particularly low-carbon technologies

Objective	Score	Comment
1 Health, well-being	+	Aims to reduce need for mass burn incineration and process wastes as far up the waste hierarchy as possible.
2 Community Safety		
3 Equality and diversity	?	Developing new catalysing waste infrastructure in London will have an uncertain effect on equalities groups, depending on their location and proximity to equalities groups and poorer communities. Beneficial effects could be the availability of jobs arising from the construction and operation, and the availability of cheaper energy from local heat networks. Adverse effects could be poorer air quality, more noise, greater traffic generation etc. Retrofitting heat networks to the existing incinerators in Lewisham and Edmonton (considered as part of this policy) may have a beneficial effect if they targeted social housing and if the cheaper cost of energy was passed on to the households.
4 Housing		
5 Liveability	+?	Policy aims to ensure that new facilities are not 'bad neighbours' but not clear how effective this can be.
6 Historical and Cultural Environment		
7 Governance, participation, education and awareness		

[29] Modelling the Impact of Household Charging for Waste in England: Final Report to Defra, Dr Dominic Hogg, Duncan Wilson, Dr Adrian Gibbs, Martin Astley and Joe Papineschi 20/12/2006

Objective	Score	Comment
8 Accessibility		
9 Economy, jobs, skills	+	Should secure more value from waste
10 Biodiversity		
11 Water Quality and Resources		
12 Air Quality	+	Likely to improve air quality by avoiding incineration and encouraging cleaner options
13 Climate Change Mitigation and Energy	+	Treating and recovering value from waste will reduce greenhouse gas emissions from manufacturing virgin materials, generating energy using fossil fuels, and from landfill.
14 Climate Change Adaptation	+	Using waste as energy feedstock will contribute to London's energy security. Reducing waste transport will reduce vulnerability to fuel costs and transport disruptions.
15 Resource use and Waste	+	Policy aims to make better use of resources and get as close to regional self-sufficiency as possible. However many of the details of funding are uncertain, with possible implications for implementation.

Commentary This is the most important policy because its substantial funding will make a real difference. At the time of writing, a number of projects for waste processing high up the waste hierarchy have been included in the LWARB's 'pool' for funding. They now need to demonstrate a full business case. The effectiveness of this policy – and indeed of the strategy – will depend on how much capacity for 'higher' treatment options secures funding and is brought into operation.

Recommendations Fund as much capacity for treatment options 'higher' in the waste hierarchy and supportive of policy 2 as practicable.

Policy 6: Achieving a high level of street cleanliness

Objective	Score	Comment
1 Health, well-being	+	Litter can be a health hazard
2 Community Safety	+	There is clear evidence that litter removal helps boost perceptions of safety and deter crime.
3 Equality and diversity	+	The proposals should be beneficial to all Londoners. Poorer communities are more likely to live in degraded environments, so maintaining high standards of cleanliness will benefit them. Ways of clearing up litter and encouraging people not to fly tip, litter or produce graffiti in areas of social housing and would benefit residents living there and improve the sense of civic pride.
4 Housing		
5 Liveability	+	Policy will improve the public realm
6 Historical and Cultural Environment		
7 Governance, participation, education and awareness	+	Policy both aims to raise sense of responsibility for public space, and its result of a better public realm is likely to boost civic pride and identity
8 Accessibility		
9 Economy, jobs, skills		
10 Biodiversity		

Objective	Score	Comment
11 Water Quality and Resources		
12 Air Quality		
13 Climate Change Mitigation and Energy		
14 Climate Change Adaptation		
15 Resource use and Waste	+	On-street recycling facilities should increase recovery.

Commentary: This policy is likely to have benefits for health, community safety and the public realm more generally. It can boost perceptions of safety (signal crime theory) and act as a deterrent to motivated offenders by raising their perceptions of the risks of being challenged or apprehended in committing an offence (broken windows theory). The absence of litter will reinforce the effects of other situational crime prevention measures.

Recommendations: none

Annex 5: Detailed appraisal of BWS policies

Policy 1: Promoting the economic value of a resource-efficient business

Objective	Score	Comment
1 Health, well-being		
2 Community Safety		
3 Equality and diversity	?	May have a beneficial effect on minority owned businesses if the promotional campaigns specifically targeted them
4 Housing		
5 Liveability		
6 Historical and Cultural Environment		
7 Governance, participation, education and awareness	+	Will raise awareness, e.g. through Recycle for London, Mayor's Green Procurement Code and through business resource efficiency support programmes
8 Accessibility		
9 Economy, jobs, skills	+	Will help businesses become more competitive and resilient by reducing their waste costs, and will support development of markets for use of recovered resources.
10 Biodiversity		
11 Water Quality and Resources		
12 Air Quality		
13 Climate Change Mitigation and Energy	+	Resource efficiency extends product life-cycles, which can reduce life-cycle impacts).
14 Climate Change Adaptation		
15 Resource use and Waste	++	Will help reduce business wastes

Commentary: A valuable policy for helping encourage businesses to reduce waste and waste costs. Particularly valuable in its emphasis on options high in the waste hierarchy, on using research on the barriers to action, and on the need to stimulate demand for products made from recycled materials.

Recommendations: Consider:

- more emphasis on the behavioural, perceptual, institutional factors hampering uptake, e.g. the scarcity of management time, higher priorities
- any further practical actions the Mayor could take: we recognise that lack of statutory powers means the policy must rely largely on persuasion and encouragement, but hard measures where possible will increase its effectiveness
- targeting minority owned businesses through their networks and targeting particular sectors known to have a high proportion of minority owned businesses

The Recycle for London engagement plan ideas are all promising, but there may be others. E.g. reusing office furniture and equipment as well as hotel furniture.

Policy 2: Boosting re-use and recycling participation in the commercial and industrial sector

Objective	Score	Comment
1 Health, well-being	+	Food policies (primarily Fareshare) – distribution of unwanted, edible food to those groups that require it the most.
2 Community Safety	+	Reduced number of waste collection vehicles in defined business areas as a result of collective contracting.
3 Equality and diversity	+	Large numbers of smaller businesses are BAME owned so helping them reduce waste costs should help safeguard their employment and prosperity
4 Housing		
5 Liveability		
6 Historical and Cultural Environment		
7 Governance, participation, education and awareness	+	Raising participation amongst businesses in re-use, recycling and composting.
8 Accessibility	+	Help increase accessibility of re-use, recycling and composting services to all types of businesses, especially to SMEs and those in multi-tenanted buildings. Ensuring that new developments are designed so as to provide sufficient storage space and access for waste collection vehicles. Providing access to collection infrastructure - e.g. working to secure sponsorship opportunities for provision of 'trade waste' bring bank hubs, reverse vending and public place recycling within London's business parks and estates.
9 Economy, jobs, skills	+	Will help business competitiveness and prosperity by reducing waste costs. Collective contracting for SMEs, for example, through Business Improvement Districts. Linking up demand for collections and need for infrastructure (through food waste actions, for example).
10 Biodiversity		
11 Water Quality and Resources		
12 Air Quality	+	Reduced number of waste collection vehicles in defined business areas as a result of collective contracting.
13 Climate Change Mitigation and Energy	+	Carbon-positive benefits of recycling (generally speaking for most materials, especially for closed-loop applications, which is possible for plastics in London).
14 Climate Change Adaptation		
15 Resource use and Waste	+	Policy aims to reduce waste and promote management higher up the waste hierarchy.

Commentary: Potentially an important policy for helping businesses to increase re-use, recycling and composting and reduce waste costs. Emphasis welcome on promoting collaborations between businesses to achieve critical mass to make recycling and other more sustainable waste management methods viable,

Recommendations:

Given current uncertainties over the future direction of the economy, including Government interest in new emphasis on manufacturing, it will be important to ensure the policy can adapt to different possible compositions of waste.

There have previously been waste exchanges / directories. Learn from experience of what worked.

The Mayor should target SMEs in the retail and wholesale, catering, and business and professional sectors by encouraging local authorities to provide cost effective recycling services, and if possible, to encourage them to reward businesses for recycling, as in the Corporation of London scheme. Any such schemes should be promoted by the Mayor through borough and London-wide small business networks, forums and support agencies, including those targeting minority owned enterprises (e.g. Black and Asian business networks and women's networks.)

Policy 3: Supporting the waste infrastructure market in London to grow and to deliver for business

Objective	Score	Comment
1 Health, well-being		
2 Community Safety		
3 Equality and diversity	+	Proposals to maximise the growth potential of the waste infrastructure sector could provide more employment opportunities for Londoners. This could have a beneficial impact on equalities groups and unemployed people, depending on who has access to these jobs. For example the proposal to catalyse the development of waste infrastructure in East London as part of the legacy of the 2012 Olympic Games could bring employment opportunities to the poorer communities in East London.
4 Housing		
5 Liveability	+	Promotes development of waste infrastructure in appropriate locations within London (e.g. through Sustainable Industries Park, Green Enterprise District), so as to maximise opportunities for development of resource parks, links to decentralised energy schemes etc and reduce potential negative effects on sensitive receptors (e.g. away from residential communities).
6 Historical and Cultural Environment		
7 Governance, participation, education and awareness		
8 Accessibility		
9 Economy, jobs, skills	+	Securing new investment for waste treatment infrastructure in London, broker partnerships, improve knowledge base for waste sector investors
10 Biodiversity		
11 Water Quality and Resources		
12 Air Quality	+	Likely to reduce impacts from transport of waste.
13 Climate Change Mitigation and Energy	+	Links to decentralised energy schemes and heat networks, promoting carbon-efficient technologies. Contributes to Mayor's targets in this area (set out in his

Objective	Score	Comment
		Climate Change Mitigation and Energy Strategy).
14 Climate Change Adaptation		
15 Resource use and Waste	?+	Aims to help secure new waste management infrastructure in London to meet the aims of reducing reliance on landfill and increasing self-sufficiency in London of managing London's business waste.

Commentary:

A very valuable policy because it aims to provide substantial funding for processing waste higher up the waste hierarchy. The effectiveness of this policy – and indeed of the strategy – will depend on how much capacity for 'higher' treatment options secures funding and is brought into operation.

Recommendations: Secure maximum funding for options higher in the waste hierarchy.

Policy 4: Drive improvements in resource efficiency in the construction and demolition sector whilst continuing to maintain good levels of re-use and recycling performance already being achieved

Objective	Score	Comment
1 Health, well-being		
2 Community Safety		
3 Equality and diversity		
4 Housing		
5 Liveability		
6 Historical and Cultural Environment		
7 Governance, participation, education and awareness		
8 Accessibility		
9 Economy, jobs, skills	+	Will help raise construction industry standards
10 Biodiversity		
11 Water Quality and Resources		
12 Air Quality	+	Better management of construction and demolition likely to reduce dust and air pollution too.
13 Climate Change Mitigation and Energy		
14 Climate Change Adaptation		
15 Resource use and Waste	+	Policy aims to focus on waste reduction since re-use, recycling and composting in London already estimated to be at a high level (about 82% of CDE waste currently).

Commentary: Helpful policy for reducing a large component of waste.

Recommendations:
None.

ANNEX 6: IIA SCOPING REPORT

GREATER LONDON AUTHORITY **June 2009**

The Integrated Impact Assessment Scoping Report for:

The Mayor's Climate Change Mitigation and Energy Strategy

The Mayor's Air Quality Strategy

The Mayor's Municipal Waste Management Strategy

The Mayor's Business Waste Management Strategy

CONTENTS

1. Background

1.1 This document is the joint Integrated Impact Assessment (IIA) Scoping Report for the Mayor's Climate Change Mitigation and Energy Strategy (CCMES), the Mayor's Air Quality Strategy (AQS), the Mayor's Municipal Waste Management Strategy (MWMS) and the Mayor's Business Waste Strategy (BWS).

1.2 The Mayor is required to undertake a range of impact assessments to ensure that his strategies have considered crosscutting issues that affect London. This includes assessing the impacts of his policies on the environment, health and well-being, inequalities, community safety, and wider social and economic factors.

1.3 To ensure best value for money for Londoners, and to improve the coherence and efficiency of undertaking these impact assessments, they have been combined here as an "Integrated Impact Assessment" (IIA). The IIA will integrate the statutory requirements to undertake a Strategy Environmental Assessment (SEA), a Health Impact Assessment (HIA) and an Equalities Impact Assessment (EqIA), as well as the good practice of undertaking a Community Safety Impact Assessment and a Sustainability Appraisal, into a single assessment. The final IIA report will integrate all the above elements, with the Equalities Impact Assessment highlighted as a specific section to meet the requirements of this particular assessment. The Habitats Regulations Assessment (HRA) will be carried out separately.

1.4 It has also been agreed that the CCMES, the AQS and, MWMS and BWS will undertake the IIA process jointly. This is to ensure that the synergies and tensions between these environmental disciplines are recognised and integrated into the final strategies. The strategies are also due to be published in quick succession, beginning with the AQS then the CCMES and finally the MWMS and BWS, and it was agreed that undertaking a joint IIA would be more efficient, coordinated, and reduce the demands being made of consultees.

1.5 The IIA will follow the structure of a SEA to ensure that all legal requirements are met by the assessment. It will be an iterative process that will inform and shape the development of the CCMES, the AQS and MWMS and BWS. While the timescales for production of the CCMES, the AQS and the MWMS and BWS are not exactly aligned, they are close enough to allow the IIA process to be carried out for all at the same time. Since many of the policies will be closely linked, this also allows the IIA to assist in maximising benefits and minimising any potential conflicts between the strategies.

1.6 The stages of the IIA are set out in Table 1.1 below. This document is the scoping report for the IIA and fulfils the requirements for Stage A of an SEA.

Table 1.1

IIA Stages	Strategy Stages	Requirements	Outputs
Stage A	Preliminary research	Setting the context and objectives, establishing the baseline and deciding on the scope	IIA Scoping Report

IIA Stages		Strategy Stages	Requirements	Outputs
Stage Bi	**Initial Assessment**	Production of Assembly Drafts	Developing and refining alternatives and assessing effects	Stakeholder Event Report Assembly Drafts IIA Assembly Draft Reports (one per strategy)
Stage Ci			Preparing the IIA Report	
Stage Di			Consultation on the IIA	
Stage Bii	**Full Assessment**	Production of Public Consultation Drafts	Developing and refining alternatives and assessing effects	Stakeholder Event Report Public Consultation Drafts IIA Public Consultation Draft Reports (one per strategy)
Stage Cii			Preparing the IIA Report	
Stage Dii			Consultation on the IIA	
Stage Biii	**Final Assessment**	Production of Final Strategies	Developing and refining alternatives and assessing effects	Final Strategies Final IIA Reports (one per strategy - with specific section for Equalities Impact Assessment)
Stage Ciii			Preparing the IIA Reports	
Stage Diii			Consultation on the IIAs	
Stage E			Assessment of the IIA process Monitoring implementation of the plan or programme	IIA Statements (one per strategy)

1.7 The purpose of this scoping report is to identify cross-cutting sustainability (environmental, health, inequalities, community safety, economic, social) issues and relevant plans, policies and programmes that may either have an impact on the strategies or be affected by the development or delivery of the strategies. The scoping report sets out baseline information relating to all these issues, as well as climate change, air quality and waste. The scoping report briefly explains why these issues were chosen and how they affect the strategies. Finally, this report sets out the proposed IIA objectives that will be used to assess the impact of the strategies. The impact of the strategies, with suggested alternatives or arrangements where there are negative impacts, will be explored in subsequent Impact Reports.

2. The Strategies

2.1 The Mayor is statutorily required to produce an Air Quality Strategy and Municipal Waste Strategy as part of the GLA Act 1999, and is now statutorily required to produce a Climate Change Mitigation and Energy Strategy as a result of the GLA Act 2007. The Mayor is not required to produce a Business Waste Strategy but has chosen to do so in order to best capture the carbon and costs saving benefits from all of London's waste.

Climate Change Mitigation and Energy

2.2 Climate change is now widely recognised as a global phenomenon that has been largely caused by the emission of greenhouse gases through industrialisation. The anticipated impacts of climate change globally include an increase in the frequency of severe weather conditions and a massive loss of biodiversity. In the UK, and in particular the South East and London, hot, dry summers and warmer, wetter winters are anticipated. Addressing climate change requires collective action from society, government organisations and business, and the Mayor of London is ideally placed to bring together these actors in coordinating London's response to the challenge. To strengthen this response, the Mayor is required under the amendment to the GLA Act 2007 to produce a Climate Change Mitigation and Energy Strategy (CCMES).

2.3 The Mayor of London has recognised the importance of addressing climate change and energy and has publicly agreed to the target of reducing London's emissions of carbon dioxide (CO_2) by 60 per cent by 2025. He is also pioneering a number of initiatives to help Londoners and London businesses save energy, use energy more effectively, and reduce their greenhouse gas emissions. The CCMES will bring together London targets and initiatives to produce a coherent strategy for action to reduce the emissions of greenhouse gases in London.

Air Quality

2.4 Poor air quality is a significant health, as well as environmental issue. Polluted air affects personal health and well-being, particularly for children, older people, and those with a pre-disposition to respiratory and cardiovascular illnesses. These health effects are both short term (acute effects) and long-term (chronic effects). Poor air quality also affects the historic environment by degrading buildings, and the green environment, by impacting sensitive ecosystems.

2.5 The National Air Quality Strategy for England, Scotland, Wales and Northern Ireland implements legally binding limit values[30] for a number of pollutants (set by the European Union) into domestic legislation. Local authorities, including the Mayor of London, have a legal responsibility to take action to meet those limit values. The Mayor's Air Quality Strategy (MAQS) will include policies and proposals designed to meet those limit values in London, and to achieve health benefits related to cleaner air.

[30] The maximum amount of pollutant or chemical allowed in the environment or for people to be exposed to

Waste

2.6 London produces about 20 million tonnes of waste each year. About 80 per cent of this waste is commercial and industrial waste and waste from construction, demolition and excavation activities. For the purpose of this report, this waste is referred to as "business waste". The Mayor sees London's waste as an under-tapped opportunity, and boosting London's recycling rate and sending less waste to landfill is a top priority. London's municipal waste recycling rate (25 per cent) is the lowest of any region in the UK, and compares poorly to other international cities such as San Francisco, New York, and Paris. After waste reduction and reuse, dramatically increasing London's recycling rate and generating renewable energy from waste not recycled is vital to reducing waste management's contribution to climate change, most of which is a result of biodegradable waste breaking down in landfills releasing greenhouse gases.

2.7 The Mayor is required under the GLA Act 1999 to produce and review a strategy for London's municipal waste (MWMS). Municipal waste is waste collected by the London boroughs from households, including litter from the streets and some of the waste from businesses. The Mayor's previous Municipal Waste Management Strategy was published in September 2003, and set out a vision for waste management until 2020, with a series of short to medium term policies and proposals. The new strategy will take account of new legislation and Government policy.

2.8 The Mayor has chosen to set out a non-statutory strategy for the management of London's business waste (BWS) to recognise the carbon saving benefits. This strategy is intended to act as a guide to help London businesses reduce waste and manage it more effectively.

2.9 The new MWMS and BWS will link closely with the London Waste and Recycling Board (the 'Board') to improve London's performance on waste and deliver the necessary service improvements and infrastructure to manage waste more effectively. The Board, chaired by the Mayor has been set up to promote and encourage the production of less waste; increase the proportion of waste that is re-used or recycled; and the use of methods of collection, treatment and disposal of waste which are more beneficial to the environment.

3. Introduction

3.1 There are a number of benefits to adopting an IIA approach which include:

- Introducing a common assessment framework for managing the process
- Reducing the need to have different impact assessments and associated project teams to manage each assessment
- Reducing the need to consult with stakeholders on three or four separate occasions
- Enabling a greater understanding of the cross-cutting nature of each assessment and promoting 'joined-up working'.

3.2 The following sets out more detail on the various elements that are being integrated into the IIA:

- **Strategic Environmental Assessment (SEA)**: The Mayor is required to undertake a SEA of his plans and programmes under the European Directive 2001/42/EC (known as the SEA Directive), which came into force on 21 July 2004. The requirements of the SEA Directive have been transposed into English Law through the Environmental Assessment of Plans and Programmes Regulations 2004. These regulations apply to a wide range of plans and programmes, including those strategies that are considered to have significant effects on the environment. The SEA Directive's main areas of emphasis are to contribute to the integration of environmental considerations into the preparation and adoption of plans to promote sustainable development.

- The Department for Communities and Local Government (CLG[31]) has released guidance[32] for regional and local planning authorities on how to undertake a '**Sustainability Appraisal**' (SA) for Regional Spatial Strategies. A SA integrates the requirements for an SEA with broader sustainability objectives. This guidance will be used in the development of the IIA.

- **Equalities Impact Assessment (EqIA)**: Through an EqIA, the Mayor can ensure that equalities are considered in the strategies. This is a requirement of the GLA Act 2007 and will also ensure that the requirements of the Race Relations Act 1976 (statutory duties) Order 2001, Disability Discrimination Act (2005) and Equality Act (2006) to promote race, disability and gender equality are met. This assessment considers the impacts of any policies upon the following groups: women; Black, Asian and minority ethnic people; disabled people; children and young people; older people; faith groups; lesbians, gay men, bisexual and trans people. The Equalities Impact Assessment will be brought out as a specific section in the final report of the IIA.

- **Health Impact Assessment (HIA)**: The Mayor has a duty under the GLA Act 2007 to promote the reduction of health inequalities and to have regard to the effects of his strategies on reducing health inequalities in London. Incorporating a Health Impact Assessment into the IIA will achieve these duties.

- **Community Safety Impact Assessment**: There is a statutory requirement for the GLA to follow Section 17 of the Crime and Disorder Act. The newly enacted Police and Justice Act encompasses misuse of drugs, alcohol and other substances, anti-social behaviour and behaviour adversely affecting the environment. Again, integrating a Community Safety Impact Assessment into the IIA process will achieve these duties.

3.3 The Greater London Authority Act 1999, section 42, requires the Mayor to carry out consultations before adopting or revising any strategies. The Act further stipulates that the Mayor shall consult the London Assembly and the functional bodies (Transport for London, the London Development Agency, the Metropolitan Police Authority and the London Fire and Emergency Planning Authority) before

[31] The Office of the Deputy Prime Minister is now the Department for Communities and Local Government

[3] (2005) Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents.

consulting other organisations and individuals. The established procedure is that the first published draft, referred to as the Assembly Draft, is used for consultations with the London Assembly and the functional bodies. Other organisations and individuals often take the opportunity to submit comments on this draft. The second draft is referred to as the Public Consultation Draft, and the third version as the final strategy.

3.4 A draft IIA is required to accompany each Assembly Draft and Public Consultation Draft. CLG guidance[33] on the SEA states in paragraph D3 "Where plans go through several successive consultation exercises, the implications for the Environmental Report should be kept under review." The final draft of the IIA will be submitted for Mayoral approval together with final draft of the strategy. A statement explaining how the findings of the IIA have been taken into account will accompany the publication of the adopted Strategy.

4. Methodology and Structure of the Report

4.1 This scoping report is required to meet the criteria set out below:

- Identification of relevant policies, plans, programmes
- Collection of baseline information
- Identification of key issues
- Development of the IIA Framework
- Statutory consultation on the scope of the SA

4.2 The report is structured into themes or issues that have relevance to all the strategies. Within each section, an introduction is given to the theme and why it has been identified. The plans, policies or programmes associated with that issue are then set out in a table, followed by the baseline data relating to that issue. Each section concludes with a review of how the issue interacts with the Mayor's Climate Change Mitigation and Energy Strategy, the Mayor's Air Quality Strategy and Mayor's Municipal and Business Waste Management Strategies.

4.3 The themes for the IIA Scoping report have been developed based on an assessment of the key issues relevant to strategy development in London and a review of previous scoping reports developed for other GLA Strategies. All the themes reflect key issues covering all elements of the IIA. These themes are:

- The GLA and Functional Bodies (to reflect London's specific governance arrangements that affect the development and delivery of Mayoral Strategies)
- Climate Change Adaptation and Flood Risk
- Climate Change Mitigation and Energy
- Biodiversity
- Water quality, resources and management
- Air Quality
- Waste
- The Historic Environment
- Sustainable Development

[33] ODPM (2003) The Strategic Environmental Assessment Directive: Guidance for Planning Authorities

- Transport
- Liveability
- Democracy, Participation and community involvement
- Housing
- Development Planning
- Health Inequalities
- Fuel Poverty
- Inequalities
- Community Safety
- Economic Development
- Poverty
- Education, Skills and Employment

4.4 The relevant plans, policies and programmes have been identified by reviewing other impact assessments developed for the GLA, updating this information from the resources available, and using expert opinion. The plans, policies and programmes have been divided by theme, scale (local, regional, national and international) and date. All documents have been given a hyperlink to their Internet reference.

4.5 The purpose of reviewing the strategies, plans, programmes, and Mayoral objectives as part of the IIA is to ensure that the strategies' relationship with these documents is fully explored and to ensure that the IIA objectives reflect the priorities for London

4.6 The baseline data has been retrieved from the aforementioned relevant plans, policies and programmes and other key sources of information that the GLA produces, such as the State of the Environment Report. Information has also been gathered from other scoping reports, particularly the Climate Change Adaptation Strategy SA Scoping Report, the Transport Strategy Scoping Report and the London Plan SA Scoping Report. The data was chosen for relevance to the IIA and the strategies using expert opinion and is updated where necessary. It should be noted that new reports and policies are frequently announced, and the baseline data, strategies, policies and programmes are those considered appropriate at the time of publication of this report.

4.7 The report concludes with proposed IIA objectives. These objectives have been developed from information identified as part of scoping the aforementioned issues, and will be used to assess the impacts of the strategies. This will be carried out by the use of prompt questions that represent the elements of each objective, to test whether the strategies are promoting, meeting or undermining the IIA objectives. Additionally, the objectives of the strategies will be assessed to determine if there are any positive or negative cumulative and synergistic impacts. The IIA process involves the transparent discussion of the key issues with experts and stakeholders, and as such, a number of stakeholder events will take place. The impact assessments that accompany each draft strategy will include recommendations for minimising any negative impact and maximising positive ones.

4.8 All elements of the scoping report are peer reviewed by a cross-cutting IIA team consisting of GLA staff from Sustainable Development, Health, Community Safety, Equalities and Environment.

4.9 This final scoping report will be sent to the statutory stakeholders for a six-week consultation. These stakeholders are:

- Environment Agency
- Natural England
- English Heritage

4.10 The feedback received from consulting on this scoping report will, where appropriate, inform a final scoping report and subsequent impact assessments.

5. Themes

5.1 GLA and the functional bodies

5.1.1 GLA and the functional bodies – Background

The **Greater London Authority (GLA)** is a strategic citywide government for London. It is made up of a directly elected Mayor and a separately elected Assembly. The Mayor is London's spokesperson. He leads the preparation of statutory strategies on transport, spatial development, economic development and the environment. He sets budgets for the GLA, Transport for London, the Metropolitan Police Authority, the London Fire and Emergency Planning Authority and the London Development Agency. These agencies are described as the "functional bodies". The London Assembly scrutinises the Mayor's activities, questioning the Mayor about his decisions. The Assembly is also able to investigate other issues of importance to Londoners, publish its findings and recommendations, and make proposals to the Mayor.

Transport for London (TfL) is responsible for most transport in London. It is accountable to the Mayor and is responsible for delivering the Mayor's Transport Strategy through:

- Managing London Buses, the Croydon Tramlink, and the Docklands Light Railway, the Underground, major roads and the Transport for London Road Network (TLRN)
- Regulating taxis and minicabs
- Running London River Services, and promoting the safe use of the Thames for passenger and freight movement
- Helping co-ordinate the Dial-a-Ride and Taxicard schemes for door-to-door services for transport users with mobility problems
- Having responsibility for traffic lights across London.

The Metropolitan Police Authority (MPA) oversees policing in London. The MPA is responsible for:

- Maintaining and efficient and effective police force
- Publishing an annual policing plan setting out policing priorities
- Setting policing targets and monitoring performance
- Setting and delivering the police budget

The London Fire and Emergency Planning Authority (LFEPA) is responsible for:

- Setting the strategy for the provision of fire services in London, ensuring that the fire brigade can meet all normal requirements efficiently, and that they are properly trained and equipped
- Ensuring effective arrangements are in place to receive fire calls and deal with them promptly
- Gathering information useful for fire fighting and arranging advice and guidance on fire prevention.
- Assisting the boroughs will all aspects of planning for emergencies on request
- Preparing, reviewing, revising and testing emergency plans for industrial sites in London that fall under the 'Control of Major Accident Hazard Regulations', for the

public in the event of a radiological incident, and for pipelines that fall within the 'Pipeline Safety Regulations".

The **London Development Agency (LDA)** works for the Mayor, co-coordinating economic development and regeneration across the capital. It promotes business and works in partnership with industry, the public and voluntary sectors to create opportunities so all can benefit from London's economy. The LDA shares the same powers, as set out in the Regional Development Agencies Act 1998 and the Greater London Authority Act 1999 (primarily Part V and Schedule 25), but is answerable to the Mayor rather than the Secretary of State. The LDA is responsible for:

- Furthering the economic development and regeneration of London
- Promoting business efficiency, investment and competitiveness in London
- Promoting employment in London
- Enhancing and developing the skills of Londoners
- Contributing to Sustainable Development

(Source: www.london.gov.uk)

5.1.2 GLA and the functional bodies – Policies, plans and programmes

General		
Plan, Policy or Programme	**Date**	**Scale**
Cross-cutting Mayoral Strategies (all of which are currently under review and being updated): The London Plan (Consolidated with alterations since 2004) London Plan Annual Monitoring Reports (4th Annual Report) The Mayor's Transport Strategy The Mayor's Economic Development Strategy	 2008 2008 2001 2005	 Regional Regional Regional Regional
Borough Statistical Pack, *GLA/DMAG* http://www.london.gov.uk/gla/publications/factsandfigures/boros2009/stat-pack-2009.pdf	February 2009	Regional
Information London, *GLA* http://www.london.gov.uk/gla/publications/factsandfigures/information_london.pdf	March 2008	Regional
Mayor's Annual report 2007/08, *GLA* http://www.london.gov.uk/mayor/annual_report/docs/ann_rpt_2008.pdf	February 2008	Regional
London State of the Environment Report, *GLA* http://www.london.gov.uk/mayor/environment/soereport.jsp	2007	Regional
Quality of Life Indicators, *LSDC* (to be updated in 2009) http://www.londonsdc.org/documents/qol_reports/lsdc_qol_indicators_2005.pdf	2004	Regional
Environment in your Pocket 2008, *DEFRA* http://www.defra.gov.uk/environment/statistics/eiyp/pdf/eiyp2008.pdf	2008	National

5.1.3 GLA and the functional bodies – issues relevant to the development of the Mayor's Climate Change Mitigation and Energy

- The Mayor is deputy-chair of the C40 group – a group of 40 international cities committed to tackling climate change. The Mayor has also signed up to the

covenant of Mayors, a commitment by signatory towns and cities to go beyond the objectives of EU energy policy in terms of reduction in CO_2 emissions through enhanced energy efficiency and cleaner energy production and use.

- TfL and the LDA were responsible for the emission of 1.93 million tonnes of CO_2 in 2008[34] from the energy use in buildings, electricity consumption, and the combustion of fuels in various transport modes.
- LFEPA were also responsible for the emission of 13,245 tonnes[35] CO_2 and the MPA for 176, 186 tonnes[36], also including buildings, electricity and fuels.
- The Mayor has agreed a Memorandum of Understanding with London Councils that London Boroughs are key in the delivery of action on mitigating climate change and addressing energy issues in London. As such, the participation of the boroughs in the development of the Climate Change Mitigation and Energy Strategy and its IIA is essential.
- The Government Office for London, representing central government in London, has set out a number of criteria that the Mayor's CCMES must meet, including being consistent with national policy, monitoring, carbon footprinting.

5.1.4 GLA and the functional bodies – issues relevant to the development of the Mayor's Air Quality Strategy

- The EU Air Quality Directives set 'limit values' (target concentrations) and timescales for key pollutants, including particulate matter (PM10) and nitrogen dioxide (NO_2), which are particularly harmful to human health. Limit values are legally binding targets that all Member States must achieve by a certain date and if attained, must not exceed them. In 2007, the UK Government published an updated National Air Quality Strategy. This sets national standards and objectives, some of which are more stringent than those set in the EU Directives.
- The Mayor is legally required to improve air quality to work towards these objectives in London and the updated MAQS will be the framework for this work. In addition, under the terms of the Environment Act 1995, the boroughs are required to carry out local air quality management duties. All London boroughs have declared Air Quality Management Areas, and are therefore required to produce and implement Action Plans for these areas. Therefore, the boroughs will play an important role in improving air quality in London.

5.1.5 GLA and the functional bodies – issues relevant to the development of the Mayor's Municipal and Business Waste Management Strategies

- THE EU Landfill Directive sets limits and timescales for the amount of biodegradable municipal waste allowed to landfill. These are legally binding targets that all Member states must achieve by 2020, or face fines. The Landfill Allowance Trading Scheme (LATS) is the UK Government's key regulatory response for enabling England to meet its targets. Under LATS, each English Waste Disposal Authority (WDA) is allocated a diminishing annual amount of landfill allowances for biodegradable municipal waste to 2020. WDAs can trade, bank or borrow allowances to enable them to meet their allowance targets, or face fines. Therefore, London boroughs play an important role in achieving London's landfill reduction targets.

[34] TfL (2008) Environment Report 2008 - http://www.tfl.gov.uk/assets/downloads/corporate/environment-report-2008.pdf
[35] LFEPA Key Performance Indicators 2008
[36] Annual report 2006

- The Mayor is legally required to produce a Municipal Waste Management Strategy, setting out the overarching framework of policy for managing London's Waste. London local waste authorities have to develop their waste strategies and waste contracts in "general conformity" with the Waste Strategy. The Mayor's Waste Strategy must be consistent with national policies, set out in Waste Strategy for England 2007.

5.2 Climate Change and Energy

5.2.1 Background to Climate Change and Energy in London

In order to meet the requirements of the Greater London Authority Act 2007, the Mayor must identify the full range of greenhouse gas sources and emissions in London and put appropriate policies and targets in place to mitigate their output. To date, policies have principally concentrated on the impact of CO_2, the most significant of the six major greenhouse gases.

The CCMES will build on the non-statutory Mayor's Energy Strategy 2004 (Green Light to Clean Power) and the London Climate Change Action Plan 2007. The Mayor's Energy Strategy 2004 aimed to "improve London's environment, reduce the capital's contribution to climate change, tackle fuel poverty and promote economic development." The Strategy's objectives were to:

- Reduce London's contribution to climate change my minimising emissions of carbon dioxide from all sectors
- Help to eradicate fuel poverty, and
- Contribute to London's economy by increasing job opportunities and innovation in delivering sustainable energy, and improving London's housing and other building stock.

The London Climate Change Action Plan (CCAP) presented a detailed action plan for London to reduce its CO_2 emissions based on modelled data on London's CO_2 emissions. CCAP set targets for reducing emissions of CO_2 from London by 60 per cent by 2050, from a 1990 baseline of emissions of CO_2. This target involved action from London and National Government. CCAP took a sectoral approach to identifying emissions and actions in London, and segmented into the domestic sector, ground-based transport, the commercial and public sector, and the industrial sector. The CCAP also modeled emissions from aviation. The CCAP proposed a range of projects, including the Green Organizations Programme, the Green Homes Programme, and the Better Buildings Partnerships.

The London Plan (consolidated with alterations since 2004) sets out planning policies relating to climate change, energy and the environment in section 4A. These policies include the Energy Hierarchy, revised from the London Energy Strategy 2004, which asks new developments to maximize energy efficiency, deliver energy efficiency, and to provide renewable energy on new developments. As part of implementing the London Plan, the London Boroughs are requested to include its policies in their local planning policies. A key element of the CCAP and the London Plan is facilitating the delivery of a decentralized energy supply in London. The CCAP set a target to deliver a quarter of London's energy through decentralized energy by 2025. The London Plan requires developers, and boroughs through their Local Development Frameworks, to identify and safeguard existing district heating schemes, to identify the potential for new schemes, and to ensure that new build is able to connect to existing or planned decentralized energy schemes.

The London Plan (consolidated with alternations since 2004) sets out targets for installed energy capacity from renewables, which is set out in the table below:

Targets for installed electricity capacity generated from renewables

	2010			2020		
	Number	Total Installed Capacity (MW)	Total Output (MWh)	Number	Total Installed Capacity (MW)	Total Output (MWh)
Offshore Wind Farms	–	–	–	–	–	–
On-Shore Wind Farms	–	–	–	–	–	–
Single Large Wind Turbines	6	15	26,280	18	45	78,840
Small Stand-Alone Wind Turbines	50	10	13,140	150	30	39,420
Building Mounted Micro-Wind Turbines	2,000	5	3,066	6,000	15	9,198
Biomass Fuelled CHP / Electricity	8	24	126,144	24	72	378,432
Hydro Power	–	–	–	–	–	–
Solar PV (domestic) (MWp)	7,000	15	10,500	21,000	45	31,500
Solar PV (commercial) (MWp)	250	12	8,400	750	36	25,200
Tidal Energy	–	–	–	–	–	–
Wave Energy	–	–	–	–	–	–
Anaerobic Digestion[a]	4	1.2	9,460	25	7.5	67,050
Sewage Gas[a]	2	10	31,124	6	30	93,372
Gasification/Pyrolysis[b]	1	6.8[c]	42,048[c]	11	94.6[c]	662,957[c]
Total	**9,321**	**99**	**228,114**	**27,984**	**375.1**	**1,385,969**

At the international level, the Kyoto Protocol set legally binding targets for ratifying countries to reduce their greenhouse gas emissions[37] by a collective average of five per cent below their 1990 level by 2008-2012. The European Union (EU), operating collectively, agreed to an eight per cent group emission reduction target, which it distributed across its Member States. The UK's target is 12.5 per cent. The Kyoto commitment period runs until 2012, and although the world's nations agreed in December 2007 in Bali to negotiate on a global deal to tackle dangerous climate change by 2009, the nature of this deal remains to be seen.

The UK Climate Change Act, adopted in November 2008, is the first time that action and targets on climate change has been consolidated by statute. The Act has two overarching aims: to improve carbon management and help the transition towards a low carbon economy in the UK and to demonstrate strong UK leadership internationally. The Act sets legally binding targets to reduce greenhouse gas emissions by 80 per cent by 2050, and to reduce CO_2 emissions by 26 per cent by 2020, against a 1990 baseline. The Act has also initiated a five-year carbon budgeting system, which will set the UK's trajectory for emissions reductions to 2050. Other key elements of the Act include setting up a Committee on Climate Change to advise Government on setting the carbon budgets, the inclusion of international aviation and shipping emissions in the Act by 31 December 2012, a five year reporting structure on the risks to the UK of climate change and the publication of a climate change adaptation programme.

[37] The six gases included in the Kyoto Protocol are: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_20) hydrofluorocarbons (HFCs), sulphur hexaflouride (SF_6) and perfluorocarbons

The UK is currently on course to exceed its Kyoto target, with latest projections for greenhouse gases in 2010 around 23 per cent lower than 1990 levels[38]. However, the Government's domestic commitment of a 20 per cent reduction in CO_2 emissions by 2010 is currently unlikely to be met. The Government has indicated they are on course to achieve around 16 per cent by the end of the decade but commentators have indicated CO_2 emissions are only likely to decrease to around 13 per cent.[39]

Waste management activities are estimated to contribute around 2.5 per cent to total greenhouse gas emissions in the UK, including 40 per cent of the nation's methane emissions. This is a considerable volume compared to most other sectors of the economy[40].

The London Climate Change Action Plan states that some 1.1 million tonnes of carbon dioxide could be saved each year by energy generated from waste and biomass using non-incineration based technologies. This represents 15 per cent of total carbon dioxide reduction required to achieve London's 60 per cent carbon dioxide reduction target by 2025

5.2.2 Policies, Plans and Programmes

Energy		
Plan, Policy or Programme	**Date**	**Scale**
London Energy and Greenhouse Gas Emissions Inventory (LEGGI) 2006	2009	Regional
London Energy and Greenhouse Gas Emissions Inventory 2004-05 (LEGGI 04/05), *GLA*	December 2008	Regional
Biomass for London: wood fuel demand and supply chains, *London Energy Partnership* http://www.lep.org.uk/projects/energy-demand-and-supply.htm	December 2008	Regional
Reducing the Capital's carbon footprint – delivering decentralized energy, *London First* http://www.londonfirst.co.uk/documents/DE_report_summary_low_res_FINAL.pdf	December 2008	Regional
Making ESCOs Work: Guidance and Advice on Setting Up & Delivering an ESCO, *London Energy Partnership* http://www.lep.org.uk/projects/energy-action-zero-carbon.htm	February 2007	Regional
Guide to Developing an Energy Action Area, *London Energy Partnership* http://www.lep.org.uk/projects/energy-action-zero-carbon.htm	November 2006	Regional
London Wind & Biomass Study Summary Report: Feasibility of the Potential for Stand Alone Wind and Biomass Plants in London, *London Energy Partnership* http://www.lep.org.uk/projects/energy-demand-and-supply.htm	November 2006	Regional
A Green light to clean power: Mayor's Energy Strategy, *GLA* http://www.london.gov.uk/mayor/strategies/energy/index.jsp	2004	Regional
Energy Act 2008	November	National

[40] Greenhouse gas impacts of waste management technologies, January 2008.

http://www.opsi.gov.uk/acts/acts2008/pdf/ukpga_20080032_en.pdf	2008	
Renewable Energy Strategy Consultation, *BERR* http://renewableconsultation.berr.gov.uk/	June 2008	National
An Immoral Climate, *UK SDC* http://www.sd-commission.org.uk/publications/downloads/An_Immoral_Climate.pdf	January 2008	National
Energy White Paper: meeting the challenge, *BERR* http://www.berr.gov.uk/whatwedo/energy/whitepaper/page39534.html	2007	National
A Sustainable Energy System and Barriers to Achieving it, *UK SDC* http://www.sd-commission.org.uk/publications.php?id=563	May 2005	National
EU 20 per cent by 2020 Renewable Energy Target http://www.publications.parliament.uk/pa/ld200708/ldselect/ldeucom/175/175.pdf	January 2008	European
European Energy Action Plan http://www.berr.gov.uk/whatwedo/energy/international/eu/page28034.html	March 2007	European
Climate Change		
Plan, Policy or Programme	**Date**	**Scale**
National Indicator 185 on the CO_2 reductions from Local Authority Operations http://www.defra.gov.uk/environment/localgovindicators/ni185.htm	2008/09	Local
National Indicator 186: CO_2 emissions reductions per capita http://www.defra.gov.uk/environment/localgovindicators/ni186.htm	2008/09	Local
London's Food Sector's Greenhouse Gas Emissions, *GLA* http://www.london.gov.uk/mayor/publications/2008/11/gfg-emissions.jsp	November 2008	Regional
Climate change - caused by the richest nations, *GLA* http://www.london.gov.uk/mayor/environment/environmental-justice.jsp	October 2007	Regional
London Climate Change Action Plan, *GLA* http://www.london.gov.uk/mayor/environment/climate-change/docs/ccap_fullreport.pdf	February 2007	Regional
Climate Change Act 2008 http://www.opsi.gov.uk/acts/acts2008/ukpga_20080027_en_1	November 2008	National
UK Climate Change Programme, *DEFRA* http://www.defra.gov.uk/environment/climatechange/uk/ukccp/		National
Carbon Reduction Commitment http://www.defra.gov.uk/environment/climatechange/uk/business/crc/index.htm		National
Stern Review on the Economic of Climate Change http://www.hm-treasury.gov.uk/stern_review_report.htm http://www.occ.gov.uk/activities/stern.htm	October 2006	National
EU Emissions Trading Scheme Phase II http://www.defra.gov.uk/ENVIRONMENT/climatechange/trading	2008/9	European

/eu/		
The European Climate Change Program II http://www.climateactionprogramme.org/directory/entry/european_climate_change_program/	2005	European
Bali Roadmap http://www.kyoto2.org/	2008	International
Intergovernmental Panel on Climate Change Fourth Assessment Report, *IPCC* http://www.ipcc.ch/	November 2007	International
Kyoto Protocol http://unfccc.int/kyoto_protocol/items/2830.php	1997	International

5.2.3 Climate Change and Energy – Baseline Information

Information	Source
London contributes 8 per cent of national CO_2 emissions	London Climate Change Action Plan, 2007
75 per cent of London's CO_2 emissions are from electricity and gas consumption	London State of the Environment Report, GLA, 2007, p4
Excluding aviation, 38 per cent of London's CO_2 emissions are from the domestic sector, 33 per cent are from the commercial and public sector, 22 per cent are from ground based transport and 7 per cent are from the industrial sector	London Climate Change Action Plan, 2007
The five non-CO_2 greenhouse gases contribute the equivalent of approximately two per cent of London's total CO_2 emission output.	London Emissions of Greenhouse Gases 1990 – 2001, AEAT
Compared with the domestic sector, a larger proportion of emissions in the commercial sector come from electricity usage.	London State of the Environment Report, GLA, 2007, p4
In 2007, renewable energy in London contributed: 200,418 MWh electrical (excl MSW incineration) 39,063-49,744 MWh heat 50.397 MWe installed capacity (excl MSW incineration) 25.533-52.314 MWt installed capacity Including incineration of Municipal Solid Waste (MSW): 503,207 MWh electrical 114.397 MWe installed capacity	London Renewable Energy Capacity Study SEA/Renue (now Carbon Descent), 2007
Total renewable electricity generation in London (excluding the biodegradable fraction of MSW incineration) has increased by 26.6 per cent between 2001 and 2007.	London Renewable Energy Capacity Study SEA/Renue (now Carbon Descent), 2007
Within London there has been a decrease of 156 heating degree days per decade for the period 1977-2006, while the number of cooling degree days has increased at 13 degree days per year over the same period.	Draft Climate Change Adaptation Strategy, GLA, 2008
The potential increase in summer energy demand for air conditioning may offset, or even exceed the estimated 12-19 per cent energy use savings that could be	Draft Climate change Adaptation Strategy, GLA, 2008

expected from the predicted warmer winters. EDF, the principal energy supplier to London has stated that peak electrical energy demand in the summer 2006 exceeded the peak winter demand.	

5.2.4 Climate Change Mitigation and Energy – issues relevant to the development of the Mayor's Air Quality Strategy

- Measures that reduce energy use, particularly from domestic and transport sources, will also improve air quality. Combustion engines emit air quality pollutants, including NO_x and PM_{10}, which are harmful to human health, as well as CO_2, which contributes to climate change. The processes involved in gas heating systems also result in emissions of NO_x.
- There are potential conflicts between increasing renewable heat and protecting air quality and public health, and such conflicts need to be managed. Government research from the Department of Energy and Climate Change (DECC) states that air pollution from community boilers can be avoided through the use of high quality, low emission plants, the deployment of only larger (and cleaner) biomass units within Air Quality Management Areas (AQMAs) to reduce the cumulative pollution from PM_{10} and encouraging the use of larger plants through the development of heat networks where emissions are more easily controlled than a number of smaller plant units.

5.2.5 Climate Change Mitigation and Energy – issues relevant to the development of the Mayor's Municipal Waste and Business Waste Management Strategies

- Waste cannot be completely eliminated, but by managing it, its environmental impact can be reduced. As methane is generated at all landfill sites accepting biodegradable waste, and the contribution of methane emitted from landfills to global warming is significant[41], alternatives to landfill for biodegradable waste are often viewed as having a positive effect on global warming. Additionally, UK recycling currently saves between 10-15 million tonnes of CO_2 equivalent greenhouse gases per year compared to other waste management options, equivalent to about 10 per cent of the greenhouse gases emitted by UK households[42].
- Processing recyclable materials and remanufacturing them into new products also present opportunities to reduce London's contribution to climate change. Substituting virgin materials for recyclate can lead to lower energy demands during processing. For example, aluminium is easily and economically recycled. There is an energy saving of 95 per cent in the production of secondary aluminium compared with the production of the same weight of primary metal. Recycling therefore contributes to a more efficient use of energy resources[43]. The recycling of some materials may not produce such a high energy saving, but will save the extraction and use of raw materials. The Best Practical Environmental Option (BPEO) should be considered for particular materials, taking into account the life cycle, local circumstances and other sustainability objectives, such as improvement in the community.
- Better process techniques can reduce the energy required for remanufacturing, for example, by reusing waste from one process step in another process step,

[41] Review of Environmental and Health Effects of Waste Management, Defra
[42] http://www.wrap.org.uk/downloads/LCA_Full_Report_May_2006_-_Final.8160fdd5.pdf
[43] The Aluminium Federation

particularly waste heat. Another opportunity is through industrial symbiosis, using waste materials from one organisation as a feedstock for another.

- Energy can be recovered through some waste treatment processes, such as anaerobic digestion and pyrolysis, in the form of gas. This gas can then be used directly as a fuel, for electricity generation, as a chemical feedstock, or to produce hydrogen fuel.
- There are several processes, other than conventional incineration, for the recovery of useful materials and/or energy from waste, such as Mechanical Biological Treatment (MBT), anaerobic digestion, biofuels, advanced thermal treatment including pyrolysis and gasification and the use of waste wood as a fuel.

5.3 Climate Change Adaptation

5.3.1 Climate Change Adaptation – Background

Developed nations have been emitting greenhouse gases as a result of the industrial revolution for over a hundred years. Ice cores have shown that the concentration of CO_2 has increased from 280ppm in the 1780s (when James Watt developed the steam engine) to around 380ppm today[44]. This increase will result in some degree of climate change. There is also an element of inertia in the carbon cycle, which means that even if all emissions stopped today, carbon dioxide levels would take 50-150 years to reduce, during which time we will continue to experience climate change[45].

While efforts are needed to reduce the emission of greenhouse gases into the atmosphere, particularly to keep the concentrations of CO_2 in the atmosphere below 450ppm (which is expected to lead to a 2^{o}C global warming) to avoid dangerous climate change, adaptation is needed for the element of climate change we will experience. The changes are expected to include:

- Warmer, wetter winters with more frequent heavy downpours and a higher risk of flooding
- Hotter, drier summers, putting additional pressure on London's water resources. In the 1976 and 2003 heatwaves, mortality in the population aged 55 rose sharply when mean daily Central England temperature exceeded 25 ^{o}C for a few days.[46]
- An increase in the intensity and frequency of extreme weather events
- Tidal surges and flooding

With the increased pressure on London's water resources, the most significant consequence would be a failure of the domestic water supply, resulting in a need for standpipes and other methods of water delivery. This would increase the risk of contaminated water and a reduction in hygiene practices, leading to an assortment of health risks. In particularly, access to sufficient water for older, disabled and less mobile people would be a concern. Localised water shortages may be particularly important in South-East England due to population growth and climate change (HPA, 2006).

In addition to the expected increase in temperature, London experiences the "Urban Heat Island Effect". This is where London's night temperatures can be higher than those in the surrounding rural areas. In summertime, this additional heat can affect the health of vulnerable people. In the heatwave of 2003, the centre of London was up to 9^{o}C warmer than the green belt, which is believed to have contributed to a high number of excess deaths.

Flooding and storms can also have significant health implications. Alongside the contamination of drinking water and the exposure to effluent, the effect on mental health is now recognised as an important health consequence of flooding (Ohl and Tapsell, 2000). Again, older, disabled, less mobile, socially disadvantaged people and those who live in poor quality housing and do not have access to information are particularly at risk. London, with the Thames Barrier, 185 miles of floodwalls, 35 major gates and 400 minor gates, is additionally vulnerable to flooding from the tidal Thames, fluvial tributaries to the Thames, surface water flooding and overflowing sewers.

[44] http://royalsociety.org/publication.asp?id=3866

[45] Draft London Climate Change Strategy, GLA, 2008

46 HPA, Health Effects of Climate Change in the UK 2008: An update of the Department of Health report 2001/2002, February 2008

The amount of change predicted varies by region, time and how greenhouse gas emissions are managed in the future. The South East of England is predicted to experience greater changes than the rest of the UK as its climate is affected by the European continental landmass.

5.3.2 Climate Change Adaptation – Policies, plans and programmes

Climate Change		
Plan, Policy or Programme	**Date**	**Scale**
National Indicator 188: Planning to adapt to climate change http://www.defra.gov.uk/environment/localgovindicators/ni188.htm	2008/09	Local
Assembly Draft London's Climate Change Adaptation Strategy, *GLA* http://www.london.gov.uk/mayor/publications/2008/docs/climate-change-adapt-strat.pdf	2008	Regional
Your home in a changing climate, *London Climate Change Partnership (LCCP)* http://www.london.gov.uk/trccg/docs/pub1.pdf	February 2008	Regional
Helping London prepare for the impacts of climate change, *LCCP* http://www.london.gov.uk/lccp/publications/docs/leaflet.pdf	May 2007	Regional
Adapting to Climate Change: Business as Usual?, *LCCP* http://www.london.gov.uk/lccp/publications/docs/business-as-usual.pdf	November 2006	Regional
Adapting to the effects of Climate change: A good practice guide for sustainable communities, *LCCP* http://www.london.gov.uk/lccp/publications/docs/guide-sustainable-communities.pdf	October 2006	Regional
Adapting to climate change: Lessons for London, *LCCP* http://www.london.gov.uk/lccp/publications/docs/adapting-climate-change-london.pdf	July 2006	Regional
London's Warming, *LCCP* http://www.london.gov.uk/gla/publications/environment/londons_warming_tech_rpt_all.pdf	2002	Regional
Adapting to climate change: A framework for action http://www.defra.gov.uk/environment/climatechange/adapt/pdf/adapting-to-climate-change.pdf	July 2008	National

5.3.3 Climate Change Adaptation – Baseline Information

Information	**Source**
In the heatwave of 2003, the centre of London was up to 9°C warmer than the green belt, which is believed to have contributed to the high number of excess deaths	Kovats RS, Ebi KL. Heatwaves and public health in Europe. *Eur J Public Health*
Currently 32,000 households in London are signed up to receive direct flood warnings via the Floodline Warnings Direct scheme.	London State of the Environment Report, GLA, 2007, p21
The increased carbon dioxide levels in the atmosphere have intensified the greenhouse effect and caused a 0.74ºC rise in global temperatures	Intergovernmental Panel on Climate Change, 2007, Working Group 1, Fourth Assessment Report
The Central England Temperature Series, which is indicative of the signal of temperature change in the Thames region, showed about a 1ºC rise since 1980.	Draft Climate Change Adaptation Strategy, GLA, 2008
The numbers of very hot summer days (defined as in excess of 25°C) are projected to increase from an average of nine days per year (1961 - 1990) to 18-21	UKCIP Scenarios Gateway http://www.ukcip.org.uk/scenari

days per year by the 2020s and to 28-45 days per year by the 2050s. The high emissions scenario suggests that the *average* hottest summer day in London will approach 35°C by the 2050s and 40°C by the 2080s.	os Draft Climate Change Adaptation Strategy, GLA, 2008
Nearly 15 per cent of London lies at risk from tidal and fluvial flooding.	Draft Climate Change Adaptation Strategy, GLA, 2008
The draft Regional Flood Risk Appraisal has revealed that as well as an estimated 1.25 million people and 481,180 properties; there is extensive social and civil infrastructure at high flood risk. It is important to note that currently 82 per cent of these properties are at 'low' flood risk, but that 100,000 properties are at 'moderate' or 'significant' risk	Draft Climate Change Adaptation Strategy, GLA, 2008

5.3.4 Climate Change Adaptation – issues relevant to the development of the Mayor's Climate Change Mitigation and Energy Strategy

- Adaptation and mitigation, whilst treated as separate issues, are complementary in a number of areas. Cooling buildings and transport infrastructure is likely to require mechanical cooling (fans and/or air conditioning), which is energy intensive. It is estimated that the 12-19 per cent energy use savings accrued from reduced heating in warmer winters may be more than offset by the growth in energy demand for summer cooling[47] (also central heating is usually gas fired, whereas air conditioning is electrically powered and correspondingly less efficient per degree and by amount of emissions). Designing buildings and infrastructure to remain cool and using carbon efficient methods of cooling (e.g. groundwater cooling) meets both mitigation and adaptation agendas.
- Water also requires a large amount of energy to purify and circulate in a high-pressure system ($1m^3$ weighs one tonne). Using less water saves energy and recycling water for non-potable uses in local systems can save a significant amount of energy.
- Hotter summers will increase the need for cooling, leading to greater energy demands and corresponding increase in CO_2 emissions, however, warmer winters will reduce the need for winter warming and reduce winter fuel poverty. But again, hotter, drier summers will increase demand for water, leading to increased energy demand.
- Higher energy demand during summer may be beyond the capacity of power stations to provide, causing burnouts or load sharing (many power stations operate at lower capacity during summer to allow for maintenance). However, daytime demand for cooling during summer can help 'flatten' the demand profile for decentralised energy generation and sustain a strong economic argument for more local (carbon efficient) energy generation.
- Some design and construction elements to reduce development costs and improve winter thermal performance may reduce passive cooling options (e.g. lower ceilings, single aspect development etc) and increase the need for mechanical cooling

- Power transmission is also affected by temperature and rainfall. Higher temperatures increase the resistance in overhead and underground power cables. Overhead cables can sag in hot weather, and the increasing risk of more frequent and more intense winter storms will increase the risk of storm damage to all parts of the generation and transmission network. Milder winters, on the other hand, will reduce the snow and ice damage to these networks.

[47] (H Graves & M Phillipson *Potential implications of climate change in the built environment,* BRE 2000).

- The proposed move from centralised to decentralised generation, together with a more diverse mix of generation types (including renewables and energy from waste) will improve the resilience of London's energy supply to the impacts of climate change, as well as reducing carbon emissions.

  (Source: Climate Change Adaptation Strategy Sustainability Appraisal Scoping Report and Draft Climate Change Adaptation Strategy, GLA, 2008)

5.3.5 Climate Change Adaptation – issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- Changes in climate may have an impact on the composition and consistency of waste produced, e.g. warmer summers may result in an increase in plastic water bottles and green garden waste for collection. Conversely wetter winters may increase the moisture content (and therefore weight) of waste raising issues for collection capacity.
- Rising sea levels and flooding could have adverse effects on waste transport, particularly river transport. Similarly waste management sites could be vulnerable to increased flood risk and will need to ensure suitable flood protection systems are in place.

5.3.6 Climate Change Adaptation – issues associated with the development of the Mayor's Air Quality Strategy

- The behaviour of pollution in the atmosphere (and therefore exposure to population) is dependent on weather, and with climate change, some types of pollution may worsen if temperatures increase. In addition to these impacts, there may also be a change in the impact of air pollution on human health. If our bodies are under more physical stress due to high temperatures and other climate change impacts, they may be more vulnerable to the impacts of local pollution.

5.4 Biodiversity

5.4.1 Background

London has a wide variety of habitats, represented by encapsulated countryside, brownfield sites, remnant marshes, public parks and private gardens. This diversity of habitats is a legacy of the development and redevelopment of London. The River Thames, at 23km, is London's largest wildlife site and is larger than all the Sites of Local Importance added together. There are a few boroughs where the Thames provides the bulk of the wildlife sites[48].

As mentioned previously, global and local biodiversity is threatened by increasing temperatures, caused by climate change, as habitats perish or migrate to locations where they can survive. Local biodiversity can also be seriously threatened by poor air quality. Sites important for biodiversity can come under pressure as locations suitable for landfill. Currently, approximately three quarters of London's municipal waste is sent to landfill, with the majority being landfilled outside the Greater London boundary. Greater London currently has two landfill sites still in operation, the first in Rainham in the Borough of Havering, near the RSPB's Rainham Marshes, and the second at Beddington Farm in Sutton.

As mentioned previously, the Habitats Regulation Assessment (HRA) will be carried out separately to the IIA.

5.4.2 Biodiversity – policies, plans and programmes

Biodiversity		
Plan, Policy or Programme	Date	Scale
National Indicator 197 - Improved Local Biodiversity proportion of Local Sites http://www.defra.gov.uk/ENVIRONMENT/localgovindicators/ni197.htm	2008/09	Local
Producing fuel from London's trees and woodland, *Forestry Commission England* http://www.capitalwoodlands.org/site/article?type=5	December 2008	Regional
Parks, People and Nature – a guide to enhancing natural habitats in London's parks and green spaces in a changing climate, *GLA* http://www.london.gov.uk/gla/publications/environment/parks_people_and_nature.pdf	March 2008	Regional
London's Biodiversity Strategy: Progress Report: *GLA* http://www.london.gov.uk/mayor/strategies/biodiversity/docs/progress_report_2006a.pdf	October 2006	Regional
London's Biodiversity Action Plan, *London Biodiversity Partnership,* http://www.lbp.org.uk/londonap.html		Regional
Connecting Londoners with Trees and Woodlands A Tree and Woodland Framework for London, *GLA* http://www.london.gov.uk/mayor/environment/forest/docs/ltwf_full.pdf	March 2005	Regional
London's Biodiversity Strategy: Connecting with London's Nature, *GLA* http://www.london.gov.uk/mayor/strategies/biodiversity/docs/strat_full.pdf	July 2002	Regional
Design for Biodiversity: A Guidance Document for Development		Regional

[48] London Plan Sustainability Appraisal Baseline Report, p29

in London, *LDA* http://www.lda.gov.uk/upload/pdf/Design_for__Biodiversity.pdf		
Working with the grain of nature: a biodiversity strategy for England, *DEFRA*	2002	National
Countryside and Rights of Way Act 2000 http://www.opsi.gov.uk/acts/acts2000/ukpga_20000037_en_1	2000	National
UK Biodiversity Action Plan, *DEFRA* http://www.ukbap.org.uk/		National
European Commission (1992) Conservation of Natural Habitats and Wild Fauna and Floor (The Habitats Directive) http://www.jncc.gov.uk/page-1374	1992	European
European Commission (1979) Directive on the Conservation of Wild Birds http://www.jncc.gov.uk/page-1373	1979	European
Convention on Biological Diversity http://www.jncc.gov.uk/page-1365	1992	International

5.4.3 Biodiversity – Baseline Information

Information	Source
22 per cent of land within Greater London is classified as Green Belt and 9.6 per cent as Metropolitan Open Land.	London State of the Environment Report, GLA, 2007
London has over 100 community gardens, 15 city farms, about 80 km of canals and over 50 Wildlife Trust reserves, 50 square miles of woodland and 150 square miles of private gardens	London's Biodiversity Strategy: Progress Report, GLA, 2006
There are around 100 Sites of Metropolitan Importance for Nature Conservation (16,000 hectares, or 10 per cent of London's land area), 310 borough Grade 1 sites, 460 borough Grade II sites, and around 460 Sites of Local Importance.	London State of the Environment Report, 2007
Green spaces in London are home to a tremendous diversity of wildlife, including over 300 species of birds and 1,500 species of flowering plants.	London State of the Environment Report, GLA, 2007
There has been a general increase in numbers of breeding birds across the London area. However, some species surveyed, notably house sparrow and starling, show a decline in numbers.	(www.jncc.gov.uk)
Woodland occupies about 8 per cent of London's land area, and there are an estimated 7 million trees in London – nearly as many as there are residents.	Mayor's Tree and Woodland Framework, GLA, 2005
There are two Ramsar sites (the Lea Valley and South West London Waterbodies) with a combined area of 1276 hectares.	(www.jncc.gov.uk)
There are five Natura 2000 sites of European importance in London: two Special Protection Areas (the Lea Valley and South West London Waterbodies) protected under the EU Birds Directive, and three Special Areas for Conservation (Richmond Park, Epping Forest and Wimbledon Common) protected under the Habitats Directive	(www.jncc.gov.uk)
There are 38 Sites of Special Scientific Interest (SSSIs) in Greater London, including Epping Forest and Hainault Forest, with a combined area of over 3800 hectares	(www.english-nature.org.uk)

Globally, deforestation and destruction of forests account for 30 per cent of total anthropogenic GHG emissions.	http://www.scottishforestalliance.org.uk/UserFiles/File/fs_forrestry_carbon_questions.pdf
Forests contain about 45 per cent of the global stock of carbon, so preserving and enhancing this land carbon sink, in both trees and soil, (should) be the main focus of management strategies aimed at maximising land carbon sinks.	The role of land carbon sinks in mitigating global climate change, The Royal Society, July 2001
There is an estimated annual potential production of timber for biofuels in London of 300,338 green tonnes per year	Producing Fuel from London's Trees and Woodland, Forestry Commission, 2008

5.4.4 Biodiversity – issues associated with the development of the Climate Change Mitigation and Energy Strategy

- There are concerns about the impact of large wind turbines on natural habitats, and particularly bird populations. According to the UK Sustainable Development Commission "There is no evidence for (wind farms killing birds) in UK, and this is because siting is carefully avoiding areas of sensitivity. We must retain this position so developers need to have a good Environmental Impact Assessment to ensure they site the farm in a place of least damage. There are 2 high profile examples overseas where poor siting has led to problems – in Spain and California – but we have not had these problems here. In Spain the wind farm was next to a major rubbish dump, or bird food source, thus causing high bird mortality[49]" The RSPB has also stated that "the RSPB favours a broad mix of renewables, including solar, wind, and marine power, wherever they are used in ways that minimise unnecessary damage to wildlife and the natural environment," and that "If wind farms are located away from major migration routes and important feeding, breeding and roosting areas of those bird species known or suspected to be at risk, there is a strong possibility that they will have minimal impact on wildlife[50]".
- There are major concerns that the promotion and increased use of biofuels on a global scale will be detrimental to biodiversity, as land is converted for the production of biofuels. The UK Joint Nature Conservation Committee states in their position statement on transport and biofuels that "Without appropriate safeguards, the rapidly growing biofuel industry and trade – further incentivised by the European Union's biofuels target – will add another significant pressure to the environment with damaging consequences for biodiversity[51]".
- Forests, and trees generally, have an important role in reducing atmospheric CO_2. This is particularly so in the tropics, where the net uptake of carbon by trees is much greater than in temperate latitudes. The conservation of the world's remaining tropical forests is an essential part of climate change mitigation, and reforestation in the tropics can have a significant impact in reducing CO_2. London can play a role through influencing national and international policy, and through ethical consumerism. Tree planting within London, however, will not have a significant impact on CO_2 levels, due to the high latitude and limited available space. Tree planting can, however, help London adapt to climate change.
- In temperate zones, peatlands are also very important carbon sinks, and their conservation is critical for climate change mitigation..

5.4.5 Biodiversity – issues associated with the development of the Mayor's Air Quality Strategy

[49] http://www.sd-commission.org.uk/pages/wind-power-qas.html
[50] http://www.rspb.org.uk/ourwork/policy/windfarms/index.asp
[51] http://www.jncc.gov.uk/pdf/COMM_07P13.pdf

- Pollutant emissions are known to impact on sensitive ecosystems and affect the general health of plants. Such effects are both localized (i.e. within the Greater London boundary) and also wider in scale, affecting sites of special scientific interest (SSSIs) and other designations within the south-east and on a regional scale within Europe due to trans-boundary dispersal.
- Reducing emissions and pollutant concentrations will benefit the protection of sensitive plant species and ecosystems. Plants more tolerant to air pollution are likely to thrive in polluted areas thereby enhancing the liveability of an area and improving green corridors.

5.4.6 Biodiversity – issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- For those landfill sites already in existence, biodiversity opportunities must be a key consideration in the restoration and development of that site once it has reached the end of its life span. Opportunities for creating different habitats should be carefully considered, using best practice and other key guidance on how best to restore this type of site to maximise biodiversity and provide the local population with safe access.
- However, it is not only the diversion of waste from landfill and the need for specific aftercare of landfill sites to maximise the use of space and changes to the local environment that needs to be considered, but also the increase in composting at different levels.
- The composting of green waste has an important part to play in relation to London's biodiversity and links closely with the Mayor's Biodiversity Strategy to encourage wildlife gardening, community gardens, allotments, and home and community composting.
- The composting of green waste is an essential part of organic and wildlife gardening and encouraging home and community composting can increase local biodiversity. The provision of a household green waste collection service for those with gardens (70 per cent) or a kitchen waste collection service for those without gardens (30 per cent) by the local authority, can significantly reduce the amount of biodegradable waste going to landfill. Some boroughs also offer a compost 'buy back' option, which is a good example of a 'closed loop' recycling system. This will benefit London's biodiversity footprint by reducing the use of peat in horticulture, which has already devastated and continues to threaten scarce peat bogs in Britain and abroad.

5.5 Water Quality, Resources and Management

5.5.1 Water Quality, Resources and Management – Background

London has a good quality water supply. Eighty percent of London's water is abstracted from the River Thames and the River Lee and stored in several major reservoirs in west London and down the Lee. The remaining twenty per cent is sourced from local groundwater abstracted from the extensive chalk aquifer that underlies London. In most years there has been sufficient water in the River Thames and the River Lee to meet London's demands at all times of the year. The effects of a changing climate, with reductions in river flow during summer periods and increased surface flooding, is likely to reduce the amount of water available for public water supply.

Under climate change, future rainfall is expected to become more seasonal, with more rainfall (up to 30 per cent more by 2080) falling in winter and less (up to 50 per cent less by 2080) in summer (under the high emissions scenario). Although the annual average volume of precipitation is not expected to decrease, it will fall less evenly throughout the year than currently experienced, with a greater proportion falling in intense downpour events.

There are four water companies that serve London: Thames Water, Three Valleys Water, Essex and Suffolk Water and Sutton and East Surrey Water. They all have a duty to develop and maintain an efficient and economical water service.

Consumption of water for Thames Water is above the average for the water industry in England and Wales. Companies operating in south-east of England generally report higher consumption figures. This may be due to hotter and drier summers and greater use of water-hungry devices such as dishwashers, power showers and increased garden watering. Figures for consumption are higher in London than in the Thames Water area as a whole[52].

With the climate changing and the city expanding, the system is under pressure and 52 million cubic metres of untreated sewage and rainwater pollute the Rivers Thames and Lee each year - enough to fill the Albert Hall about 525 times. Of this, 32 million cubic metres comes from sewer network overflows, which provide the only safety valve to prevent the overloaded system from backing up and flooding homes and streets[53].

Since 2005, Thames Water has embarked on an extensive mains replacement programme that will see some 1600 km of new mains over the next five years in London. Transport for London and the London Boroughs have been working with Thames Water on this programme and the Mayor continues to press for the works to be accelerated[54].

Energy generation is the single biggest water consuming industry in the UK. Many coal and gas-fired power stations are reliant upon river water for cooling and may be affected by lower summer river levels. It is possible that a power station would have to reduce its power output to remain within its abstraction license (as was experienced in France during 2003)[55].

[52] London Plan Sustainability Appraisal Baseline Report, p23
[53] London State of the Environment Report, GLA, 2007
[54] Draft Climate Change Adaptation Strategy, GLA, 2008
[55] ibid

The supply and consumption of water also carries its own carbon footprint. It is estimated that the total water usage per year per household in London is approximately 136,838.5 litres, and of this, 41,051.55 is hot water. The emissions from hot water use are approximately 363.99 kg of CO_2 per annum per household[56].

Water is an essential resource and amongst many other uses, water is a key component in many waste management activities, such as the transport, recovery and disposal of different types of waste – including hazardous waste and the re-processing or re-manufacturing of waste. All can have potential detrimental effects on London's water quality if they are not managed within the parameters given and regulated closely. It is very important to ensure that waste management activities maintain efficient use of water resources, minimise adverse effects on water quality and does not pollute the waterways.

The Water Framework Directive 2000 introduced a duty for all public bodies to have regard, in exercising their functions that affect a river basin district, to have regard to the river basin management plan for that district and any supplement plans. This includes the duties undertaken by the Mayor of London.

5.5.2 Water Quality, Resources and Management – Policies, plans and programmes

Water Quality and Water Resources		
Plan, Policy or Programme	**Date**	**Scale**
London's Water Action Framework, *GLA*, in preparation	Unpublished	Regional
Draft action plan for the Thames Region: Water for People and the Environment: Thames Regional Action Plan, *Environment Agency,* http://www.environment-agency.gov.uk/wrthames	June 2009	Regional
Water Matters: Assembly Draft Water Strategy, *GLA* http://www.london.gov.uk/mayor/environment/water/docs/la-draft-water-strategy.pdf	March 2007	Regional
Thames Estuary 2100 Project Consultation, *Environment Agency* http://www.thamesweb.com/page.php?page_id=60&topic_id=9	2009	Regional
Thames Region Catchment Flood Management Plan Executive Summary, *Environment Agency* http://www.jubileeriver.co.uk/thames_cfmp_2103822.pdf	July 2008	Regional
Draft consultation Thames River Basin Management Plan, *Environment Agency* http://www.environment-agency.gov.uk/research/planning/33106.aspx	2009	Regional
Draft Water Resources Management Plan, *Thames Water,* http://www.thameswater.co.uk/cps/rde/xchg/corp/hs.xsl/5373.htm	2008	Regional
Consultation Thames Region Catchment Flood Management Plan, *Environment Agency* http://www.environment-agency.gov.uk/research/library/consultations/54510.aspx	2007	Regional
Water for People and the Environment: Water Resources Strategy for England and Wales, *Environment Agency* http://www.environment-agency.gov.uk/wrs	March 2009	National
Draft Water Resources Management Plan, *Environment Agency,* http://www.thameswater.co.uk/cps/rde/xchg/corp/hs.xsl/5373.htm	2009	National
Water Resources Management Plan Regulations, *Environment Agency*	2007	National

[56] internal calculations based on data from energy saving trust, waterwise, etc

http://www.opsi.gov.uk/si/si2007/em/uksiem_20070727_en.pdf		
River Basin Planning Guidance, *DEFRA* http://www.defra.gov.uk/environment/water/wfd/pdf/riverbasinguidance.pdf	2006	National
Making space for water: taking forward a new government strategy for flood and coastal erosion risk management in England, *DEFRA* http://www.defra.gov.uk/Environ/Fcd/policy/strategy.htm	2005	National
UK Water Framework Regulations http://www.opsi.gov.uk/si/si2003/20033242.htm	2003	National
EU Water Framework Directive 2000/60/EC http://ec.europa.eu/environment/water/water-framework/index_en.html	2000	European

5.5.3 Water Quality, Resources and Management – Baseline Information

Information	Source
The majority of London's rivers and canals (56 per cent) were in the top three grades (A to C) in 1999-2001, which is second only to a peak of 60 per cent in 1992-94. But this is a low percentage when compared to the Thames Region, and England and Wales as a whole; both had 87 per cent of their rivers in these grades	(www.statistics.gov.uk).
The biological water quality of London's rivers has remained variable over recent years, but the chemical quality has steadily improved	Environment Agency
Only one in five households in London have a water meter.	Draft London Climate change Adaptation Strategy, GLA, 2008
Each Londoner consumes an average of 168 litres per day, compared to the national average of 150 litres per person per day.	Draft London Water Strategy, GLA, unpublished
The average household water consumption on a Thames Water metered home is 326 litres per day compared with 426 litres per day in an unmetered Thames Water home.	Ofwat
Average household water demand has increased dramatically over the past quarter-century, and London uses half as much water again as it did in 1980.	London State of the Environment Report, GLA, 2007, p28
Water consumption per capita in London from 1999/2000 – 2005/06 has remained fairly stable.	Ofwat
Eighty per cent of London's water comes from the Thames and the River Lee and is stored in reservoirs around London. The remaining twenty per cent is groundwater, abstracted from the chalk aquifer that lies underneath London.	Draft Climate Change Adaptation Strategy, GLA, 2008
Over 600 million litres a day, nearly a quarter of all the water distributed in the water mains network, is lost in leakage.	Draft London Climate Change Adaptation Strategy, GLA, 2008
The Environment Agency has estimated that without any further action to manage water demand, new strategic water resources may be required for London, under some scenarios by 2020.	Environment Agency: *Water Resources for the Future. A Strategy for Thames Region*

5.5.4 Water Quality, Resources and Management – issues associated with the development of the Mayor's Climate Change Mitigation and Energy Strategy

- Londoners use more water per capita than the UK or EU average, and the Thames region, in which London is located, is already one of the most heavily utilised water resource catchments with around 55 per cent of available water being abstracted for potable use. As such, avoiding dangerous climate change is important for the conservation of valuable water resources.
- The supply and consumption of water is carbon intensive, and as such there are opportunities to be jointly water and carbon efficient.

5.5.5 Water Quality, Resources and Management – issues associated with the development of the Mayor's Air Quality Strategy

- Rainfall affords a natural "scrubbing" of the atmosphere leading to a reduction of levels of pollutants in air. Certain pollutant species (NO_x and SO_x) are known to form acidic species when dissolved in water and, at low concentrations, affect the nutritional balance of soils leading to changes in plant competition between species, resulting in accelerated change in species composition within an ecosystem. Reducing emissions of acidic airborne pollutants species will benefit the protection of sensitive plant species and ecosystems.
- Air pollution is not known to directly affect the quality of drinking water.
- Some technological fixes to emissions reduction may bring associated risks to water contamination.

5.5.6 Water Quality, Resources and Management – issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- Certain waste management activities have a more detrimental affect on the use of water resources and pollution of waterways than others, such as the landfilling of waste and the reprocessing of recyclate. Landfilling has the potential to pollute groundwater through the production of leachate, although strict controls on landfilling now exist to minimise this impact.
- Moves are being made to further limit the risks to water associated with landfilling by the development of alternative new technologies. Mechanical Biological Treatment, for example, when used as a pre-treatment for residual waste, prior to final disposal can help significantly in minimising the production of leachate.
- Water can also be used in the incineration process, both to cool the ash produced from the burned rubbish and in the gas cleaning equipment. Operators therefore have a duty to manage their wastewater discharges and meet the regulations as they do for the emission controls.
- Many recyclate re-processing plant, such as the paper recycling, require the use of vast volumes of water. Water is required at a number of stages in the reprocessing of paper, for de-inking, bleaching, and the cleaning and treatment of wastewater. However, as with landfill and incineration, strict standards are in place and must be met before any waster is discharged.
- Hazardous waste, including household hazardous wastes, can have very damaging effects on the waterways and the environment if not disposed of safely and correctly. All hazardous waste must be segregated from general waste and only disposed of in the correct manner to ensure their disposal does not pollute the environment and waterways. Household hazardous waste collection services are available in some London boroughs, but to enable this to be effective this service should be made available to all Londoners including businesses.
- Fly tipped waste and litter in rivers and waterways can also be a problem. However all local authorities offer a collection service which residents are encouraged to use to prevent fly tipping. With London's large and transient

population litter is a constant problem, but the Mayor, through his Capital Standards programme, is working with all the London boroughs to improve this. Other organisations, such as Thames21, also contribute in making London's waterways free from litter through volunteer clean up days and helping to create clean, safe and sustainable waterside environments for all.

5.6 Air Quality

5.6.1 Air Quality – Background

The quality of the air we breathe is a fundamental "quality of life" indicator. Currently, it is estimated that 12,000 people die in the UK each year due to air pollution. Additionally, it is estimated that current pollution levels reduce the life of every individual by an average of 7 – 8 months and costs around £20billion to the UK economy each year in associated health costs.

In central London, high background levels of pollution occur, which make a significant contribution to poor air quality at all locations. In contrast, within the surrounding London Boroughs, poor air quality is largely confined to roadside locations along main busy arterial routes and "pinch-points" on the local road network (i.e. compliance with current regulations is achieved at background locations). However, emerging evidence indicates that for certain pollutants no safe threshold exists and it is therefore important that the improvement of air quality is carried out in a way that ensures benefits not only to those worse affected, but also that all Londoners have a role to play in the provision of clean air and reap the associated benefits of measures that are implemented to improve air quality.

In children, outdoor air pollution is associated with acute lower respiratory tract infections, asthma, low birth weight, and impaired lung function.[57] COMEAP (United Kingdom Government Committee on the Medical Effects of Air Pollution) states that, in the longer term, air pollution probably has additional effects on individuals including some reduction in average life expectancy, though the extent of this is not fully understood at present. For death from cardiovascular causes, there is an estimated 76 per cent increase in risk with each increase of 10 µg per cubic metre in long-term PM2.5 exposure.

There is a concern that minority populations and/or low-income populations bear a disproportionate amount of adverse health and environmental effects have also increased[58]. Those most affected by air pollution tend to live in deprived neighbourhoods with major arterial roads running close to them. The combined health impacts from road traffic injuries and transport related air pollution are estimated to account for one per cent of annual deaths in London and is responsible for a major contribution to morbidity[59]. King and Stedman (2000) found tentative evidence for a link between air pollution and social deprivation in the UK, supported by a study in Ontario, Canada. It was noted, however, that other socio-economic factors were important to this relationship, such as education levels and employment in the manufacturing industry[60].

The collection of London's municipal waste and transport to disposal sites, mostly to landfill outside of the London area, creates a significant transport requirement, and as such contributes to localised air pollution. It is estimated that one in ten lorries on Europe's roads transport waste[61]. At present approximately 53 per cent of municipal

57 London Health Commission, Health in London 2006/07

58 Wheeler and Ben-Schlomo, Environmental equity, air quality, socio-economic status, and respiratory health: a linkage analysis of routine data from the Health Survey for England. Journal of Epidemiology and Community Health, 2005

59 Watkiss, P. et al., Informing traffic health impact assessment in London, 2000.

60 Jerrett, 200

61 European Commission press release: Speech 01/302, Mrs Margot Wallstrom European Commissioner for the Environment 'Future Directions for European Waste Policy' European Waste Forum, Brussels, 21 June 2001

waste is sent for disposal (outside London) by road. These vehicles are usually heavy good vehicles and can emit high levels of air pollutants.

5.6.2 Air Quality – Policies, plans and programmes

Air Quality		
Document	Date	Scale
National Indicator 194: Local Air Quality http://www.defra.gov.uk/environment/airquality/local/indicator.htm	2008/09	Local
Draft Air Quality Strategy (in development), *GLA*	unpublished	Regional
Every Breath You Take: An investigation into air quality in London, *London Assembly,* http://www.london.gov.uk/assembly/reports/environment.jsp	May 2009	Regional
Review of the Potential Impact on Air Quality from Increased Wood Fuelled Biomass Use in London, *London Councils*	March 2008	Regional
London Atmospheric Emissions Inventory 2004, *GLA*	2007	Regional
The Mayor's Air Quality and Transport Strategy Revisions: London Low Emissions Zone, *GLA* http://www.london.gov.uk/mayor/environment/air_quality/links.jsp	July 2006	Regional
Cleaning London's Air: The Mayor's Air Quality Strategy, *GLA* http://www.london.gov.uk/mayor/strategies/air_quality/air_quality_strategy.jsp#full	2002	Regional
Air Pollution in the UK 2007, *DEFRA* http://www.defra.gov.uk/environment/airquality/strategy/index.htm	January 2008	National
Consultation on UK Report regarding plans and programmes to meet EU Air Quality limit values, *DEFRA* http://www.defra.gov.uk/corporate/consult/air-limitvalues2006/index.htm	October 2008	National
National Atmospheric Emissions Inventory, *DEFRA* http://www.naei.org.uk/	2007	National
The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, *DEFRA* http://www.defra.gov.uk/environment/airquality/strategy/	July 2007	National
EU Directive on Air Quality http://www.defra.gov.uk/ENVIRONMENT/airquality/eu-int/eu-directives/airqual-directives/	2008	European
EU Large Combustion Plant Directive http://www.defra.gov.uk/ENVIRONMENT/airquality/eu-int/eu-directives/airqual-directives/	2001	European
European Commission Air Quality Framework Directive http://www.defra.gov.uk/ENVIRONMENT/airquality/eu-int/eu-directives/airqual-directives/	1996	European
The Convention on Long Range Transboundary Air Pollution (LRTAP Convention), *UNECE* http://www.unece.org/env/lrtap/	November 1979	International

5.6.3 Air Quality – Baseline Information

Information	**Source**
Gas usage in the Greater London Area remains constant between 2004 and 2006 and is responsible for 34% of NOx emissions in London	London Atmospheric Emissions Inventory, GLA, 2006
In 2006 road transport emissions were responsible for	London Atmospheric Emissions

42 per cent of NOx and 72 per cent of PM10 emissions. (LAEI)	Inventory, GLA, 2006
Part A process in Greater London emitted eight per cent of total oxides of nitrogen (NOx) emissions, and a significant proportion of sulphur dioxide (SO2) and carbon monoxide (CO)	State of the Environment Report, GLA, July 2007
75 per cent of London (1,175 km2) was covered by Air Quality Management Areas in April 2007	State of the Environment Report, GLA, July 2007

5.6.4 Air Quality – issues associated with the development of the Mayor's Climate Change Mitigation and Energy Strategy

- While biomass boilers have advantages over conventional boilers in terms of reducing CO_2 emissions, small-scale biomass combustion, particularly wood burning, can result in emissions of PM_{10} on both a local scale and in contribution to London-wide background levels.
- Many measures designed to reduce emissions of CO_2 from transport sources, including those aimed at reducing the need to travel, mode shift and changing behaviour, will also reduce emissions of air quality pollutants. However, the increased use of diesel vehicles, which reduce the emissions of CO2 from vehicles, increased the emission of NO_x and PM_{10}.

5.6.5 Air Quality – issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- Other waste related air pollution is caused by the incineration of municipal waste. Twenty per cent of London's waste is incinerated by London's two existing municipal waste incinerators, Edmonton and SELCHP. The impact on air quality from these plants, however, is minimised by strict emission controls set by the Environment Agency and tall chimney stacks, which disperse the pollution.
- The transportation of source-collected residual waste or recyclables can involve a number of different waste transfer stages. Prioritisation should be given to more sustainable modes of transporting waste, such as water and rail and wherever possible other existing transport networks should be utilised. This should also ensure the efficient collection and transportation of wastes to minimise traffic volumes and associated impacts such as noise and fuel consumption.
- In relation to waste management facilities within London, under the Environmental Protection Act 1990, most large scale waste management facilities, including operations such as waste incinerators, are required to have a waste management licence. This allows them to operate and sets the parameters within which they must work and must adhere to. This ensures that waste facilities have high standards of air quality in terms of dust etc. The Environment Agency regulates licensed waste management facilities and emissions of pollutants to air, land and water to protect the environment and human health.

5.7 Waste

5.7.1 Municipal Waste – Background

Every year, London produces approximately four million tonnes of municipal waste, costing London Boroughs approximately £580m[62]. This 'waste' is a valuable resource that is not being utilised, and represents inefficiencies for the environment and the economy. WRAP estimate that in the UK, 1/3 of the food purchased is thrown away[63], meaning that 1/3 of all the materials and financial resources spent on food is wasted.

London's recycling performance was the lowest of any English region in 2007/08. However, municipal recycling performance is improving, up from eight per cent to 21 per cent over seven years. Even with this improvement, London was unable to meet the national recycling target of 25 per cent in 2005/06, with only 15 of the 37 waste authorities meeting it.

53 per cent (2.2 million tonnes) of London's municipal residual waste is sent to landfill each year, and the majority of that is sent to landfill outside of London. It is apparent that it is more sustainable to adopt the 'proximity principal', and manage London's waste near to where it is generated.

London's use of incineration with energy from municipal waste in 2007/08 (at an average of 22 per cent) is substantially higher than the UK average of eleven per cent over the same period. London's waste management method compared with other English regions shows that London incinerated the largest amount (919,000 tonnes) of municipal waste of any region[64]. London's incineration capacity is provided by two facilities, London Waste in Edmonton and South East London Combined Heat and Power Limited (SELCHP) in Lewisham. A third incinerator, Belvedere in Bexley, is planned to come on line in 2014.

Business Waste – Background

London's business waste makes up 80 per cent of London's waste (16 million tonnes per year). Almost half of the waste generated (9.6 million tonnes) in London is from the construction, demolition and excavation (CDE) sector, the largest source of waste arisings in London. The CDE is already acehving very high reuse and recycling rates of about 82 per cent but much more can be done to reduce approximately 1.4 million tonnes of waste from this sector going to landfill each year. Commercial and Industrial (C&I) waste makes up the remaining 6.4 million tonnes of London's business waste, achieving recycling and composting performance of about 42 per cent. The Mayor's approach to business waste is to help provide the resources necessary to help drive resource efficiency in businesses, boost re-use, recycling and composting performance for both C&I and CDE waste and improve London's waste infrastructure provision for these two waste streams.

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[62] Assumes average London local waste authority figure of £53/tonne waste to landfill. Source: DEFRA 2007/08 Municipal Waste Statistics, Best Value Performance Indicator Worksheet, Table 3. http://www.defra.gov.uk/environment/statistics/wastats/archive/mwb200708a.xls [Last Accessed 15 April 2000].

[63] http://www.lovefoodhatewaste.com/about_food_waste

[64] GLA statistics 2009; DEFRA 2007/08Municipal Waste Statistics, http://www.defra.gov.uk/environment/statistics/wastats/archive/mwb200708.xls#'Table 2'!A1 [Last accessed 13 Aroul 2009]

London currently uses a 'waste hierarchy' approach to the management of waste to minimise its impact on climate change (reduce, reuse, recycle, recovery). Here, options that provide the greatest carbon reductions are taken as a first choice. Reduction and reuse minimise the demand for new resources and energy, reducing the size, cost and environmental impact of waste treatment and disposal facilities. Recycling means substituting virgin materials for recycled materials, which can lead to lower energy demands during processing. Recovering energy from waste that is not recycled is the final step on the hierarchy, using thermal treatment conversion technologies, preferably advanced technologies such as anaerobic digestion. Incineration can only produce electricity at electrical efficiencies of around 25 per cent. Heat makes up some two-thirds of the energy produced from thermal treatment and thus harnessing it significantly increases the efficiency the facility, and also reduces the emission of greenhouse gases from other heating technologies, such as individual gas boilers.

A significant proportion of the waste stream (approximately 30 per cent) consists of biomass, i.e. it originates from plant and animal matter. Where electricity is generated from biomass, it counts towards meeting the national renewable energy target and be eligible to earn Renewable Obligation Certificates (ROCs) providing certain conditions are met.
The least desirable method for managing waste is landfill, particularly for biodegradable waste as this releases methane, a potent greenhouse gas.

(Source: GLA Internal Draft Strategy Review material, DEFRA Municipal Waste Management Statistics, Environment Agency Municipal Waste Statistics)

5.7.2 Waste – Policies, plans and programmes

Waste		
Plan, Policy or Programme	Date	Scale
National Indicator 191-193, Residual household waste per household, Household waste reused, recycled and composted, Municipal waste landfilled http://www.defra.gov.uk/environment/localgovindicators/ni191-193.htm	2008/09	Local
London Waste and Recycling Board Priorities http://www.londoncouncils.gov.uk/London%20Councils/PrioritiesPlansummary.pdf	2008/09	Regional
Rubbish In - Resources Out: Design ideas for waste facilities in London, *GLA* http://www.london.gov.uk/mayor/environment/waste/docs/waste-design.pdf	September 2008	Regional
Reuse Capacity in London, *GLA* http://www.london.gov.uk/gla/publications/environment/reuse-fullreport.pdf	July 2008	Regional
London Reuse and Recycling Centre Best Practice Guidance, *GLA* http://www.london.gov.uk/gla/publications/environment/RRC-Best-Practice.pdf	March 2008	Regional
Key Actions to Reduce Waste in London, *GLA* http://www.london.gov.uk/gla/publications/environment/keyactionstoreducewaste-report.pdf	March 2008	Regional
The Mayor's draft Business Waste Management Strategy: Making waste work in London, *GLA* http://www.london.gov.uk/gla/publications/environment/bwms-	February 2008	Regional

draft.pdf		
Costs of energy from waste technologies, *GLA* http://www.london.gov.uk/mayor/environment/waste/docs/efwtechnologiesreport.pdf	January 2008	Regional
Greenhouse gas balances of waste management scenarios, *GLA* http://www.london.gov.uk/mayor/environment/waste/docs/greenhousegas/technicalreport.pdf	January 2008	Regional
Household Waste Behaviour in London 2005, *GLA* http://www.london.gov.uk/gla/publications/environment/household-waste-05.pdf	March 2006	Regional
Wider Waste Strategy background study (technical report to the GLA) http://www.london.gov.uk/gla/publications/environment/wider_waste_strategy.pdf	2004	Regional
London Municipal Waste Management Strategy: Rethinking Rubbish, *GLA* http://www.london.gov.uk/mayor/strategies/waste/docs/wastestrat_all.pdf	2003	Regional
Managing Sludge – out 25-year plan, *Environment Agency* http://www.thameswater.co.uk/cps/rde/xchg/corp/hs.xsl/6315.htm.	2009	National
Waste Strategy Annual Progress Report, *DEFRA* http://www.defra.gov.uk/ENVIRONMENT/waste/strategy/	July 2008	National
Waste Strategy for England, *DEFRA* http://www.defra.gov.uk/ENVIRONMENT/waste/strategy/	May 2007	National
The Landfill (England and Wales) Regulations, *DEFRA* http://www.opsi.gov.uk/si/si2002/20021559.htm	2002	National
EU Revised Waste Framework Directive, 2008/98/EC http://www.defra.gov.uk/ENVIRONMENT/waste/thematicstrat/	2008	European
EU Directive on Waste Electronic and Electrical Equipment http://www.berr.gov.uk/whatwedo/sectors/sustainability/weee/page30269.html	2006	European
European Commission Landfill Directive http://www.defra.gov.uk/Environment/waste/topics/landfill-dir/pdf/landfilldir.pdf	1999	European
EU Packaging Waste Directive 94/62/EC http://ec.europa.eu/environment/waste/packaging_index.htm	1994	European
EU Waste Framework http://ec.europa.eu/environment/waste/legislation/a.htm	1975	European

5.7.3 Waste – Baseline Information

Information	Source
In 2007/08 total municipal solid waste in London was estimated at 4.1 million tonnes.	Borough Statistics Pack, GLA, 2009
In 2007/08, Household waste arisings in London were estimated at 3,342 thousand tones	www.capitalwastefacts.com
In 2007/08, 22 per cent of municipal waste was recycled, 22 per cent was incinerated with waste recovery and 53 per cent was landfilled	www.capitalwastefacts.com
Greater London has a household recycling rate of 26 per cent. 90 per cent of London households now receive a recycling collection of at least two materials. There are approximately 4,000 bring banks in London	www.capitalwastefacts.com WasteDataFlow 2006/07
The total amount of waste currently produced each year in London is 18.1 million tonnes. This is forecast to rise	The London Plan, GLA, 2008, p224

to 23.6 million tonnes by 2020 with business as usual.	
In 2007/08 each London household produced on average 759 tonnes of residual household waste (non-recycled waste), making London the fourth highest of all the regions.	http://www.defra.gov.uk/environment/statistics/wastats/archive/mwb200708.xls#'Table 4'!A1
Of the municipal waste landfilled in 2007/08 (2.2 million tonnes) approximately 80 per cent (1.76 million tonnes) was deposited in landfill sites outside the Greater London area, predominantly in the East and South East of England with just 20 per cent (0.44 million tonnes) being landfilled in sites within London.	London State of the Environment Report, GLA, July 2007 www.environment-agency.gov.uk
Emissions from landfill sites contribute to the vast majority of London methane emissions, and these are calculated from estimates of putrescible waste disposed of to landfill. Landfill emissions have declined by over 50 per cent since 1990, because of the implementation of methane recovery systems. Since 1994 all new landfill sites must collect and either flare or utilize the landfill gas to generate power.	London State of the Environment Report, GLA, July 2007

5.7.4 Waste – Issues associated with the development of the Climate Change Mitigation and Energy Strategy

- Using waste wood in biomass boilers could be an efficient way to utilise this resource and prevent it from going to landfill. However, because the wood is classed as a waste, using it in a biomass boiler is also considered incineration, and many argue that there are more sustainable ways to reuse the wood. Increases in landfill taxes are making it attractive for waste businesses to recycle waste wood or sell it for energy generation rather than landfill it. Meanwhile, the new Renewable Obligations Certificates (ROCS) regime means power generators can earn extra income for using renewable fuel sources in their power stations. Under ROC rules, recycled wood and other organic waste such as food waste can be classified as a renewable (biomass) fuel source, providing it passes a purity test. WRAP's report into the wood recovery infrastructure in South East England estimated that total waste wood arising in South East England in 2005 was some 950,000 tonnes per year. This volume arises from a number of sources with 35 per cent from construction and demolition waste, 30 per cent from packaging waste, 25 per cent from municipal waste (domestic and civic amenity sites), 5 per cent from the secondary wood processing industry (mainly furniture industry) and 5 per cent from other sources.[65]
- After reuse and recycling opportunities have been exhausted, energy generation using London's remaining residual waste as feedstock will contribute to London's energy generation capacity. The Mayor is currently reviewing the number and type of treatment facilities required in London to maximise re-use, recycling and energy recovery opportunities for diverting this waste away from landfill.
- Landfills are estimated to account for around 46 per cent of the UK's methane emissions. Methane is a powerful greenhouse gas and has Global Warming Potential twenty three times that of carbon dioxide. Emissions from landfills would be much higher, but all new landfill sites after 1994 are required to collect and utilise (or flare) their methane emissions[66]. Methane is generated from the breakdown of putrescible waste in the landfill. This putrescible waste could easily

[65] WRAP's Wood Recovery Infrastructure in South-East England (2005) http://www.wrap.org.uk/downloads/WoodRecoveryInfrastructureSE1.f16f0a20.pdf

[66] http://www.airquality.co.uk/archive/reports/empire/naei/annreport/annrep96/sect2_3.htm

either be extracted for composting or utilised to generate energy and heat through anaerobic digestion.

- A significant proportion of domestic refuse is unnecessary packaging. The production of this packaging generates emissions of greenhouse gases in the extraction of its primary parts, its manufacture, distribution and disposal.
- There are several waste related initiatives that can reduce the emissions of greenhouse gases. Increased recycling is beneficial in carbon terms as it reduces the emissions from the extraction of virgin materials. Increasing the uptake of advanced waste conversion technologies could reduce emissions, increasing London's self-sufficiency in the management of waste will reduce emissions from transport that currently transports waste around and outside of London. Advanced waste conversion technologies such as anaerobic digestion and gasification can produce gases that can be reformed into renewable hydrogen, synthetic gas or biogas to generate energy more efficiently than conventional incineration.

Waste – Issues associated with the development of the Mayor's Air Quality Strategy

- Air pollution is associated with the disposal of waste through direct emissions (in the case of incineration and energy from waste plants), or indirectly, through the production of methane as a by-product of decomposition (in the case of landfill). Consideration will need to be given to the location of waste management facilities and activities in London to minimise impacts on local air quality.
- Composting provides for the disposal of putrescent waste streams, however, concern related to the occurrence of odours and bioaerosols (airborne bacteria) occur where facilities are located within a residential area.
- Domestic bonfires have been a traditional way of households disposing of certain waste streams. Bonfires typically lead to increased levels of smoke – black carbon particles – and other toxic pollutants, such as dioxins, which impact on the health of individuals and can cause nuisance.
- Dust from waste transfer site operations, as well as the emissions from associated traffic, can cause health problems for site workers and local residents. Regulations and good practice exist to reduce the risks, including measures such as wheel washing, speed limits, dowsing and covering sources of dust. The Environment Agency is responsible for regulating emissions from waste transfer stations.

5.8 Historic Environment

5.8.1 Historic Environment – Background

London is considered to be one of the most important historic cities in the world. English Heritage sets out the importance of London's historic character, landscape and open space[67]:

"A vital aspect of London's continuing prosperity and success is its uniquely rich mix of historic buildings, public spaces, landscapes and waterways, which coalesce to create a great world city. Maintaining and investing in this uniqueness is crucial to its future. London has flourished by striking a successful balance between the old and the new. It is not a question of choosing one or the other. We must have both. The challenge is to reuse the legacy of historic buildings and areas we have inherited from past generations to regenerate failing parts of the city – to get the right buildings in the right places. Looking after the historic environment is intrinsically linked to making London a truly sustainable city'.

As development rapidly continues in London, a balance needs to be sought between allowing for economic development and growth whilst recognising that London's attractiveness, both economic and social, derives in large part from its cultural and landscape setting. Challenges to the historic environment and cityscape in London will be raised by the delivery of new homes and associated infrastructure.

English Heritage is responsible for advising Government on historic issues. In their publication 'Climate Change and the Historic Environment" 2008, English Heritage state:

Climate change is one of the most important and urgent problems facing us today. Without action to reduce greenhouse gas emissions, the direct impacts of a changing climate will have major adverse effects on society, the economy, and the environment, including our cultural heritage. The wide-ranging action required to limit further damaging emissions, combined with the need to adapt historic assets to make them more resilient to a changing climate, will also have significant implications for the historic environment.

Without action to mitigate and respond to its impacts, climate change will cause severe disruption to society and inflict serious impacts on the environment, including the historic environment. It will damage or destroy many historic assets and may significantly impair the ability of future generations to understand and enjoy their cultural heritage.

English Heritage therefore recognises the urgent need to reduce greenhouse gas emissions by decreasing fossil fuel use, increasing energy efficiency and exploiting low carbon technologies and renewable energy sources…. Nevertheless, we also recognise that some policies for adaptation and mitigation may have a damaging effect on historic buildings, sites and landscapes. These impacts can diminish the public's quality of life and be detrimental to the important social and economic contribution our cultural heritage makes to society.

5.8.2 Historic Environment – Policies, plans and programmes

Built and Historic Environment

[67] English Heritage (2005), Heritage Counts - The State of London's Historic Environment.

Plan, Policy or Programme	Date	Scale
The Survey of London, *English Heritage* http://www.english-heritage.org.uk/server/show/nav.1636	On-going	Regional
Heritage Counts - The State of London's Historic Environment, *English Heritage* http://www.english-heritage.org.uk/hc/	2008	Regional
Retrofitting Soho: Improving the Sustainability of Historic Core Area, *University of Westminster* http://www.wmin.ac.uk/sabe/page-1159	December 2008	Regional
English Heritage and EON research into historic buildings and climate change http://www.english-heritage.org.uk/server/show/ConWebDoc.13074	January 2008	National
Guidance on Conservation Area Appraisals, *English Heritage* http://www.english-heritage.org.uk/upload/pdf/Conservation_area_appraisals_20060320130154.pdf		National
Climate Change and the Historic Environment, *English Heritage* www.helm.org.uk/upload/pdf/Climate-change.pdf?1234873309	2008	National
Microgeneration and the Historic Environment, *English Heritage* www.helm.org.uk/upload/pdf/Microgeneration.pdf?1234872543	2008	National
Small Scale Solar Thermal Energy and Traditional Buildings, *English Heritage* www.helm.org.uk/upload/pdf/1799.SolarThermal_08.pdf?1234873162	2008	National
Small Scale Solar Electric (photovoltaics) Energy and Traditional Buildings, *English Heritage* www.helm.org.uk/upload/pdf/49357-SolarElectric.pdf?1234873245	2008	National
Energy Conservation in Traditional Buildings, *English Heritage* www.helm.org.uk/upload/pdf/89410-EnergyConservation1.pdf?1234873362	2008	National
Micro-wind generation and Traditional Buildings, *English Heritage* www.helm.org.uk/upload/pdf/69945-MicroWind1.pdf?1234873268	2008	National
Biomass Energy and the Historic Environment, *English Heritage* www.helm.org.uk/upload/pdf/Biomass-Energy.pdf?1234873504	2007	National
Wind Energy and the Historic Environment, *English Heritage* www.helm.org.uk/upload/pdf/Wind_Energy_%28final%29.pdf?1234873391	2005	National
Ancient Monuments and Archaeological Areas Act http://www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1979/cukpga_19790046_en_1	1979	National

5.8.3 Historic Environment - Baseline Information

Information	Source
London has a quarter of England's World Heritage Sites	English Heritage (2008), Heritage Counts - The State of London's Historic Environment.
18,461 listed buildings 152 scheduled monuments Over 500 Archaeological Priority Areas 955 Conservation Areas 148 Registered Parks and Gardens 4 World Heritage Sites Over 600 historic squares 8 Royal Parks 39 urban public parks; 16 historic cemeteries, 600 Garden Squares 1 Registered Historic Battlefield Between 1994 and 2008, London was awarded £834.2 million, representing 25% of all HLF investment in England. 30/33 London local authorities have Heritage Champions	English Heritage (2008), Heritage Counts - The State of London's Historic Environment.
84 Grade I and Grade II listed building items were at risk 121 monuments were at risk (80% of monuments in London)	English Heritage (2008) Heritage at Risk Register

5.8.4 Historic Environment – Issues associated with the development of the Climate Change Mitigation and Energy Strategy

- As outlined above, there is concern that certain renewable energy technologies are not easily integrated into an historic landscape, and that the widescale roll out of these technologies will damage the historic environment.
- There are also concerns that retrofitting historic buildings to improve their energy efficiency will damage the historic nature and aesthetics of the buildings and ruin them for current and future generations. In addition, English Heritage is concerned that it is generally assumed that older and historic buildings are less energy efficient than modern buildings, and they assert that this is not always the case.
- There appears to be insufficient information available on the energy efficiency and energy consumption of heritage buildings in London.
- English Heritage and E.ON are undertaking a three-year collaboration to explore and deliver initiatives to reduce the impact of climate change in the communities they operate. This includes promoting advice to the public on how to adapt their homes in the face of a changing climate and make them energy efficient, conducting research to produce more comprehensive data about energy efficiency in traditionally constructed buildings, and a look into how English Heritage properties can make a contribution to mitigating climate change. *(http://www.emptyhomes.com/documents/publications/reports/New%20Tricks%20With%20Old%20Bricks%20-%20final%2012-03-081.pdf)*

5.8.5 Historic Environment – Issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- The construction industry generates substantial volumes of waste – restoring older buildings and empty properties reduce the need for additional construction and the associated levels of waste. For all developments, there is a substantial opportunity to reuse materials and buildings.

- The siting of waste management facilities need to take into account the local character. Innovative design and sensitive land use planning can integrate waste management into the urban form.

5.8.6 Historic Environment – Issues associated with the development of the Mayor's Air Quality Strategy

- Air pollution affects the built environment through acid erosion and soiling of surfaces. Some of London's most historic buildings have been built using materials that are susceptible to pollution, with the loss of architectural details as a result of acid deposition. Continued preservation of London's historic buildings is an essential part of making London a worldwide tourist destination. Reducing emissions of acidic deposition pollutant species will preserve and enhance the built environment, whilst reducing the potential for restoration work, which could affect tourist revenues for notable sites of interest.

5.9 Transport

5.9.1 Transport – Background

Many forms of transport emit greenhouse gas emissions and the transport infrastructure is likely to be affected by the impacts of climate change. Unlike other sectors, transport emissions in London have remained stable since 1990 despite the growth of London's population and economy. This is due to a combination of high long-term levels of public transport use, investment in the public transport network, and technological advances. Transport emissions per capita in London are 45 per cent lower than the UK average, but if reduction targets for CO_2 emissions are to be met it will be critical to ensure that as many trips as possible are carried on lower-carbon modes: either public transport or walking and cycling.
(Source: London State of the Environment Report, GLA, 2007)

Road transport is also a significant contributor to air pollution in the capital. Road transport, particularly from larger diesel engined vehicles, is responsible for around two thirds of all emissions of particulate matter and around 40 per cent of all emissions of oxides of nitrogen in London. In central London, where concentrations of the pollutants which are most damaging to human health are at their highest, the share of emissions from road transport is even higher. It is therefore clear that reducing emissions from road transport, for example by encouraging a shift to cleaner modes, by encouraging technological development and by encouraging a shift to cleaner vehicles, will help improve air quality and health in London.

London has several airports, the largest being Heathrow in the London Borough of Hillingdon. Good international connectivity is important for London's competitiveness with its world city function and specialism in financial and business services. However, aviation is one of the most environmentally damaging modes of transport and, per passenger kilometre, is the most CO_2 intensive form of travel. For a typical short-haul flight of 300 to 800km an Airbus A320/100 would use between 3.2 and 2.5 litres of fuel per seat per kilometre. Presently, aviation accounts for 2 per cent - 3 per cent of global emissions but one third of London's total carbon footprint. It is also a growing sector[68]. During flight, aircraft engines emit carbon dioxide, oxides of nitrogen, oxides of sulphur, water vapour, hydrocarbons and particulates. These emissions alter the chemical composition of the atmosphere in a number of ways, both directly and indirectly. The impact of aircraft emissions can be very different depending where they occur in the atmosphere, but they generally have a disproportionately negative impact, known as radiative forcing. Research by the IPCC indicates that the radiative forcing effect of emissions from aviation may be between 2.0 - 2.7 times that of CO_2 alone. In addition to the emissions from the aircraft themselves, vehicular transport movements associated with airports can also have an impact on local air quality and emissions of greenhouse gases.

Road traffic crashes account for about 3,500 deaths each year, with ten times as many people seriously injured. In addition, road danger has become a strong disincentive to active transport. This has created a vicious circle: rising road danger has led to greater traffic volumes, in turn resulting in more danger and less walking and cycling. Children's physical and psychological development is

[68] http://www.london.gov.uk/mayor/environment/climate-change/docs/short-haul-flights.pdf

now constrained by parental restrictions imposed in light of their traffic safety fears.

Disadvantaged urban areas tend to be characterized by high traffic volume, leading to increased levels of air and noise pollution and higher rates of road traffic accidents without the benefits of access to private transport. Children from deprived areas are less likely to be car passengers, more likely to walk, cross more roads that have higher volumes and speeds of traffic, and are less likely to be accompanied by an adult or to have been taught road safety. They therefore have both higher exposure and higher risk for a given exposure.[69]

There is some evidence that there are ethnic inequalities in injury risks.[70] Between 1996 and 2006, there were 428,000 casualties recorded in road traffic collisions occurring in London. In children and adults, road traffic injury rates were higher in 'Black' groups (305 per 100,000 population in children; 617 in adults) and lower in 'Asian' groups (175 in children and 421 in adults), compared with rates in 'White' groups (234 in children and 479 in adults). 'Black' Londoners have been on average 1.3 times more likely to be injured on the roads than 'White' Londoners.

Healthy transport means less driving and more walking and cycling, backed up by better public transport. Cycling, walking and the use of public transport promote health in four ways - by providing exercise, reducing fatal accidents, increasing social contact and reducing air pollution. Regular exercise protects against heart disease and, by limiting obesity, reduces the onset of diabetes.[71] In general, interventions directed at making the environment safer (e.g. reducing the speed and volume of traffic) will reduce injury risk for the whole population in the longer term, as well as reducing the differences across ethnic groups. In the short term, it will be necessary to work with local communities to look at ways of managing existing risks.

As mentioned previously, the management of waste, particularly sending it to landfill outside London, increases the proportion of heavy goods vehicles on London's roads, contributing to air pollution and local road safety concerns.

5.9.2 Transport – Policies, plans and programmes

Transport		
Plan, Policy or Programme	Date	Scale
National Indicators 47, 48, 167, 177, 178 and 198 (people and children killed or seriously injured in road traffic accidents, congestion, local bus passengers, and children travelling to school) http://www.communities.gov.uk/publications/localgovernment/finalnationalindicators	2008/09	Local
Way to Go, *GLA* http://www.london.gov.uk/mayor/publications/2008/docs/way-to-go.pdf	November 2008	Regional
Short-haul aviation for business travel, *GLA* http://www.london.gov.uk/mayor/environment/climate-change/docs/short-haul-flights.pdf	March 2008	Regional
Executive Summary, Transport 2025, Transport vision for a	November	Regional

69 LHO

70 London School of Hygiene and Tropical Medicine, Road Safety of London's Black and Asian Minority Ethnic Groups: A report to the London Road Safety Unit, 2007

71 Marmot & Wilkinson, Social Determinants of Health, 2006

growing world city, *TfL* http://www.tfl.gov.uk/assets/downloads/corporate/T2025-new.pdf	2006	
Climate change and London's transport system, *LCCP* http://www.london.gov.uk/lccp/publications/docs/climatetransportsept05.pdf	Septembe r 2005	Regional
The Mayor's Transport Strategy, Transport for London, *TfL* http://www.london.gov.uk/mayor/strategies/transport/index.jsp	July 2001	Regional
Decision on adding capacity at Heathrow, *DfT* http://www.dft.gov.uk/pgr/aviation/heathrowconsultations/heathrowdecision/	January 2009	Regional
White Paper 'Delivering a Sustainable Railway', *DfT* http://www.dft.gov.uk/about/strategy/whitepapers/whitepapercm7176/	July 2007	National
Adding Capacity at Heathrow: public consultation document, *DfT* http://www.dft.gov.uk/pgr/aviation/heathrowconsultations/	November 2007	Regional
Local Transport Act http://www.dft.gov.uk/press/speechesstatements/statements/impoundingscheme		National
Aviation and Social Exclusion, *UK SDC* http://www.sd-commission.org.uk/publications/downloads/AviationandSocialExclusionData.pdf	January 2006	National
Transport 2010: meeting the local transport challenge, *DfT* http://www.dft.gov.uk/pgr/regional/policy/transport2010/transport2010meetingthelocal3735	Septembe r 2005	National
The Future of Air Transport - White Paper and the Civil Aviation Bill, *DfT* http://www.dft.gov.uk/about/strategy/whitepapers/air/	2003	National
Air transport & sustainable development - a submission from the SDC, *UK SDC* http://www.sd-commission.org.uk/publications/downloads/021101-Air%20transport-and-sustainable-development.pdf	November 2002	National
Aviation and sustainable development, *UK SCD* http://www.sd-commission.org.uk/pages/aviation.html	April 2001	National

5.9.3 Transport – Baseline Information

Information	Source
London is the only major world city experiencing a modal shift away from car travel to other more sustainable modes of travel including public transport.	London State of the Environment Report, GLA, 2007
Since 2000, there has been a shift of five per cent away from car usage, saving 500,000 car journeys per day and an estimated 210,000 tonnes of carbon dioxide emissions per year.	London State of the Environment Report, GLA, 2007 Transport 2025 - TfL
Cycling in London has grown fast, up 83 per cent on red routes in the past six years, and an increase of 91 per cent on TfL roads. There are now an estimated 480,000 cycle journeys every day across London, around 30,000 more than a year ago.	London State of the Environment Report, GLA, 2007 and Way to Go, GLA, November 2008
London has the lowest regional percentage of children walking and cycling to school	www.defra.gov.uk
Most travel into London is made by public transport. There is a projected increase in the numbers of Londoners cycling, but also the increase in numbers of cars and peak time	London State of the Environment Report, GLA 2007

demand for public transport. 7 per cent of daily trips are made on foot.	
On 7 December 2007 the Tube recorded its busiest day ever, with more than four million people on the trains, and the total Tube ridership is about 1.1 billion journeys per year.	Way to Go, GLA, November 2008
Between 2000/1 to 2004/5 bus journeys increased by 1/3 & an increase in bus network mileage of 26 per cent.	London State of the Environment Report, GLA, 2007
Vehicles travelled a total of 32,870 million vehicle kilometres (MVK) in London in 2007, a slight decrease from the 2006 total of 33,040.	Borough Statistics Pack, GLA, 2009
Around 50 per cent of journeys in London are less than 2km. Many of these shorter journeys, such as trips to school, could be made on foot or by bicycle but are deterred by poor road crossing facilities, fast flowing traffic and a poor environment.	London State of the Environment Report, GLA, 2007
In 2005, 37 per cent of all households in London did not own a car.	Borough Statistics Pack, GLA, 2009
Around 70,000 fewer vehicles entered the congestion charge area in 2006, compared to the 334,000 that entered each day before charging began.	State of the Environment Report, GLA, July 2007
In 2005, there were 26,742 vehicle collisions resulting in 31,830 casualties, of whom 214 were killed, 3436 were seriously injured and 28,180 were slightly injured.	State of the Environment Report, GLA, July 2007
Between 2001 and 2005 the number of pedestrian casualties decreased by 26 per cent and the number of fatal pedestrian casualties fell by 31 per cent. The number of seriously injured pedestrian casualties decreased by 32 per cent and the number of slight pedestrian casualties decreased by 24 per cent.	State of the Environment Report, GLA, July 2007
Between 2001 and 2005 the number of pedal cycle casualties decreased by 13 per cent, although the number of fatal pedal cycle casualties did not fall. The number of seriously injured pedal cycle casualties decreased by 21 per cent and the number of slight pedal cycle casualties decreased by 11 per cent.	State of the Environment Report, GLA, July 2007
In 2006 road transport emissions were responsible for 42 per cent of NOx and 72 per cent of PM10 emissions. (LAEI)	London Atmospheric Emissions Inventory, GLA, 2006

5.9.4 Transport – Issues associated with the development of the Mayor's Climate Change Mitigation and Energy Strategy

- Transport contributes to climate change through the emission of greenhouse gases. It is estimated that transport in London, excluding aviation, contributes 22 per cent of London's total emissions, and if aviation is included, this proportion increases to 34 per cent[72].
- However, there are opportunities to drive the low carbon economy through alternative transport fuels, such as hydrogen fuelled vehicles and electric vehicles.
- Encouraging fewer short journeys by private vehicles has further health benefits, as well as local and global environmental benefits. The National Travel Survey 1998 showed that 18 per cent of journeys less than one mile were made by car, and that a third of journeys under two miles are made in the car. Walking or cycling these

[72] Climate Change Action Plan (2007)

short distances provide personal health benefits, as well as reducing the impact on the local environment, local air pollution, and global climate change.

- The Government has been encouraging the uptake of diesel vehicles. Diesel vehicles tend to emit higher levels of NO_x and PM_{10} then their petrol equivalents. In recent years, tax incentives from central Government have encouraged the purchase of diesel vehicles, as they emit lower levels of CO_2. However, this could have an adverse impact on air quality. It should be noted, however, that for newer vehicles (Euro 5 and over), the difference in emissions between petrol and diesel is very small.

5.9.5 Transport – Issues associated with the development of the Mayor's Air Quality Strategy

- In central London, high background levels of pollution occur, which make a significant contribution to poor air quality at all locations. In contrast, within the surrounding London Boroughs, poor air quality is largely confined to roadside locations along main busy arterial routes and "pinch-points" on the local road network
- London's poor air quality is attributed currently to road traffic, with some vehicles producing a proportionately higher level of emissions than other vehicle classes. Speed and congestion additionally play a role in changing the emissions during driving, as does the driving style of an individuall.

5.9.6 Transport – Issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- The fuels used for waste collection provide an opportunity to increase the sustainability of waste management collection. Trials[73] are underway in London to ascertain the potential to produce bio-diesel from used cooking oil and use it as an environmentally benign alternative to traditional diesel. Bio-diesel from used cooking oil virtually eliminates the emission and odour problems associated with the fossil-based fuel. When produced to the appropriate standards, it can be introduced to existing diesel engines without any need for engine modification. At the same time, establishing bio-diesel production based on used cooking oil helps to absorb a waste material that is under increasingly strict controls[74] and which can be problematic when disposed of by traditional means[75].
- Biofuels produced from waste management techniques such as anaerobic digestion and gasification can also be also used for vehicle fleets in London. Biogas from anaerobic digestion (and landfill gas) can be upgraded to biomethane or hydrogen fuel for used in vehicles. This opportunity has been taken by Sainsburys, who are retrofitting some of its vehicles to be powered on a combination of diesel and refined landfill gas[76]. Camden have also taken the initiative to install London's first biogas refueling station providing renewable fuel for a trial vehicle, with a view to roll out production of fuel for its entire waste vehicle fleet[77]. Similarly, synthetic gases from gasification can be upgraded for use as a vehicle fuel.

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[73] For example, South East London Transport Strategy (SELTRANS) Bio diesel Initiative for Sustainable Transport (BISTRO)

[74] Under the Landfill Directive, England is already to ban the landfilling of all liquid wastes from October 2007

[75] "London's market potential for bio diesel from used cooking oils" www.londonremade.com

[76] Sainsbury's biomethane-diesel vehicle fleet web article: http://www.cleanairpower.com/CAP_Sainsburys_dual-fuel_initiative.php [Last Accessed 13 April 2009[

[77] London's first biogas refuelling station web article: http://www.camden.gov.uk/ccm/content/press/2008/october/first-biogas-fueling-station-in-london---turning-food-waste-into-vehicle-fuel.en [Last accessed 13 April 2009].

5.10 Sustainable Development

5.10.1 Sustainable Development– Background

Sustainable development means ensuring we have a better of quality of life now and for the future whilst protecting and enhancing the earth's resources. The London Sustainable Development Commission has produced a 'Sustainable Development Framework for London'. In this document, the Commission sets out its vision for London:

"Our vision for the 'World Class' London of the future is a place where all Londoners and visitors feel the greatest possible sense of physical, emotional, intellectual and spiritual well-being. Our thinking and decision-making will be long-term, meeting the needs of the present without compromising the ability of future generations to meet their own needs. This means ensuring that the ways in which we live, work and play will not interfere with nature's inherent ability to sustain life. We will achieve this by taking responsibility for the regional and global impacts of city life. With our commitment to inclusion and cooperation, we will build upon and celebrate London's diversity, in all its forms. Resources will be used efficiently and fairly and the natural and built environment protected. Our reward will be a prosperous, vibrant and healthy city, one in which we all make the most of opportunities for fulfillment."

The framework sets out four overarching objectives for a Sustainable London. These are:

- Taking Responsibility
- Developing Respect
- Managing Resources
- Getting Results

The objectives set out in the framework will be used as a guide in the development of the objectives for the Integrated Impact Assessment of the Climate Change Mitigation and Energy Strategy, Air Quality Strategy, and Waste Strategy.

(Source: http://www.londonsdc.org/)

5.10.2 Sustainable Development – Policies, plans and programmes

Sustainable Development		
Plan, Policy or Programme	**Date**	**Scale**
London Sustainable Development Commission Annual Report 2005/06 , *LSDC* http://www.london.gov.uk/mayor/sustainable-development/docs/lsdc_report_2006.pdf	July 2007	Regional
Securing the Future: The Gaps and Opportunities in London, *LSDC* http://www.london.gov.uk/mayor/sustainable-development/docs/lsdc_gapsopps_suumary.pdf	July 2007	Regional
Quality of Life Indicators for London 2005, *LSDC* http://www.london.gov.uk/mayor/sustainable-development/susdevcomm_indicators.jsp	June 2005	Regional
The Urban Environment, *Royal Commission On Environmental Pollution,* reporthttp://www.rcep.org.uk/urban/report/urb_env_summary.pdf#	March 2007	National

UK Government Sustainable Development Strategy: Securing the Future, *DEFRA* http://www.defra.gov.uk/sustainable/government/publications/pdf/strategy/SecFut_complete.pdf	March 2005	National
Rio De Janeiro Declaration on Environment and Development: Agenda 21 http://www.iisd.org/rio+5/agenda/declaration.htm	1992	International

5.10.3 Baseline Information

For baseline information on sustainable development, please refer to the London Sustainable Development Commission's Quality of Life Indicators.

5.10.4 Sustainable Development – issues associated with the development of the Mayor's Climate Change Mitigation and Energy Strategy

- Climate change should be regarded as an element of sustainable development. Climate change is occurring because our choice of using finite fossil fuels to develop has led to environmental damage. Sustainable Development adds dimensions to climate change, including issues of equity, particularly where some communities will feel the effects of climate change to a greater extent than those communities who are contributing to it the most. Where climate change can be regarded as a scientific phenomenon, viewing through the lens of sustainable development allows us to appreciate the wider implications of a changing climate and the environmental impacts of our current energy use.

5.10.5 Sustainable Development – issues associated with the development of the Mayor's Air Quality Strategy

- A healthy city is an integral part of the London Sustainable Development Commission's vision for London. It is important that the air quality implications of decisions related to planning, transport infrastructure and energy use are included in the appraisal process.

5.10.6 Sustainable Development – issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- To achieve regional self-sufficiency, we need to manage as much of London's waste as practicable within London. This will assist London to be more sustainable by realising the value of its waste as a resource for re-use, recycling and energy recovery within London, thus reducing its reliance on landfill sites and treatment facilities outside the region.

5.11 Liveability and Sustainable Communities

5.11.1 Liveability and Sustainable Communities – Background

- Liveability means creating and sustaining safe, mixed-use physical and social environments that promote health, long-term social cohesion, sustainable lifestyles and a sense of community and place[78].
- As London grows, the challenges of involving all of London's communities in decision-making, and ensuring that all Londoners have access to the services and infrastructure they need, will continue to multiply. The Deputy Prime Minister stated in his Sustainable Communities Plan for London (2003) that London's strategic challenges are to accommodate growth and to alleviate poverty and deprivation. To meet the challenges, the ODPM (now CLG) stated that London needs to provide more and better-designed and affordable homes, including homes for our key workers; improve public transport and other vital infrastructure required to support the development of new and growing communities; raise education standards and skill levels across the capital; and tackle crime, anti-social behaviour and the fear of crime.

  Plans for new developments must include sufficient infrastructure, facilities and capacity for waste management, with the goal of achieving regional self-sufficiency. Sites must be protected for waste management activities, especially where they have access to sustainable transportation modes such as railheads and wharves, and are facing competition from other land uses such as housing.

  Much of London's regeneration is planned for areas of brownfield land, in order to conserve London's green belt and open spaces. Brownfield redevelopment can generate hazardous wastes from contaminated land and construction and demolition activities must maximise the safe and sustainable (on-site) management of hazardous wastes arising from brownfield redevelopment. This is essential to ensure that the continued development of London's brownfield sites is not to be jeopardised by a lack of facilities, technologies or understanding. The consistent use, across London, of detailed Site Waste Management Plans and tools, such as the Demolition Protocol[79], early in construction projects is essential. Such tools can help to identify and plan for hazardous waste arisings.

5.11.2 Liveability and Sustainable Communities

Liveability and Sustainable Communities		
Plan, Policy or Programme	Date	Scale
National Indicators 2- per cent of people who feel that they belong to their neighbourhood	2009	Local
Culture Metropolis, *GLA* http://www.london.gov.uk/mayor/culture/cultural-metropolis/docs/cultural-metropolis.pdf	November 2008	Regional

[78] http://www.london.gov.uk/mayor/strategies/sds/further-alts/docs/sa-nts.pdf

[79] The Demolition Protocol shows how a building audit can used to generate a Demolition Recovery Index (DRI). The DRI allows project teams to identify the potential for cost effectively recovering material from demolition. In addition, the DRI provides planning authorities with a tool for ensuring that demolition methodologies reflect national and local authority policies on waste management and sustainable development.
http://icextra.ice.org.uk/tlml/demolition

Open Spaces Strategy, *GLA* http://www.london.gov.uk/mayor/strategies/sds/open_space/oss-draft-sept08.pdf	September 2008	Regional
London: A Culture Audit, *GLA* http://www.london.gov.uk/mayor/culture/docs/cultural-audit.pdf	March 2008	Regional
Green Theatre: Taking action on Climate Change, *GLA* http://www.london.gov.uk/mayor/publications/2008/docs/green-theatre-report.pdf	September 2008	Regional
The Sustainable Communities Plan, *ODPM* http://www.communities.gov.uk/documents/communities/pdf/143939.pdf	February 2003	National

5.11.3 Liveability and Sustainable Communities – Baseline Information

Information	Source
Over 15 million overseas tourists come to London each year – five million more than go to Paris or New York - together with ten million domestic visitors and 150 million day trippers. On average, seven out of ten of these visitors say that London's cultural offer influenced their decision to visit.	Culture Metropolis, GLA, 2008
There are over 200 festivals staged in the capital each year	Culture Metropolis, GLA, 2008
The total emissions from London theatres (excluding pre-production and audience travel) are approximately 50,000 tonnes a year, excluding indirect emissions from audience travel, estimated at approximately 35,000 tonnes of carbon dioxide per year.	Green Theatre: Taking action on Climate Change, *GLA, 2008*
Thirty thousand Londoners rent allotments to grow vegetables and fruit and 14 per cent of households grow vegetables in their garden. Interest and participation in gardening is high and there is a shortage of allotment sites in Inner London boroughs. There are now over 4,300 people waiting for allotments across the city – 3,000 more than a decade ago.	London State of the Environment Report, GLA, 2007

5.11.4 Liveability and Sustainable Communities – issues associated with the development of the Mayor's Climate Change Mitigation and Energy Strategy

- Advice on mitigating climate change recommends small changes that individuals can make to reduce their greenhouse gas emissions. However, a community-based approach to tackling climate change could encourage more behavioural change and result in greater action being taken at the local level. Global Action Plan has been using this concept through their "Eco-teams" initiative in the UK[80].

5.11.5 Liveability and Sustainable Communities – issues associated with the development of the Mayor's Air Quality Strategy

- As London grows, the challenge of maintaining a place where the objectives of creating safe, mixed-use physical and social environments that promote health, long-term social cohesion, attractive lifestyles and a sense of community and place becomes greater. Developmental pressures may bring forward sites that may appear unattractive for people to live by virtue of their close proximity to roads and industrial sites, which are likely to experience elevated levels of pollution.

[80] http://www.globalactionplan.org.uk/upload/resource/EcoTeams%20intro.15.07.08.pdf

5.11.6 Liveability and Sustainable Communities – issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- There is often concern about the siting of waste management facilities in urban areas. However, to promote awareness of waste and to reduce the environmental impact of its processing, it is essential that waste management is integrated into urban areas. Through good design, odours and health issues associated with waste can be eliminated, and its management integrated into the functions of a modern urban area.

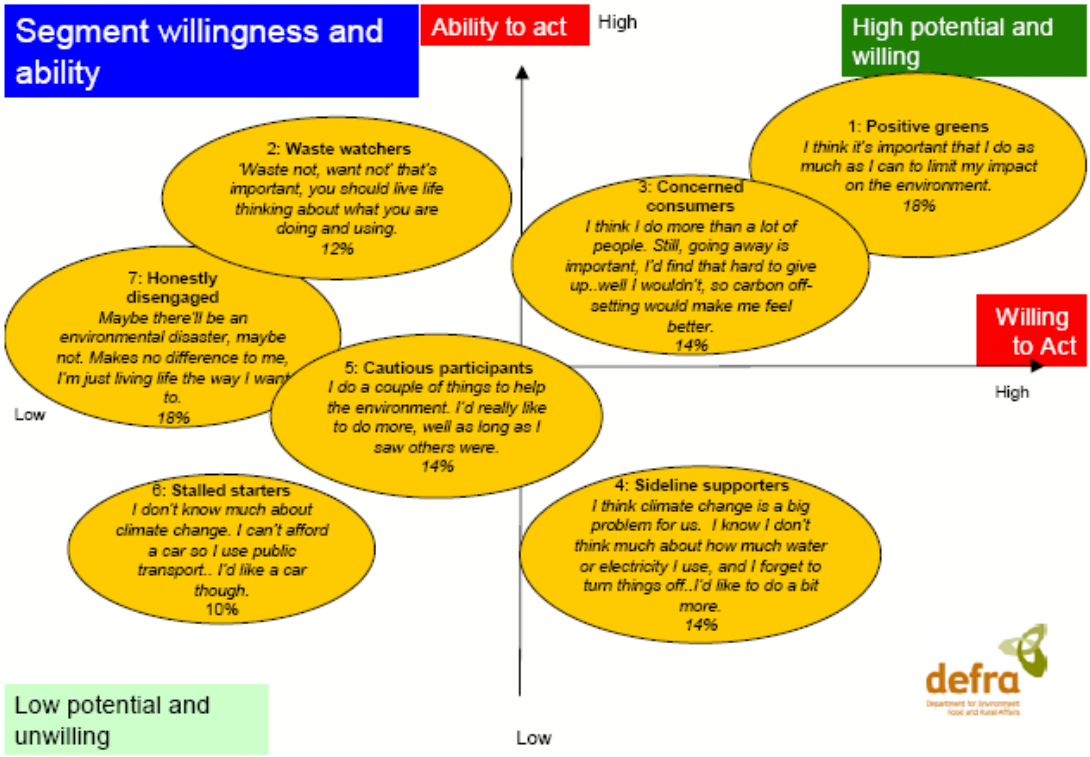
5.12 Governance, Democracy, Participation, Engagement and Awareness

5.12.1 Governance, Democracy, participation, engagement and awareness – Background

Climate change highlights important inter-generational responsibility issues, particularly that an inability to limit further climate change will leave future generations to deal with dangerous levels of climate change.

A recent MORI poll ranked climate change in the top three concerns of Londoners[81], yet very few people are prepared to take action to reduce their energy and water consumption, even when this will save them money (with free advice and subsidies provided) or when the risk of type of impacts are already being experienced are likely to occur more frequently / severely (e.g. heatwaves, water restrictions and flooding).

Defra's environmental segmentation model[82] (below) divides the public into seven clusters each sharing a distinct set of attitudes and beliefs towards the environment, environmental issues and behaviours. It has been established that providing information does not necessarily lead to behavioral change, but that additional sets are required to generate this change.



Governance refers to the requirement to make decisions at a strategic level, many of which may not provide benefits with the political lifetime of the decision maker. Decision-making requires the knowledge of society's tolerance and acceptance of risk, and the costs and benefits of different courses of action. Tackling climate change, improving air quality and reducing waste will require good governance, leadership, and participation.

[81] http://www.london.gov.uk/mayor/consultation/docs/2006-12-toplines-web.pdf
[82] http://www.defra.gov.uk/evidence/social/behaviour/pdf/behaviours-jan08-report.pdf

(Source: Climate Change Adaptation Strategy Sustainability Appraisal Scoping Report)

The environment sector has a long history of volunteering, the involvement on non-government organisations (NGOs) and innovative approaches pioneered through the third sector and social enterprises. It is important to continue to value the contribution people make through volunteering and social enterprises, whilst mainstreaming the issues to broaden the scope of involvement. Many environmental organisations and "green businesses" feel that "big business" has taken over the environment debate, and claims of "greenwash" are becoming more frequent[83]. It is important to engage with all sectors of society and allow all to participate in taking action on the environment, but these actions should be substantiated and where possible monitored and transparent for public scrutiny.

5.12.2 Governance, Democracy, Participation, Engagement and Awareness – Policies, Plans and Programmes

Democracy, Participation, Engagement and Awareness		
Plan, Policy or Programme	**Date**	**Scale**
National Indicators 3, 4, 6 Civic participation in the local area, percentage of people who feel they can influence decisions in their locality, Participation in regular volunteering	2008/09	Local
Communities in control: real people, real power - White Paper, *CLG* http://www.communities.gov.uk/communities/communityempowerment/communitiesincontrol/	July 2008	National
Local Democracy, Economic Development and Construction Bill, *CLG* http://www.commonsleader.gov.uk/output/page2664.asp	December 2008	National
Public Attitudes to Climate Change 2008, *MORI* http://www.ipsos-mori.com/_assets/pdfs/public%20attitudes%20to%20climate%20change%20-%20for%20website%20-%20final.pdf	2008	National
Framework for pro-environmental behaviours, *DEFRA* http://www.defra.gov.uk/evidence/social/behaviour/pdf/behaviours-jan08-report.pdf	January 2008	National
Third sector strategy for Communities and Local Government, *CLG* http://www.communities.gov.uk/publications/communities/thirdsectorstrategy	June 2007	National
New Rules, New Game, Communication tactics for climate change, *Futerra* http://www.futerra.co.uk/downloads/NewRules:NewGame.pdf		National

5.12.3 Governance, Democracy, Participation, Engagement and Awareness – Baseline Information

Information	**Source**
There were almost 5.48 million electors in London on the 2007 Electoral Register (ONS).	Borough Statistical Pack, GLA, 2009
In the 2001 General Election, 55 per cent of the London electorate voted, which was down from 68 per cent in 1997.	Quality of Life Indicators 2005, LSDC

[83] http://www.guardian.co.uk/environment/series/greenwash

The turnout (the proportion of London electorate who actually cast their vote on polling day) for the elections on 1 May 2008 was at 45 per cent, the highest since the Mayoral and London Assembly elections began eight years ago.[84]	Mayor's Annual Report 2008, GLA, 2008
37 per cent of Londoners participated in formal volunteering in 2003 (at least once during a 12 month period). This has decreased from 39 per cent in 2001. It is also less than the average for England of 42 per cent, which increased from 39 per cent in 2000 to 42 per cent in 2003.	Quality of Life Indicators 2005, LSDC
54 per cent of those living in London "definitely" enjoyed living in their neighbourhood	Quality of Life Indicators 2005, LSDC
In 2004, 75 per cent of Londoners were very or fairly satisfied with London as a place to live, compared to 71 per cent of those surveyed in the previous year, and 75 per cent in 2000. In 2004, 83 per cent of Londoners were very or fairly satisfied with their neighbourhood, compared to 78 per cent in the previous year and 83 per cent in 2000	Quality of Life Indicators 2005, LSDC
93 per cent of people in the UK say they know something about climate change, and nearly half say they know something about carbon footprints.	Framework for pro-environmental behaviours, DEFRA, 2008
73 per cent of people in the UK claim they are aware of environmental problems but not solutions and, beyond using less, people do not know what actions they can take to help	Framework for pro-environmental behaviours, DEFRA, 2008
63 per cent of people in the UK agree that if things continue on their current course we will soon experience a major environmental disaster.	Framework for pro-environmental behaviours, DEFRA, 2008
Two thirds of people in the UK think humans will find a way of overcoming environmental problems, one in five think it will be scientists that find solutions without people making big changes to their lifestyles and a similar number think it is too late to do anything about climate change	Framework for pro-environmental behaviours, DEFRA, 2008
11 per cent of UK consumers think there is too much concern with the environment	Framework for pro-environmental behaviours, DEFRA, 2008
62 per cent of UK adults think they have become more environmental aware over the last 12 months	Framework for pro-environmental behaviours, DEFRA, 2008
Nearly a quarter of people in the UK do not think their behaviour contributes to climate change	Framework for pro-environmental behaviours, DEFRA, 2008
60 per cent of people think they are doing quite a few things to help the environment	Framework for pro-environmental behaviours, DEFRA, 2008
More than half of people in the UK would like to do a bit more to	Framework for pro-

help the environment	environmental behaviours, DEFRA, 2008

5.12.4 Governance, Democracy, Participation, Engagement and Awareness – issues associated with the development of the Mayor's Climate Change Mitigation and Energy Strategy

- Raising awareness and education does not automatically mean people change their behaviour. Changing behaviour requires more support than the provision of information, and it is behaviour change that is needed to collectively reduce the emission of greenhouse gases.

5.12.5 Governance, Democracy, Participation, Engagement and Awareness – issues associated with the development of the Mayor's Air Quality Strategy

- The requirements to make decisions at strategic level for issues which pose a risk to society – either as a whole, or to certain sectors – requires a knowledge and understanding of society's acceptance of the risk and to the benefits afforded by it through the different courses of action. Poor air quality affects a proportion of Londoners and especially those that live adjacent to busy roads experiencing high volumes of traffic and regular congestion. Improvements in air quality will require action by those not directly affected by the release of emissions.
- The proposed new approach to air quality management – the Exposure Reduction approach – for "no-threshold" pollutants (such as PM2.585) provides a means of including the principles of social equity and environmental justice into the implementation of measures aimed at improving air quality.

5.22.6 Governance, Democracy, Participation, Engagement and Awareness – issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- The very use of language around waste management enables it to become 'someone else's' responsibility or concern – it is disposed of, removed, taken away. Managing waste within London, in conjunction with communities, NGOs and social enterprises, changes waste from an unwanted nuisance to a valuable resource, as recyclate, compost, or materials that can be reused. This is important in changing society's relationship with waste, to value it as an important resource.
- Education and raising awareness is key to reducing waste and increasing recycling. As such, there are a number of initiatives, such as WRAP's "Love Food Hate Waste "campaign and the Recycle for London campaign. Such initiatives are crucial to reduce the amount of waste produced in London and boost London's recycling performance.

[85] $PM_{2.5}$ = fine particulates with an aerodynamic diameter of 2.5 microns or less.

5.13 Housing and Sustainable Design and Construction

5.13.1 Sustainable Design and Construction – Background

London's population is expected to grow to 8.2 million people by 2021, a growth of 870,000 people since 2001. The number of households is also expected to grow from around 3.1 million (mid-2004) to nearly 3.6 million in 2021, an increase of over 500,000 households in 20 years. To meet this demand, it is estimated that 35,400 new homes will need to be constructed each year [86].

London's economy has grown significantly for some 20 years. Economic development brings with it the need for provision of new, improved and enhanced infrastructure. The regional Gross Value Added (GVA) based on workplace industry groupings indicates that the construction sector contributed some £8.402Million to the London economy in 2006.

The GLA Act 2007 gave the Mayor new housing and planning powers, including responsibility for producing the London Housing Strategy, which he is currently developing. There have been recent changes to the structures of those involved in the delivery and investment of housing in London including the creation of the Homes and Communities Agency (HCA) and its London Board, chaired by the Mayor, with a budget of over £5 billion. The Draft London Housing Strategy sets out an overarching aim to promote opportunity – to meet the housing needs and raise the aspirations of Londoners across the capital, a diversity that includes not only the city's great cultural and ethnic mix, but also its mix of ages, household types and needs.

The Draft Housing Strategy sets out the Mayor's vision of producing greener homes and to deliver higher environmental standards for all London's homes and neighbourhoods – in both new and existing homes. Proposed new policies in the strategy include:

- Ensuring new housing developments will meet the highest standards of sustainable design and construction;
- Ensuring all new publicly funded homes will meet at least level 3 of the Code for Sustainable Homes, with many schemes reaching higher levels, between 2008 and 2011;
- All new publicly funded housing developments will provide low carbon and renewable energy generation, where feasible on site
- Social rented homes will be improved so they are more than 'decent'
- By 2016 all occupied homes in London will achieve a SAP rating of at least 40, and should aim for a rating of 65 where the building fabric will allow
- Private home owners will be helped to improve the condition of their homes, with an emphasis on improving energy efficiency, environmental performance, adapting to the risk of flooding, overheating and water scarcity, and improving accessibility for disabled and older people;
- Green skills within the housing sector will be developed.

As mentioned previously, existing homes contribute 35 per cent of London's emissions, when aviation is not taken into account, and as such it is vital that existing housing is improved and homeowners are supported in their efforts to reduce their greenhouse gas emissions[87].

[86] GLA (2005) Housing Requirements Study
[87] Climate Change Action Plan, 2007

Currently there are over 61,000 families on London borough housing waiting lists in need of a home with three or more bedrooms.[88] As a consequence, overcrowding has increased in recent years. Between 1996/07 and 2006/07 the number of overcrowded households in London rose by a quarter to nearly 200,000 households. Overcrowding is particularly concentrated among minority ethnic communities and is linked to poorer health and educational outcomes. Overall in London, 14 per cent of BAME households are living in overcrowded conditions compared to less than four per cent of White households. For any given household size, overcrowding is higher in Black, Asian and minority ethnic (BAME) households. This suggests that higher overcrowding rates among ethnic minority households has less to do with family size and more to do with poverty and poor housing.

Households from ethnic minority groups are disproportionately likely to become homeless, reflecting in part greater exposure to risk factors such as poverty, deprivation and overcrowding. White British households make up 60 per cent of London's population but just a third of those accepted as homeless and in priority need. Caribbean, African and other black households comprised another third of those accepted as homeless but just 11 per cent of the general population.[89]

The interface between living conditions and health is a complex one. Poor housing can cause or contribute to ill-health or exacerbate existing conditions, for example through damp, mould, cold, bad lighting or design, or poor maintenance. Certain vulnerable groups such as homeless people, asylum seekers and people with mental health problems often reside in low standard accommodation which can seriously impact on their health. Living in bad housing means up to 25 per cent higher risk of severe ill-health and disability during childhood and early adulthood, as well as an increased risk of meningitis, asthma, slow growth, which is linked to coronary heart disease, a greater chance of suffering mental health problems and problems with behaviour, lower educational attainment, and a greater likelihood of unemployment, and poverty.[90] Overcrowding has been associated with the spread of infectious diseases, accidental deaths, asthma, cardiovascular diseases, stress and depression.[91] Children in overcrowded homes miss school more frequently due to illnesses and infections. Overcrowding is linked to delayed cognitive development, and homelessness to delayed development in communication skills.[92]

London has a diverse housing stock, 50 per cent of which is made up of flats[93]. Each local authority operates its own distinct waste, recycling and composting collection services. This presents challenges for providing consistent and equal levels of service across London, particularly the provision of recycling services to flats where performance is traditionally low. Through the Waste Strategy, the Mayor will work with local authorities to make recycling a hassle-free part of Londoners lives irrespective of where people live.

Through the London Spatial Strategy, the London Plan, the Mayor of London has the power to direct the development of London. This is an important tool to be able to tackle climate change, air quality and waste. London is continuing to grow, and

88 The Mayor of London, The London Housing Strategy, 2008

89 The Mayor of London op.cit

90 Shelter, Chance of a lifetime, 2006

91 CSIP, Good housing and good health?

92 London Health Commission op.cit

93 London Housing stock: http://www.london.gov.uk/mayor/publications/2009/docs/strategic-housing-report.pdf [Last accessed 13 April 2009].

the buildings and infrastructure that are developed now will probably still be used in 60 years – in 2069 when the implications of climate change, both in terms of whether we have hit our targets for greenhouse gas reductions and in terms of the degree of global warming that we will be experiencing, will be a reality. This is why the decisions made in the development of London now are vitally important in tackling climate change now and in the future.

In addition, an adequate waste infrastructure must form part of every development plan. Developing London sustainably requires waste infrastructure to be of high quality, attractively and innovatively designed and planned. This will ensure that necessary waste infrastructure can be co-located within mixed-use developments (minimising waste transportation requirements and enabling decentralised energy generation). Sufficient infrastructure for the sustainable collection and management of wastes (i.e. providing adequate space for bins) should additionally be suitably planned for.

There are also substantial opportunities to continue London's construction sustainably. For all developments, the reuse of materials and buildings and the use of recyclate should be prioritised.

5.13.2 Housing, Sustainable Design and Construction – Policies, plans and programmes

Housing, Sustainable Design and Construction		
Plan, Policy or Programme	Date	Scale
National Indicators 154, 158 and 160 Net additional homes provided, per cent non-decent council homes, Local authority tenants'satisfaction with landlord services http://www.communities.gov.uk/publications/localgovernment/finalnationalindicators	2008/09	Local
National Indicators 157 and 159 Processing ofplanning applications, Supply of ready to develop housing sites http://www.communities.gov.uk/publications/localgovernment/finalnationalindicators	2008/09	Local
Assembly and funtional body draft London Housing Strategy, *GLA* http://www.london.gov.uk/mayor/housing/strategy/docs/strategy.pdf	Nov 2008	Regional
Affordable Housing Development Control Toolkit, *GLA* http://www.london.gov.uk/mayor/planning/aff-housing/index.jsp	Nov 2008	Regional
Monitoring the Implementation of Lifetime homes, *GLA* http://www.london.gov.uk/mayor/planning/docs/lifetime-homes.pdf	Aug 2008	Regional
Energy and the Built Environment: Education and Training for Planners, *London Energy Partnership* http://www.lep.org.uk/uploads/LEP%20Planners%20Energy%20Training%20(Uni%20and%20CPD)%20Trainer%20manual.pdf	July 2008	Regional
Planning for a better London, *GLA* http://www.london.gov.uk/mayor/publications/2008/docs/plan-better-london.pdf	July 2008	Regional
Geodiversity of London – draft, *GLA* http://www.london.gov.uk/mayor/planning/geodiversity.jsp	July 2008	Regional
Credit crunch and the property market, *GLA Economics* http://www.london.gov.uk/mayor/economic_unit/docs/credit-crunch.pdf	May 2008	Regional
Bidding Prospectus: Regional Housing Pot Targeted Funding Stream 2008 – 2011, *GLA*	March 2008	Regional

http://www.london.gov.uk/mayor/housing/docs/fund_stream_prospectus.pdf		
City Fringe Opportunity Area Planning Framework, *GLA* http://www.london.gov.uk/mayor/planning/city-fringe.jsp	March 2008	Regional
Living roofs and walls - Technical report: supporting London Plan policy, *GLA* http://www.london.gov.uk/mayor/strategies/sds/docs/living-roofs.pdf	Feb 2008	Regional
East London Green Grid SPG, *GLA* http://www.london.gov.uk/mayor/strategies/sds/spg-east-lon-green-grid.jsp	Feb 2008	Regional
The Mayor's Prospectus for the London Thames Gateway, *GLA* http://www.london.gov.uk/mayor/planning/thames-gateway/index.jsp	Nov 2007	Regional
Summary of EiP Panel Report on Further Alterations to the London Plan, *GLA* http://www.london.gov.uk/mayor/strategies/sds/eip-report07/report-summary.pdf	Oct 2007	Regional
Housing choice for disabled Londoners, *GLA* http://www.london.gov.uk/mayor/housing/docs/housing-choice-for-disabled-londoners.pdf	Sep 2007	Regional
Review of the impact of the energy policies in the London Plan on applications referred to the Mayor (Phase 2), *GLA and LSBU* http://www.london.gov.uk/mayor/planning/docs/lsbu-research.pdf	Sept 2007	Regional
London Office Policy Review 2007, *GLA* http://www.london.gov.uk/mayor/planning/docs/lopr-07.pdf	May 2007	Regional
Evidence Base: Climate Change in the Further Alterations to the London Plan, *GLA* http://www.london.gov.uk/mayor/strategies/sds/further-alts/docs/cc-evidence-base.pdf	April 2007	Regional
Planning Policy: making it happen: Capacity Building of Planners and Others Implementing Energy Policy in London – Project Report, *London Energy Partnership* http://www.lep.org.uk/uploads/capacity-building.pdf	March 2007	Regional
Who buys new market homes in London? *GLA* http://www.london.gov.uk/mayor/housing/docs/who-buys-new-market-homes.pdf	Jan 2007	Regional
The London Plan (consolidated with alterations since 2004), *GLA* http://www.london.gov.uk/thelondonplan/thelondonplan.jsp	2007	Regional
Best Practice Guidance – The control of dust and emissions from construction and demolition, *GLA & London Councils* http://www.london.gov.uk/mayor/environment/air_quality/docs/construction-dust-bpg.pdf	Nov 2006	Regional
Towards Zero Carbon Developments: Supportive Information for Boroughs, *London Energy Partnership* http://www.lep.org.uk/uploads/towards_zero_carbon_developments.pdf	July 2006	Regional
Delivering Increased Housing Output, *GLA* http://www.london.gov.uk/mayor/strategies/sds/lon_plan_changes/docs/deliver-incr-housing.pdf	April 2006	Regional
Empty Homes in London 2005-6, *GLA* http://www.london.gov.uk/mayor/housing/empty_housing/empty_homes_2005.pdf	March 2006	Regional
Adapting to climate change: A checklist for development, *LCCP* http://www.london.gov.uk/lccp/publications/docs/adapting_to_climate_change.pdf	Nov 2005	Regional

London Housing Advice Strategy, *GLA* http://www.london.gov.uk/mayor/housing/docs/housingadvice.pdf	Dec 2004	Regional
Greater London Housing Requirements Study, *GLA* http://www.london.gov.uk/mayor/housing/docs/housing_reqs_2004.pdf	Dec 2004	Regional
Integrating renewable energy into new developments: Toolkit for planners, developers and consultants*, London Energy Partnership* http://www.lep.org.uk/uploads/renewables_toolkit.pdf	Sept 2004	Regional
English House Condition Survey Headline Report for 2007, *CLG* http://www.communities.gov.uk/publications/corporate/statistics/ehcs2007headlinereport	2009	National
Definition of Zero Carbon Homes and Non-Domestic Buildings http://www.communities.gov.uk/documents/planningandbuilding/pdf/1101177.pdf	Decr 2008	National
Killian Pretty Review of the planning application system in England's Final Report, *CLG* http://www.planningportal.gov.uk/england/professionals/en/1115315772911.html	Nov 2008	National
Planning Act 2008, *CLG* http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1	Nov 2008	National
Community Energy: Urban Planning for a Low Carbon Future, *CHPA* http://www.chpa.co.uk/news/reports_pubs/Community%20Energy-%20Urban%20Planning%20For%20A%20Low%20Carbon%20Future.pdf	2008	National
Housing and Regeneration Act http://www.opsi.gov.uk/acts/acts2008/ukpga_20080017_en_1	July 2008	National
Working Draft of Practice Guidance to support the Planning Policy Statement: *Planning and Climate Change* http://www.erm.com/ERM/Website.nsf/GFN/PracticeGuide_NT_IG_SP_edits%20_3.pdf/$file/PracticeGuide_NT_IG_SP_edits%20_3.pdf	Dec 2007	National
Planning Policy 1 Supplement: Planning and Climate Change http://www.communities.gov.uk/documents/planningandbuilding/pdf/ppsclimatechange.pdf	Dec 2007	National
Home Truths, *Oxford Environmental Change Institute* http://www.eci.ox.ac.uk/research/energy/hometruths.php	Nov 2007	National
Government's Housing Green Paper - Homes for the future: more affordable, more sustainable, *CLG* http://www.communities.gov.uk/publications/housing/homesforfuture	July 2007	National
Planning White Paper Planning for a Sustainable Future http://www.communities.gov.uk/publications/planningandbuilding/planningsustainablefuture	May 2007	National
Development Control: Planning for Air Quality, *Environmental Protection UK* http://www.environmental-protection.org.uk/assets/library/documents/Development_Control_planning_for_air_quality.pdf	Sept 2006	National
40 per cent house, *Oxford Environmental Change Institute* http://www.eci.ox.ac.uk/research/energy/downloads/40house/40house.pdf	Feb 2005	National
Planning Policy 1: Delivering Sustainable Development http://www.communities.gov.uk/documents/planningandbuilding/pdf/pl	January 2005	National

anningpolicystatement1.pdf		
PPS 22 – Renewable Energy, *CLG* http://www.communities.gov.uk/publications/planningandbuilding/pps22	Aug 2004	National

5.13.3 Housing, Sustainable Design and Construction – Baseline Information

Information	Source
In 2007/08 17,050 new dwellings were started and 20,740 completed, as indicated by DCLG.	Borough Statistics Pack, GLA, 2009
New development represents only 0.6 per cent of existing development in a single year in London,	Draft Climate Change Adaptation Strategy, GLA, 2008
Since 2001, the amount of derelict land has dropped overall by almost 76 per cent.	London State of the Environment Report, GLA, 2007
Buildings are responsible for approximately 50 per cent of current carbon dioxide emissions. It is estimated 30 per cent of buildings that will exist in 2050 are yet to be built	Community Energy: Urban Planning for a Low Carbon Future, TCPA & CHPA, 2008
Most residential development in the UK has an intended lifespan of 60-80 years, but in practice, given the current rate of housing replacement, has an effective lifespan in excess of 100 years. Twenty-nine per cent of London's housing stock was built before 1919 and sixty per cent of homes were built before 1945.	Draft London Climate change Adaptation Strategy, GLA, 2008
About 25,600 new homes were delivered in London in 2004/5; however, only 30 per cent of these were 'affordable'	*Reviewing the Water Action Framework*, 2005
London has more non-decent homes than other regions. In 2003, over one million homes failed to meet the government's Decent Homes standard, 71 per cent of which were in the private sector	Communities and Local Government (2003) English House Condition Survey
Nationally 44 per cent of council homes were non-decent in April 2004. In London this rises to 50 per cent or 241,000 dwellings (a reduction from 53 per cent in the previous year)	ODPM
The reuse of previously developed land for new housing in the region is the highest of all the regions	www.defra.gov.uk
London's mean house price in 2007 was £354,632. The next highest region was the South East with £267,978. The 2007 figure has increased by 11 per cent from 2006 and since 1996 the average price has more than trebled. Kensington and Chelsea had by far the highest average house price of £1,033,470. Barking and Dagenham had the lowest with £193,314.	Borough Statistics Pack, GLA, 2009
There were 3.15 – 3.20 million households in London in 2006. Based on the latest available projections, London's population could increase by 0.79 million to 1.14 million between 2006 and 2026 – the balance of evidence suggests that the top end of this range is more likely than the bottom.	London Plan, GLA, 2008, p64
Such a range could lead to an increase of 540,000 to 728,000 households over the next 20 years – a total of around 3.70 to 3.92 million. This assumes that household representative rates are stable over this period and is equivalent to 27,000 – 36,000 additional households a year.	London Plan, GLA, 2008, p64
The GLA Housing Requirements Study estimated that the net housing requirement arising from household population	GLA Housing Requirements Study

change and historic unmet need was 353,500 homes over 10 years or 35,400 additional homes a year.	
The London Plan has set a minimum target for housing provision at 30,500 additional homes per year.	London Plan, GLA, 2008
The present rate of demolition in the UK is low – resulting in less than 0.01 per cent of the stock being demolished each year and implying that the stock is replaced once every 1,300 years. A further worrying aspect of the demolition rate is that only 20 per cent of those demolished were unfit, the remaining 80 per cent were apparently satisfactory dwellings	40 per cent House, Boardman et al, 2005 ODPM 2003
In 2007, London had more registered social landlord dwellings completed than any other region (7,750)	Borough Statistics Pack, GLA, 2009
In 2006, there were 781,849 borough owned and social housing dwellings in London. This constitutes 19 per cent of the national total and 24 per cent of the total dwelling stock of London. Southwark contains the most public sector dwellings with 55,512 as well as the highest proportion (47 per cent).	Borough Statistics Pack, GLA, 2009

5.13.4 Housing, Sustainable Design and Construction – Issues associated with the development of the Mayor's Climate Change Mitigation and Energy Strategy

- The implementation of design and technologies that mitigate and adapt to climate change require skills from planning and building control officers. Whilst there is a share of good practice, and the May 2008 London Councils report, "Assessing the Capacity in London Boroughs' Building Control Services to Deliver on Sustainability & Climate Change" highlighted that London's Building Control departments are more aware of climate change and have generated a greater number of initiatives when compared to the rest of the UK, officers who took part in the study also stated that in many instances they do not have the skills or funding to see the greater adoption of sustainability in their work.[94]
- Equally, the design of more sustainable buildings requires skills in the private sector, particularly for architects, developers, house-builders, and so on. There is also often a mis-match between skills where, for example, architects develop the blueprints for a house, but the house-builders cannot interpret the new design or technology, or do not have the skills to install the technology in the house.
- Through the London Plan, the Mayor has significant powers to direct large-scale new build. However, he does not have direct powers to improve the energy efficiency of existing homes and buildings. It is estimated that in London, existing homes contribute 35 per cent of London's total emissions (excluding aviation), so it is essential in tackling climate change in London, to tackle existing homes[95].
- Whilst new homes and buildings can be built to high environmental standards, there is still carbon embedded in the process of sourcing the materials for the building and the construction of the building.
- Whilst it is important to meet London's housing needs, additional housing is likely to lead to an increase in greenhouse gas emission.
- There are opportunities to improve existing housing through schemes such as the CERT (Carbon Emission Reduction Target). However, many homes in London are classified as "hard to treat", and it is more costly and difficult to improve the energy efficiency of these homes.

[94] Assessing the Capacity in London Boroughs' Building Control Services to Deliver on Sustainability & Climate Change, London Councils, May 2008

[95] London Climate Change Action Plan, GLA, 2007

- As well as the way a home is constructed, how a householder uses their home also has implications for energy efficiency and greenhouse gas emissions. If a homeowner cannot use the technology that has been installed, removes it after occupation, keeps their home a much higher temperatures or purchases and uses high consumption electrical goods, then the home will continue to emit, or will increase emissions, or greenhouse gases. Education, raising awareness and communication about the technologies that have been installed are essential for a lifetime of low emissions from the home.
- The purchasing of high-consumption electrical goods has been increasing. These goods have been increasing the energy demands of homes, and the associated greenhouse gas emissions.

5.13.5 Housing, Sustainable Design and Construction – Issues associated with the development of the Mayor's Air Quality Strategy

- It is estimated that there are some 10,000 active construction sites in London at any one time. Air pollution arises as a result of construction activity. Typically, dust[96] arises as a consequence of demolition activities and stone-cutting activities, whilst the use of diesel generators brings with it associated emissions of NO_x and fine particulates[97]. Dust can cause nuisance to residential and business communities as a result of soiling of surfaces. In extreme causes of nuisance, physiological trauma may arise, resulting in the need for further specialized provision of health services and an associated increase in the number of sickness days. The "Considerate Contractors" scheme commonly used to promote best practice on construction sites has, in recent years, gone a long way to promote a better image for the construction sector, both in relation to environmental issues, and in respect to changes in behaviour of site workers to instill respect for the impact that construction sites can have.
- London experiences the highest background levels of NO_x in the UK as a result of a mix of emissions sources. Domestic and commercial fuel use (predominantly gas) is estimated to contribute 16,028 tonnes of NO_x in 2010. NO_x emissions associated with power and heating can be managed through the application of appropriate abatement technologies and through consideration to alternatives and design.
- It is important that the planning process for new housing minimises the need for travel by high-polluting forms of transport and encourages the use of public transport, walking and cycling.
- Without the application of best practice guidance, there is a risk that the construction of new housing in London could contribute to emissions of air quality pollutants.
- Schemes that reduce energy waste from domestic sources will have benefits in terms of reduced emissions of air quality pollutants.

5.13.6 Housing, Sustainable Design and Construction – Issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- The process of construction generates large volumes of waste. Historically, London has promoted the reuse of construction waste, particularly on-site.
- Recycling and waste services provided to households and businesses vary greatly between boroughs: there is a lack of consistency on recycling and waste collection methods, materials that are collected for recycling, service frequency, and bulky waste collection and recycling.

[96] Dust defined as particles up to 75 microns in diameter, including suspended particles

[97] PM_{10} = particles with an aerodynamic diameter of up to 10 microns.

5.14 Health Inequalities and Fuel Poverty

5.14.1 Health Inequalities – Background

The UK Government defines health inequalities as "inequalities in respect of life expectancy or general state of health, which are wholly or partly a result of differences in respect of general health determinants2."

Individual choice plays an important part for people maintaining a healthy and active lifestyle. How much exercise people take, the food people eat, the levels of alcohol people drink, are important factors for individual health. These choices are made within a physical, social and economic environment. It is also important to consider how strategic policies for London can present people with *healthy* options.

The level of poverty in London, particularly child poverty, is a major long-term cause of health inequalities across the city. Levels of poverty and deprivation correlate closely with levels of poor health. People's employment status and the nature of their work also have a direct bearing on their physical and mental health, and even on their life expectancy[98].

The physical environments in which people live have a strong bearing on their health. Poor quality housing, the way new neighbourhoods are designed, the availability of open space, local air quality, levels of noise, and access to services all affect health both directly and indirectly. Also important is people's sense of safety in and ownership of their local area. Across London the quality of local environment varies greatly[99].

Fuel poverty is estimated to afflict 5.26 million households in England, and 760,000 households in London in April 2008 (of which 572,445 are vulnerable)[100]. In simple terms, a fuel-poor household is unable to keep the home warm at an acceptable cost. Causes of fuel poverty include low income, high energy prices and low energy efficiency standards of dwellings. The consequences of fuel poverty can be severe – in particular, children, older people and those who are sick or disabled can suffer serious health implications. Fuel poverty is associated with a significant number of additional deaths that occur in the winter.

There is clear evidence that low indoor temperatures have a negative impact on physical and mental health and contribute to the numbers of excess winter deaths. Adverse health effects include respiratory conditions, bronchitis, heart attacks, and strokes. There is a gradient of risk linked with age of the property with the greatest risk for dwellings built before 1850 and lowest in the more energy efficient dwellings built after 1980.[101] The risk of winter death seems to be widely distributed in older people rather than being heavily concentrated in the most disadvantaged groups.[102] Research into energy efficiency and housing has shown that dealing with fuel poverty among low-income

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[98] Mayor's Draft Health Inequalities Strategy, GLA, January 2008

[99] ibid

[100] Numbers of households in fuel poverty in London and England, (as of April 2008) from Association for the Conservation of Energy Report on Fuel Poverty in London, using the Residual Income definition. Note that this report has not yet been published.

101 Wilkinson, 2001

102 Wilkinson, Pattenson et al., Vulnerability to winter mortality in elderly people in Britain, BMJ 2004

households alone does not solve the underlying problem of energy inefficiency or cold homes. This can only be solved by improvements to the housing stock, improvements to the levels of insulation, the air-tightness, and the heating systems.[103]

The economic downturn, coupled with high energy price,s mean that more households struggle to pay their bills. However, identifying the households that are in fuel poverty, and ensuring that they receive the appropriate assistance, remains complicated. The UK government has predicted that it will not meet its targets to eliminate fuel poverty. In London, action to tackle fuel poverty is undermined by the patchwork of fuel poverty and domestic energy efficiency schemes. Additionally, cavity wall and loft insulation, which national schemes tend to focus on, are not appropriate for a large percentage of London's housing stock. This failure to improve the energy efficiency of London's housing stock also makes it harder for London to reduce emissions, and tackle climate change.

According to the government's definition, a household is fuel poor if it spends more than 10 per cent of its income on all fuel use to maintain a satisfactory heating regime[104]. (A satisfactory heating regime is generally defined as 21°C in the living room and 18°C in other occupied rooms – the temperature recommended by the World Health Organisation.) The way in which household income is defined has considerable impact on the total number of households considered to be fuel-poor. While, the government's preferred definition of household income includes housing benefits and support, it does not reflect the high housing costs Londoners face. Under the government's definition, 10 per cent of households in London are experiencing fuel poverty, whereas including housing costs, which are high in London, this figure increases to 24 per cent (760,000) in 2008[105].

Disadvantage can also become entrenched in certain neighbourhoods. People with low incomes often live in areas with poor housing, low quality environments and inadequate access to quality services because these areas are often more affordable to them. The health of these individuals is compromised by both their poverty and poor environment. Across London different boroughs have different average life expectancies dependent in part on the number of deprived neighbourhoods they contain. However, because deprivation can become concentrated at the neighbourhood level, even those boroughs with relatively high average life expectancy contain pockets of deprivation where life expectancy is significantly lower than the borough wide figure would suggests[106].

London is one of the world's wealthiest and most successful economies, but includes some of the country's poorest communities – over 600,000 or 43 per cent of London's children live in households below the poverty line. This means that pockets of deprivation exist close to areas of extreme wealth[107]. A boy born in the London borough of Kensington and Chelsea today could expect to live to the age of 82.2 years. Another boy born on the same day in the London borough of Islington could expect to live to be just 74.6 years old,

103 Ormandy, Energy efficiency, health and housing standards in England

104 www.berr.gov.uk/energy/fuel-poverty/strategy/index.html

105 Association for the Conservation of Energy Report on Fuel Poverty in London

106 ibid

107 ibid

over seven years less than his contemporary. Similarly a girl born in Barking and Dagenham could expect to live to be 79.4 years old, over six years less than her contemporary from Kensington and Chelsea, who could expect 86.2 years of life.

Londoners' self-reported health is slightly better than the national average for England. However, there are significant health inequalities within London. Areas such as Tower Hamlets, Hackney and Newham report high rates of poor health. Most of the areas with low levels of male and female reported *good health* are located in inner London. There are also wide variations in the percentage reporting their health as *not good* by ethnic group. The percentage who reported their health as *not good* was highest in the Asian, British, Bangladeshi and Pakistani groups and was also high in the Indian and Black Caribbean groups. In terms of infant mortality rate (IMR), London is very similar to the rest of the country. The IMR in London as a whole has declined from 7.3 / 1000 in 1990-92 to 5.7 / 1000 in 2000-02. As with self-reported health there are considerable inequalities in infant mortality by borough. Brent, Lambeth, Southwark, Newham, Hackney and Waltham Forest had the highest rates and along with Croydon were significantly higher than the England rate.

The increasing age of the population in London means it is necessary to consider how health profiles and demand for services will alter. Individual living conditions will also change as people move through the life cycle. Deprivation is not a static phenomenon; people move in and out of it. The health effects of age may also be compounded by those of ethnicity and social class, for example the high unemployment rate of older people. The current Black and Minority Ethnic (BME) population in London is younger than the London population as a whole. As this population ages the health of BAME elderly people will assume growing importance. The population of elderly people from BAME groups in London will triple by 2011.
(Source: Climate change adaptation strategy sustainability appraisal scoping report)

Waste storage and treatment methods can directly and indirectly affect human health. A householder's or business's own hygiene in waste and recycling storage can potentially impact on health: uncollected and uncontained waste may invite rats, insects and mould. The swift collection of fly-tipped waste is also important for these same reasons. The collection and safe management of wastes such as clinical waste litter (e.g. syringes) and abandoned vehicles is also important where injury may result from children playing with wastes.

Waste treatment and disposal facilities such as landfills and incinerators have historically had the reputation of polluting the environment (such as air pollution, and ground and surface water pollution), and so indirectly impacting on human health. Consequently, the waste industry is now the most heavily regulated in Europe. Alarmingly, the waste industry also has a poor track record in ensuring the health and safety of its workers. The Health and Safety Executive's report on fatal accident statistics[108] states that "The industry with the highest rate of fatal injury to employees is the recycling of waste and scrap [industry], where the rate is approximately 27 times the national

[108] Health and Safety Commission (July 2005) Statistics of fatal injuries 2004/05 National Statistics pg 4

average. In the three-year period from 2002/03 to 2004/05, there have been eight deaths to employees in this industry." The industry fatality rate is some 19 deaths per 100,000 workers.

Recovering energy from London's waste presents significant opportunity for tackling fuel poverty in London. Waste facilities generating energy have the potential to provide cheap renewable heat and power for local use providing the necessary heat and power distribution infrastructure is available. Particular opportunities exist for generating renewable energy using advanced conversion technologies such as anaerobic digestion and gasification. Such technologies are eligible for double Renewables Obligations Certificates (ROCs), whereas conventional incineration is not. The RO requires power suppliers to supply a proportion of their electricity from renewable energy sources and provides a market mechanism to increase the profitability of renewable energy generation, as the ROCs have a commercial value. Depending on the scale of facility, the price for ROCS varies between £30-£35 per MWH of electricity produced[109]. The Strategy will promote the provision of waste facilities generating renewable energy for local use, particularly those that qualify for ROCs.

5.14.2 Health Inequalities and Fuel Poverty – Policies, plans and programmes

Health Inequalities and Fuel Poverty		
Plan, Policy or Programme	Date	Scale
National Indicators 54-58, 119-139, 145-146 http://www.communities.gov.uk/publications/localgovernment/finalnationalindicators	2008/09	Local
National Indicator 187 Tackling fuel poverty - per cent of people receiving income based benefits living in homes with a low energy efficiency rating	2008/09	Local
LEP-LWZ Fuel Poverty Action Plan, "Developing delivery partnerships to alleviate fuel poverty in London", *London Energy Partnership* http://www.lep.org.uk/uploads/LEP-LWZ%20fuel%20poverty%20action%20plan%20(Oct%2008).pdf	November 2008	Regional
State of London's Children Report, *GLA* http://www.london.gov.uk/mayor/children/solc.jsp	March 2008	Regional
Living Well in London: The Mayor's draft Health Inequalities Strategy, *GLA* http://www.london.gov.uk/mayor/health/strategy/docs/health-inequalities-text.pdf	January 2008	Regional
Health in London Looking back looking forward report: 2006/07 review of trends, progress and opportunities, *GLA* http://www.london.gov.uk/lhc/publications/healthinlondon/	June 2007	Regional
Health Issues in Planning Best Practice Guidance, *GLA,* http://www.london.gov.uk/mayor/strategies/sds/bpg-health.jsp	June 2007	Regional
London Food Strategy, *LDA* http://www.london.gov.uk/mayor/health/food/docs/food-strategy.pdf	May 2006	Regional
Health in London 2005, *GLA* http://www.london.gov.uk/lhc/publications/healthinlondon/	January 2006	Regional
Health Bill, *DoH* http://www.publications.parliament.uk/pa/cm200506/cmbills/069/2006	January 2009	National

[109] ROC prices and ranges 2009: http://en.wikipedia.org/wiki/Renewables_Obligation [Last accessed 13 April 2009].

069.htm		
Saving Carbon, Improving Health: NHS Carbon Reduction Strategy for England, *NHS* http://www.sdu.nhs.uk/page.php?area_id=2	January 2008	National
Health Profile of England 2008, *DoH* http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsStatistics/DH_093465	2008	National
The UK fuel poverty strategy: 6th annual progress report 2008, *BERR* http://www.berr.gov.uk/whatwedo/energy/fuel-poverty/strategy/index.html	2008	National
Consultation on the Review of the Home Energy Consultation Act (1995), *DEFRA* http://www.defra.gov.uk/ENVIRONMENT/climatechange/uk/publicsector/localauth/heca95/#review	October 2007	National
Taking the temperature: towards an NHS response to global warming, *NHS Confederation* http://www.nhsleadtheway.co.uk/Uploads/documents/NHS-Report-Taking-the-Temperature.pdf	2007	National
UK Fuel Poverty Strategy, *DEFRA / BERR* http://www.berr.gov.uk/whatwedo/energy/fuel-poverty/strategy/index.html	November 2001	National
Home Energy Conservation Act http://www.defra.gov.uk/ENVIRONMENT/climatechange/uk/publicsector/localauth/heca95/	1995	National

5.14.3 Health Inequalities and Fuel Poverty – Baseline Information

Information	Source
Warmer temperatures and more cloud-free summer days may result in more people overexposing themselves to ultra-violet radiation (UVR). The principal effects of this will be an increase in the number of cases of skin cancers and cataracts, which are likely to increase by 5,000 and 2,000 case per year respectively	NHS Confederation (2007) Taking the temperature. Towards an NHS response to global warming
For the period 2000-2002, life expectancy in London for women was 80.8 years and for men 75.9 years. These are very close to national averages.	Quality of Life Indicators 2005, LSDC
In a single London borough average life expectancy can vary by as much as ten years between people living in the most and least deprived neighbourhoods.	Mayor's Draft Health Inequalities Strategy, GLA, January 2008
According to the government's definition, a household is fuel poor if it spends more than 10 per cent of its income on all fuel use to maintain a satisfactory heating regime. (A satisfactory heating regime is generally defined as 21°C in the living room and 18°C in other occupied rooms – the temperature recommended by the World Health Organisation.)	DEFRA/DTI, UK Fuel Poverty Strategy, 2001, p6, www.berr.gov.uk/energy/fuel-poverty/strategy/index.html
The GLA 2002 London Household Survey found that almost eight per cent of responding households could not afford to heat their homes to the standards that they required (equating to around 240,000 homes if projected across all of the capital's housing). Women, lone parent families, older people, some minority ethnic groups and people in local	London Energy Partnership, A Fuel Poverty Discussion Paper for London, 2006

authority housing were more likely to be affected. In 2004/05 there were 3,400 Excess Winter Deaths in London.	
In England, approximately a third of excess winter deaths are related to low indoor temperatures and 90 per cent of these occur in those more than 65 years of age. In London 3,000 pensioners died of cold related illnesses in the winter of 2004/05.	Land Use Consultants in association with CREH (2007) *Delivering Healthier Communities in London* Help the Aged

5.14.4 Health Inequalities and Fuel Poverty – issues associated with the development of the Mayor's Climate Change Mitigation and Energy Strategy

- Any new technologies that will contribute to reducing the greenhouse gas emissions from London need to consider health and safety issues. For example, a critique of electric vehicles is that their low level of noise makes it more hazardous for walkers and cyclists crossing and using the roads. This has further implications for those with visual impediments or disabilities and their ability to navigate roads and the city safely.
- There are physical and mental health benefits to walking and cycling, and not using private vehicles.
- Often, improving the local environment and taking measures to improve energy efficiency and integrate adaptation features, such as green roofs, reduce local health inequalities associated with the built environment
- Improving the energy efficiency of homes where people suffering fuel poverty can help reduce energy waste and lower energy bills
- Often those in fuel poverty are using lower amounts of energy, so the CO_2 savings are likely to be larger in the homes of the more affluent.
- Injury and ill health can be contributing factors to families falling into fuel poverty. Also, when those suffering illness or injury return home after being hospitalised, it is important for them to maintain thermal comfort to ensure their recovery. Often patients return to hospital because their conditions in their homes have inhibited their ability to recover from their illness or injury.
- Older people are regarded as being more vulnerable to fuel poverty, both in terms of having smaller disposable incomes to spend on fuel bills, particularly where prices increase. They are also more vulnerable to the cold, and their health can be seriously impaired if they are living in fuel poverty.
- Families, older people, those suffering long term sickness and people who are disabled spend longer periods of time at home, and as such need to keep their home warmer for longer periods of time. This, in turn, increases costs.

5.14.5 Health inequalities – issues associated with the development of the Mayor's Air Quality Strategy

- Air pollution is known to affect sensitive groups within a population – young children, the elderly and those pre-disposed to respiratory and cardiovascular illness.
- Young people and the elderly are known to be particularly sensitive to the impacts of air pollution. Communicating the risks associated with air pollution to different groups, and how they can reduce risks to themselves is challenging and today's modern methods of communication (internet / email, SMS texting, etc) will not always be either immediately understandable or available to all vulnerable individuals.
- Dust and odour can, in certain circumstances, lead to the occurrence of nuisance to Londoners. In extreme cases, nuisance can have a detrimental effect on the quality of life of individuals, which may lead to psychological disorders such as depression and anxiety.

5.14.6 Health inequalities – issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- The EU's Landfill Directive aims to prevent or reduce negative effects on the environment (including the global environment), as well as any resulting risk to human health, from the landfilling of waste, both during operation and after closure of the landfill[110]. The aim of the Waste Incineration Directive is "to minimise the impact of negative environmental effects on the environment and human health resulting from emissions to air, soil, surface and ground water from the incineration and co-incineration of waste"[111].
- Research commissioned by the Department of Food, Environment and Rural Affairs (Defra) on health effects linked to municipal solid waste found that "health effects in people living near waste management facilities were either generally not apparent, or the evidence was not consistent or convincing"[112].
- There is an opportunity to utilise London's waste in the generation of renewable energy and heat generation, in particular through anaerobic digestion, which could provide a cheap source of heat for Londoners, and reduce the issue of fuel poverty.
- The Government has announced it will introduce a heat feed-in-tariff in addition to the Renewable Obligation Certificate system, whereby heat providers will be incentivised to produce and export heat. This is likely to increase the number of waste facilities operating in combined heat and power mode, and again provide a cheap source of heat to assist those currently experiencing fuel poverty.

[110] http://www.defra.gov.uk/environment/waste/topics/landfill-dir/ 13 June 2006
[111] http://www.defra.gov.uk/environment/ppc/wasteincin/index.htm 13 June 2006

[112] Defra (May 2004) Review of environmental and health effects of waste management: municipal solid waste and similar wastes pg 17

5.15 Inequalities and Diversity

5.15.1 Inequalities and Diversity – Background

The disparity in wealth and other quality of life measures between the poorest sections of society and the wealthiest is growing. Measured solely in terms of GDP per capita, London is the wealthiest region in the UK. However, London has higher concentrations of individuals in both high and low-income bands than the rest of Great Britain. While London showed strong economic growth during the 1990s, this occurred in the context of a worsening of London's position relative to the national average for a number of measures of social well-being.

While many people seek to leave London when they no longer need to live there for work reasons, research suggests that many pensioners would prefer to stay but feel they cannot do so. One of the reasons cited is that older people are disproportionately affected by housing of low quality and often feel that social and health care does not meet their needs. Many pensioners in London live in households without a car. Convenient, cheap, safe and reliable public transport is therefore a priority for them. Many older people would be more predisposed to remain in London after retirement if London's environmental quality was higher, and the provision of basic facilities such as accessible places to meet, public toilets and street furniture were greater and if concerns over safety and security were more transparently addressed.

Many women's experiences of London are affected by concerns about the gender pay-gap, childcare, health facilities and personal safety, particularly in the public realm but also on public transport. Women are significant contributors to London's economy. They fill 47 per cent of jobs located in London. However, on average women working in London earn only 76 per cent of men's earnings per hour. This means less ability to buy a home, less savings for retirement and personal investment. Women living in London depend crucially on public policy and the future of London's public services. Women make up approximately 60 per cent of the workforce in the public services sector and are the greatest users of public services. Therefore low pay rates and poor services affect women directly. In the domestic arena, women still have the main responsibility of supporting children, elderly people and those with limiting illness. They are more likely to do the shopping and transport children alongside working, mainly part-time. Since women often make a range of complex local journeys, they currently use cars for such trips.

Half of the UK's black, Asian and minority ethnic communities live in the capital. London's minority ethnic population stands at 42 per cent. The 2001 Census indicates that there were 42 communities of over 10,000 people born in countries outside Britain living in the capital[113].

London has always been a city of many cultures and many faiths, with a population from all over the world. To ensure its continued status as a world city London must ensure that the benefits of diversity are gained and the disadvantages minimised. Key concerns for London include the economic consequences of failing to create community cohesion and the need to tackle systematic (often unconscious) discrimination.

[113] Mayor's Draft Health Inequalities Strategy, GLA, January 2008

Prejudice and discrimination (which shows itself in differential rates of unemployment, differential wage rates, geographical as well as social and political exclusion) disempowers individuals and communities and leads to lower levels of satisfaction and social exclusion.

Climate change will increase social inequality and affect the most vulnerable in society. People in poor health and on low income are more likely to live in low quality, overcrowded housing, with poor air quality, and poor access to natural greenspace. These groups will experience the impacts of climate change more acutely than other Londoners and will be least able to afford any increases in the costs of living, insurance, utility prices due to climate change.

(Source: London Plan (consolidated with alterations since 2004), GLA, 2008)

Different cultures have different attitudes towards the environment. These behaviours and attitudes need to be considered and incorporated into environmental awareness campaigns, in education through schools, and at a strategic level. As mentioned earlier, the Mayor is committed to making recycling a hassle-free part of Londoners lives. Recycling and waste services provided to households and businesses vary greatly between boroughs: there is a lack of consistency on recycling and waste collection methods, materials that are collected for recycling, service frequency, and bulky waste collection and recycling. Additionally, recycling services to flats are very limited and inconsistent, ranging from doorstep collections through to local bring banks or no service at all. Car ownership is low in London, which limits access to bring banks and Reuse and Recycling Centres. Indeed some Reuse and Recycling Centres do not allow pedestrian access, hindering residents' ability to recycle a broader range of materials than those collected at the kerbside. There may be language and literacy barriers for some in accessing recycling and waste service information, which must be tackled. Services need also to have regard to older, frail or disabled residents' needs and, where charges are levied for services, to residents' ability to pay.

5.15.2 Inequalities and Diversity – Policies, plans and programmes

Inequalities and Diversity		
Plan, Policy or Programme	Date	Scale
National Indicators 1, 116 per cent of people who believe people from different backgrounds get on well together in their local area, Proportion of children in poverty http://www.communities.gov.uk/publications/localgovernment/finalnationalindicators		Local
Equality Map of London's Population, *GLA*	2009	Regional
The Mayor's Equality Framework: Equal life for all, *GLA* http://www.london.gov.uk/mayor/equalities/framework/	November 2008	Regional
The Mayor's Annual Equalities Report 2008, *GLA* http://www.london.gov.uk/mayor/annual_report/index.jsp	September 2008	Regional
Women in London - capitalwoman 2009 http://www.london.gov.uk/capitalwoman/	March 2009	Regional
Mayor's Older People Strategy Annual Report, *GLA* http://www.london.gov.uk/mayor/strategies/older_people/docs/ops.pdf	September 2007	Regional
The State of Equality in London report, *GLA* http://www.london.gov.uk/mayor/equalities_commission/docs/state-	January 2007	Regional

of-equality-in-london1.pdf		
Gender Equality Scheme 2007-10, *GLA* http://www.london.gov.uk/mayor/equalities/gender_equality_scheme.jsp	March 2006	Regional
Valuing Older People - the Mayor's Older People Strategy, *GLA* http://www.london.gov.uk/mayor/strategies/older_people/index.jsp	September 2006	Regional

5.15.3 Inequalities and Diversity – Baseline Information

Information	Source
In London 28 per cent of children live in families on at least one key benefit. This ranges from 9 per cent in Richmond to 49 per cent in Tower Hamlets	Borough Statistic Pack, GLA, 2009
In the 2007 Indices of Multiple Deprivation, Hackney was ranked as the most deprived London borough followed by Tower Hamlets, Newham and Islington. All four appear in the bottom ten nationally. Richmond is the least deprived borough and ranks 309 out of 354 districts in England.	Borough Statistic Pack, GLA, 2009
An estimated 10 per cent of Londoners are lesbian women, gay men or bisexual people[114]. There are no reliable figures for the size of London's trans community.	Equality Map of London's Population, GLA, 2009
In 2008 51.1 per cent of people in Londoners were women or girls, 48.9 per cent were men or boys, 22.3 per cent were aged 17 and under, 10.0 per cent aged between 18 and 25, and 15.5 per cent were 60 or over.[115]	Equality Map of London's Population, GLA, 2009
In 2007 66.9 per cent of Londoners were white. 14.6 per cent of Londoners were Asian or Asian British of whom 6.7 per cent were Indian, 2.3 per cent were Pakistani, 2.4 per cent Bangladeshi and 3.1 per cent had other Asian backgrounds. 13.6 per cent of Londoners were Black or Black British of whom 6.1 per cent were Black African, 4.8 per cent were Black Caribbean and 2.6 per cent had other Black backgrounds. 1.4 per cent of Londoners were Chinese and 3.5 were from other ethnic minority groups[116].	Equality Map of London's Population, GLA, 2009
13.6 per cent of Londoners have mental health problems.[117]	Equality Map of London's Population, GLA, 2009
In 2007, of the 99.6 per cent of Londoners who stated their religion, 60.6 per cent were Christian, 16.4 per cent had no religion, 12.1 per cent were Muslim, 4.7 per cent were Hindu, 2.1 per cent were Jewish, 1.4 per cent were Sikh, 0.9 per cent were Buddhist and 1.7 per cent were from other religious groups[118].	Equality Map of London's Population, GLA, 2009
5.8 per cent of all London's population are parents living in lone parent families[119]. 15 per cent of parents in families (including with non-dependent children) are living on key benefits (Income Support or Unemployment or Housing benefits)[120].	Equality Map of London's Population, GLA, 2009
In 2004, one quarter (25 per cent) of London's children were living in workless households - far higher than the rate nationally (15 per cent).	Quality of Life Indicators 2005, LSDC

[114] State of Equality in London Report, Greater London Authority, 2009
[115] Source: 2008 Round GLA Demographic Projection PLP Low
[116] Source: GLA 2007 Round Ethnic Group Projections PLP Low
[117] Estimated Prevalence of Common Mental health Problems, 2006. ONS Mid-Year Estimate of London population 2006: 7,461,400
[118] Source: Annual London Population Survey, Office for National Statistics, 2007
[119] Source; Labour Force Survey Households, Office for National Statistics, Oct-Dec2007
[120] Source; Labour Force Survey Households, Office for National Statistics, Oct-Dec2007

20 per cent of households in London include a disabled person	London Plan, GLA, 2008, p85
London has the highest child and pensioner poverty (after housing costs have been taken into account of all the English regions	www.defra.gov
In 2004 the percentage of pupils in maintained secondary schools with English as a second language was 50 per cent in Inner London and 28 per cent in Outer London. This compares to a national average of 11 per cent.	Quality of Life Indicators 2005, LSDC
In 2002/03, the unemployment rate for Black, Asian and Minority Ethnic (BAME) Londoners was similar to the previous year at 12 per cent. This is more than twice as high as the rate for White Londoners, at 5 per cent	Quality of Life Indicators 2005, LSDC
23 per cent of London's total workforce (13.6 per cent of London's population) are part time workers[121]. 70 per cent of part-time workers in London are women[122].	Equality Map of London's Population, GLA, 2009
Black, Asian and minority ethnic households were disproportionately likely to live in housing in a state of disrepair.	GLA (2005) *London and Sub Regional Strategy Support Studies*

5.15.4 Inequalities and Diversity – issues associated with the development of the Mayor's Climate Change Mitigation and Energy Strategy

- Climate change and energy communications need to consider the cultural and language diversity of their recipients (particularly where English may not be a first language).
- Access to measures that improve energy efficiency and low carbon technologies should be accessible to all.

5.15.5 Inequalities and Diversity – issues associated with the development of the Mayor's Air Quality Strategy

- London has always thrived on its cultural mix of people. Inevitably, different cultures have a different attitude to environmental issues and the possibility exists of sharing knowledge across cultures on environmental issues through raising the awareness of pollution and its effects on sensitive groups.
- Evidence has shown a strong link between high levels of pollution and those wards with the highest deprivation indices. An "exposure reduction" approach to tacking poor air quality will result in particular improvements for those who live in such areas, and will help to level out health inequalities in London.

5.15.6 Inequalities and Diversity – issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- The development of the green industries sector will bring associated job and regeneration opportunities to the local area, enhancing the economic possibilities for all Londoners. Large amounts of development are planned for the East End of London, which is traditionally the most deprived area of London.
- The Waste Strategy should work to ensure that all Londoners are able to participate in and enter the green industries sector. Ritual purity, for example, may cause barriers within some faiths to handling waste and may well make the running of a waste management company a less than desirable business to be in and should be tackled in cooperation with stakeholders.

[121] Source: Annual London Population Survey, Office for National Statistics, 2007
[122] Source: Annual London Population Survey, Office for National Statistics, 2007

- Data on diversity in employment in the waste industry are not available. However, anecdotally, the industry has a large proportion of BAME employees. The concern is that the majority of these are in blue-collar roles, which through appropriate training and development opportunities can be addressed

5.16 Community Safety

5.16.1 Community Safety – Background

Being able to live without being a victim of crime and without a fear of crime is an essential part of enjoying a good quality of life. The safety of communities in London is of paramount importance for a sustainable city.

The London region has the highest rate of recorded crime per 1,000 population compared to the remainder of England and Wales. Recorded rates of violent crime are notably high in London and the Metropolitan Police Service records 39 per cent of all robberies in England and Wales[123].

To improve community safety and reduce the fear of crime experienced by communities in London, the Metropolitan Police Service (MPS) has introduced Safer Neighbourhoods teams in all 624 wards in London, with extra coverage in 87 large wards and six additional Safer Neighbourhoods teams focusing on critical community issues.

The London Household Survey 2002 asked respondents how safe they felt walking in their local neighbourhood alone in the evening. Among the White group around 30 per cent said they felt unsafe. Respondents from Black & White African, Other Mixed, Bangladeshi, Pakistani, Chinese and Other groups had higher rates overall, while those from Black Caribbean, African, Other Black, Indian, White & Asian and Black & White Caribbean had lower rates.

Fear of crime particularly affects older people, women, poor and other disadvantaged and vulnerable groups, and has been shown to be significantly associated with poorer health.[124] People in social rented accommodation are more likely to have high levels of worry about burglary, car crime and violent crime than those from other tenure groups, as are people from non-white groups overall, who are more than twice as likely to have high levels of worry about all three crime types as those from white ethnic groups. People who are unemployed or economically inactive and social renters are more likely to have high levels of worry about violent crime.[125]

An element of a sustainable lifestyle is more walking, cycling and taking public transport. However, it is important that these activities can be carried out without a fear of crime. Londoners need to feel safe if they are going to walk and cycle – safe from attack, safe from dangerous or inconsiderate driving and safe from bicycle theft. Londoners also need to feel safe on London's public transport, and the MPS has established twenty-one Safer Transport teams to focus on crime and anti-social behaviour on and around public transport. In May 2008, the Mayor announced transport hub teams to be deployed at a variety of interchanges across the capital, specifically targeting those areas experiencing the greatest problems. The implementation commenced in May 2008 with three pilot teams deployed in West Croydon, Wood Green and Canning Town. In the initial pilot period, the teams reduced robberies by 37.8 per cent and overall crime by more than 16 per cent. The teams carried out more than 6,000 stops in their areas and

[123] The London Plan (with alterations since 2004), GLA, 2008
[124] Green et al, 2002
[125] British Crime Survey, 2005/06

conducted almost 200 street briefings with the local communities. All 32 teams will be rolled out across London by June 2009.

The Mayor has also launched a consultation "Violence against Women" strategy. The strategy seeks to address wider forms of gender-based violence including domestic violence, rape, sexual violence, forced marriage, trafficking and prostitution, female genital mutilation and crimes "in the name of honour". It aims to rally boroughs, statutory agencies and the voluntary sector to provide more holistic service to women who experience violence, addressing their complex needs and ensuring they get the justice and support they deserve. The formal consultation period finishes at the end of July 2009.

Community Safety issues arising from waste management are addressed through the Mayor's Capital Standards Programme, of which 28 London local authorities are members. The cleanliness of the street environments; negatively affected by litter, graffiti, fly-tipping, fly-posting, dog fouling, directly impacts on people's enjoyment of their local area. There are a number of parks and open spaces in London, as well as utility land (railways etc.), that are neglected and rundown, which accumulate litter and attract fly-tipping, graffiti, and other anti-social behaviour.

According to Encams[126] (the charity responsible for the Keep Britain Tidy campaign and a delivery partner in the Mayor's Capital Standards programme):

- When combined with litter, fly-tipping and other indicators of environmental neglect can make an area feel abandoned or uncared for,
- Dog fouling is consistently one of the highest sources of complaints by the public to MPs, local councillors and local authorities, and
- Due to its nature, graffiti is often located in places where it will gain maximum exposure, thus it can have an enormous impact on the fear of crime in an area. Graffiti, along with other environmental crimes, is regarded as a sign of an uncaring and indifferent society, the visual impact of which can rapidly diminish the desirability of an area.

5.16.2 Community Safety – Policies, plans and programmes

Community Safety		
Plan, Policy or Programme	Date	Scale
National Indicators 15-46 (serious violent crime rate, perceptions of anti-social behaviour, re-offending rates, satisfaction with police and local authorities, support to victims of serious sexual offences, serious knife crime rate, gun crime rate, domestic violence, arson, violent extremism, civil protection, drugs, alcohol, and young offenders) http://www.communities.gov.uk/publications/localgovernment/finalnationalindicators	2008/09	Local
Metropolitan Police Authority (MPA)/Metropolitan Police Service (MPS) consultation on London policing priorities for 2009/10, *MPA* http://www.mpa.gov.uk/downloads/reports/policingplan-consultation-2009-10.pdf	2009	Regional
Transport community safety plan, *Transport for London* http://www.tfl.gov.uk/assets/downloads/corporate/community-safety-plan-2008-2009.pdf	2008	Regional

[126] http://www.encams.org/aboutus/sub.asp?sub=1 13 June 2006

Policing London Plan 2008-2011, *MPA* http://www.mpa.gov.uk/downloads/reports/policingplan2008-11.pdf	2008	Regional
Time for Action: Equipping young people for the future and preventing violence, *GLA* http://www.london.gov.uk/mayor/crime/timeforaction/	November 2008	Regional
London Anti-social behaviour strategy, *GLA* http://www.london.gov.uk/mayor/crime/antisocial_behav.jsp	July 2005	Regional
Cutting Crime: The Home Office's Crime Strategy, *Home Office* http://www.homeoffice.gov.uk/documents/crime-strategy-07/	2008	National
National Community Safety Plan, *Home Office* http://police.homeoffice.gov.uk/publications/national-policing-plan/national-community-safety	2008	National

5.16.3 Community Safety – Baseline Information

Information	Source
In 2007/08 there were 862,000 offences recorded by the Met police. This represents a 6 per cent drop in crime from the previous year (922,000). Total recorded crime has fallen 15 per cent in London since 1990/2000.	Borough Statistics Pack, GLA, 2009
Crime on the transport system is at the lowest rate since recording began four years ago. There is currently 15 crimes per million passenger journeys on the bus network and 14 crimes per million passenger journeys on London Underground and Docklands Light Railway	Transport community safety plan, Transport for London
In 2003/04, 56,455 offences of street crime were recorded	Quality of Life Indicators 2005, LSDC
The Inner London boroughs saw offences drop by 6.4 per cent from 2002/3 to 2003/4, while Outer London offences remained fairly static, decreasing by 0.6 per cent	Quality of Life Indicators 2005, LSDC
In total, there were 1,060,930 reported crimes in 2003/4.	Quality of Life Indicators 2005, LSDC

5.16.4 Community Safety – Issues associated with the development of the Mayor's Climate Change Mitigation and Energy Strategy

- Occasionally, advise on positive environmental measures can be counter to the advise given to reduce crime. One such example is asking people to turn out their lights when they are not needed, and the link between incidents of burglaries and unlit homes.
- Renewable energy installations, particularly small-scale and at the household level, are known to be targeted by vandals, and often the siting of these installations need to take crime issues into account.
- New environmentally friendly houses also need to integrate safety issues. However, the are many mutual benefits – for example, a home that benefits from a local combined cooling, heating and power supply, will not need to open the windows in summer to keep cool. With the onset of climate change, where some warming is expected, it is likely that warmer summers will encourage more people to leave their windows open, and as such the incidence of burglary may increase.
- In the promotion of walking, cycling, and taking public transport as opposed to a private vehicle, the safety of an individual needs to be considered. It will be detrimental to any walking, cycling or public transport campaign if people are at risk from crime, or fear crime, whilst undertaking these activities.

5.18.5 Community Safety – issues associated with the Mayor's Air Quality Strategy

- Air pollution is not known to directly affect safety and national security. Measures to improve air quality may necessarily require an assessment of risk in implementation, which should include consideration to safety and security of Londoners.

5.18.5 Community Safety – issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- The Mayor's waste strategy cannot directly impact on graffiti and fly-posting in London, because they are not specifically a waste issue. However, instances of graffiti and fly-posting may lead to other environmental crime such as fly-tipping and where opportunities to minimise any such activity arise it is important that they are taken.
- Open spaces, including allotments, can provide a focus for community action and a venue that forms an important part of local identity. As well as enabling people to get involved in outdoor activity, space can be used for community-based projects such as composting, 'Friends of…' clean-up groups, etc.
- Reusing second hand goods through local charity shops or community groups may develop a sense of community responsibility, will support disadvantaged members of the community and ensure a waste product is put to productive use.

5.17 Economic Development

5.17.1 Economic Development – Background

Along with Tokyo and New York, London is one of the world's economic elite cities. As a world financial centre, London is particularly exposed to the effect of global climate change on the global economy. Jobs in the financial and business services sector have a doubled as a proportion of all jobs between 1971 and 2003, from around 730,00 to 1.4 million jobs[127]

However, the severity of the economic downturn and its sharp impact on London businesses and Londoners requires urgent practical action from all levels of government. The Mayor has developed his "Economic Recovery Plan" for London to set out what the Mayor and the agencies he directs or influences will do to help. The Plan has three broad aims: to help businesses, help Londoners, and to invest in London's infrastructure and skills base to support long-term growth.

Despite difficult current economic circumstances, it is essential that London continue to invest in infrastructure, environmental improvement and energy efficiency. This is vital for London's long-term future. Investment in environmental projects will lead to a greener London, and also reduce costs, secure jobs and increase efficiency, which is especially valuable in a time of economic constraint. On energy efficiency, simple measures such as turning off computers and printers could save London's businesses tens of millions of pounds a year.

London has become one of the first regions in Europe to sign a Memorandum of Understanding with the European Investment Bank (EIB) to take forward the Joint European Support for Sustainable Investment in City Areas ('JESSICA') financial instrument to combine European and other public and private sector funding to make repayable investments in environmental projects that benefit SMEs.

(Source: The Mayor's Economic Recovery Action Plan, GLA, 2008)

The green/environmental industries sector presents an exciting potential for London in terms of training and employment opportunities. Pioneering technologies and manufacturing products, which are at the cutting edge will enhance London's position as a global leader. London needs to become an attractive prospect for new green businesses and be able to respond to the skills demands across a range of levels.

In 2005 Defra developed the Business Resource Efficiency and Waste (BREW) Programme to return £284 million of the additional receipts from increases in Landfill Tax to business to encourage and support resource efficiency over three years. Defra is currently reviewing its business support in this area. This is part of a wider examination of Defra's delivery landscape for providing support to organisations and consumers in the drive to a low carbon, resource efficient future.

[127] GLA Economics, 2005, Our London. Our Future

There is a strong business case for improved environmental performance among London's businesses. Envirowise[128] has calculated that waste management typically costs 4 per cent of business turnover. However, when materials, costs of treatment, energy, wasted labour etc. are considered, the real price tag on waste is five-twenty times the cost of disposal[129]. Such costs, especially as they continue to grow as a result of factors such as producer responsibility legislation and the landfill tax escalator, will increasingly hurt London's businesses (particularly small businesses) and may threaten their ability to be economically competitive. Smart growth, which prioritises resource efficiency, is able to decouple economic growth from a comparable growth in waste arisings. Demonstrating the economic benefits of resource efficiency measures, which lead to a reduced requirement for raw materials and savings in waste management costs and legal compliance must be demonstrated. Businesses and authorities that choose to invest now in sustainable waste management and resource efficiency measures will ultimately save later on penalties, taxes and compliance with legislation.

The Landfill Allowance Trading Scheme offers London's authorities an exciting opportunity to generate an income stream, which can be invested locally. Developing partnerships between the public and private sector and coordinating the management of waste regardless of its origin (commercial, municipal etc.) will be crucial to success. Developing waste infrastructure within London, which seeks to add value to London's wastes within the city (rather than having them exported outside London/abroad) will significantly benefit London's economy.

However, small businesses may be at a disadvantage where they do not have the resources to research and implement environmental efficiency actions and cannot therefore take advantage of the opportunities to save money on their waste disposal costs, which may put them at a commercial disadvantage. They may additionally be unable to broker a competitive recycling service if their waste arisings are very small. There are significant opportunities for small businesses to work together (through the Business Improvement Districts or shopping centres) to overcome these barriers or for local authorities to offer improved recycling services to businesses. Larger organisations should work with their suppliers (particularly small businesses) to improve their environmental efficiency through training, advice or financial assistance. This is especially important as those tendering for work increasingly specify a particular environmental standard from their suppliers, which may inhibit small businesses' ability to win contracts.

5.17.2 Economic Development – Policies, plans and programmes

Economy		
Plan, Policy or Programme	Date	Scale
National Indicators 151-153, 171, 172 (employment rate, benefits, VAT registration rate) http://www.communities.gov.uk/publications/localgovernment/finalnationalindicators	2008/09	Local
Mayor's Economic Recovery Action Plan, *GLA* http://www.london.gov.uk/mayor/economy/recovery/	December 2008	Regional
London's environmental effectiveness - an update: Comparing	July 2008	Regional

[128] Envirowise delivers a valuable government-funded programme of free, confidential advice to UK businesses.

[129] www.envirowise.gov.uk

London with other English regions, *GLA Economics* http://www.london.gov.uk/mayor/economic_unit/docs/environmental_effectiveness_of_london_2008.pdf		
Current Issues Note 21: Rising energy prices and their effects on environmental behaviour, *GLA Economics* http://www.london.gov.uk/mayor/economic_unit/docs/current-issues-note-21.pdf	July 2008	Regional
Implementing delivery mechanisms for financing London's low carbon future, *London Energy Partnership* http://www.lep.org.uk/uploads/Implementing%20Delivery%20Mechanisms%20for%20Financing%20Londons%20Low%20Carbon%20Future.pdf	January 2008	Regional
Social Enterprises in London October, *GLA Economics* http://www.london.gov.uk/mayor/economic_unit/docs/social-enterprises-in-london.pdf	October 2007	Regional
Current Issues Note 19: The role of financial services sector in mitigating and adapting to climate change, *GLA Economics* http://www.london.gov.uk/mayor/economic_unit/docs/current_issues_note_19.pdf	September 2007	Regional
Implementing delivery mechanisms for financing: London's low carbon future, *London Energy Partnership* http://www.lep.org.uk/uploads/Implementing%20Delivery%20Mechanisms%20for%20Financing%20Londons%20Low%20Carbon%20Future.pdf	November 2006	Regional
Ending Child Poverty: Everybody's Business, *DWP* http://www.hm-treasury.gov.uk/d/bud08_childpoverty_1310.pdf	2008	National

5.17.3 Economic Development – Baseline Information

Information	Source
As of January 2005, 477 organisations had signed up to the Mayor's Green Procurement Code (this includes all 33 of the London Boroughs).	Mayor's Green Procurement Code
London's overseas exports of goods and services are currently estimated to be £37 billion and financial and businesses services account for around £15.5 billion.	London Plan, GLA, 2008, p106
Companies employing more than 250 people account for 55 per cent of private sector employment here. Although smaller firms employing fewer than 50 workers are more numerous, they account for 36 per cent of private sector employment.	London Plan, GLA, 2008, p106
London contains 4.6 million jobs of which around a fifth are filled by commuters into London.	London Plan, GLA, 2008, p106
The employment rate in London in 2007 was 69.8 per cent compared with 74.3 per cent in the UK, and London's unemployment rate was 6.0 per cent.	Borough Statistics Pack, GLA, 2009
The environmental goods and services sector is forecast to double by 2010.	London Plan, GLA, 2008, p119

5.17.4 Economic Development – issues associated with the development of the Mayor's Climate Change Mitigation and Energy Strategy

- Moving to a low carbon economy will require financial investment and backing. However, the Stern Review on the economics of climate change (2006) estimates that mitigating climate change now will only require 1-2 per cent of global GDP – whereas mitigation later and having to adapt more could cost at

least 15 per cent of GDP – so investing now will save money and resources in the future.

- There are numerous business opportunities in the development of a low carbon economy, and as for employment, it could provide an area of growth where other sectors are suffering.
- The Ernst and Young report "The Low Carbon Capital" 2009 estimated that there was a total opportunity of £3.7bn in low carbon industries. The report also estimated that £845m annual investment is needed until 2025 and an additional 14,000 jobs to meet Mayor's climate change targets.
- There are many economic advantages to tackling climate change. Not least, improving energy efficiency and generally being more resource efficient lowers bills and costs, and increases the capacity to invest in other areas.

5.17.5 Economic Development – issues associated with the development of the Mayor's Air Quality Strategy

- Poor air quality can affect the attractiveness of an area in relation to tourism and where people spend their money doing recreational activities. Within the last decade the UK has observed significant growth in "café culture" – in 1997 there were 778 branded cafes in the UK, and by 2005 the number has grown to 2,428. By and large, cafes attract people through roadside tables, which afford higher levels of exposure to pollution than air-conditioned outlets / outlets with no external premises. Current estimates on leisure expenditure in London are around £9.5 billion to London's economy and £38 billion to the national economy. Specific expenditure on dining, drinking, visiting and entertainment show revenues of £4.7 billion, £2.4 billion and £450 million, respectively. The challenge is to minimize risks to these vital economic revenues, which includes any further deterioration to air quality that would otherwise make London an unattractive place for visitors.
- Increased road traffic is considered part of economic development, and is also the main source of pollution in London. Slow moving and congested traffic releases high rates of emissions of pollutants that free-flowing traffic at average speeds in London.

5.19.6 Economic Development – issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- Capturing more of London's waste for recycling and energy recovery will provide economic opportunities through income from recycled materials and energy sales. This will also achieve considerable savings on landfill disposal costs. From April 2009 landfill tax will raise from £32/tonne to £40/tonne. This will increase to £48 in 2010/11, pushing the average total London landfill disposal cost in 2007/08 from £53/tonne to £77/tonne.
- The Mayor, through his chairmanship of the London Waste and Recycling Board wants to unlock the value of waste. This will include the development of new waste management facilities to recover value from waste.

5.18 Employment, Training, Skills and Education

5.18.1 Employment, Training, Skills and Education – Background

London is an economically successful region. London residents appear highly qualified and better rewarded than their national counterparts, but this masks a polarity between skilled workers and semi or unskilled workers[130]. It is estimated that employment in London will grow and that by 2025, London will have a total of 5.4 million jobs – 927,000 more than in 2003[131].

Employment in London is now 4.45 million, 15 per cent of the UK total and 700,000 higher than in the early 1990s, and is expected to rise twice as fast as the UK as a whole over the next three years[132]. London's economy is highly competitive, acting as a focus for inward investment to the UK and with a strong exports performance. The capital's workforce is also highly skilled – in 2004 nearly 32 per cent of London's workforce had a degree or equivalent level qualification[133].

London's unemployment rate as measured by the Labour Force Survey has risen to 6.7 per cent, the highest of any Government Office Region other than the North East of England. The effect is typically most acute in the inner London boroughs, reflecting the social and economic deprivation in parts of the capital. The recession is likely to result in more Londoners losing their jobs, and make it more difficult for those already out of work to find employment. A key to maximising opportunity for individuals is to ensure that they have the skills and attributes to obtain and progress in employment[134].

The energy efficiency and low carbon sector has experienced rapid change over the last five years. We have seen new legislation, government initiatives, increased awareness of the threat of climate change and incentives aimed at reducing energy consumption and carbon emissions. New jobs and skills will be required in heat and gas engineering, insulation, glazing, electrical trades, plumbing, construction, engineering, architecture, surveying, home energy inspection, housing, planning, advice, building control and commercial energy management. To achieve London's target of reducing carbon emissions by 60 per cent by 2025, there will be a major demand for low carbon products and services. This, in turn, will mean more demand for those with skills and training in these sectors

The green/environmental industries sector presents an exciting potential for London in terms of training and employment opportunities. Pioneering technologies and manufacturing products, which are at the cutting edge, will enhance London's position as a global leader. London needs to become an attractive prospect for new green businesses and be able to respond to the skills demands across a range of levels.

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[130] London Plan (consolidated with alterations since 2004), GLA, 2007

[131] GLA (2006) Further Alterations to the London Plan (London Assembly consultation draft)

[132] Corporation of London (November, 2005) *London's Place in the UK Economy 2005-06*.

[133] ODPM (November, 2005) The Greater London Authority: *The Government's proposals for additional powers and responsibilities for the Mayor and Assembly*.

[134] The Mayor's Economic Recovery Action Plan, GLA, 2008

A number of new qualifications are being developed in the waste management sector and organisations including business support agencies and universities are diversifying their programmes to include environmental awareness training.
Becoming more regionally self-sufficient in waste management and developing green businesses that seek to reuse and recycle wastes will bring associated local skills, training, and employment opportunities.

5.18.2 Employment, Training, Skills and Education – Policies, plans and programmes

Training, Skills and Education		
Plan, Policy or Programme	Date	Scale
National Indicators 117 and 174 16 to 18 year olds not in education, employment or training, Skills gaps in the current workforce reported by employers http://www.communities.gov.uk/publications/localgovernment/finalnationalindicators	2008/09	Local
London's Future: The skills and employment strategy for London 2008-2013, *London Skills and Employment Board* http://www.london.gov.uk/lseb/docs/london-futures-report.pdf	July 2008	Regional
The Mayor's Review of Higher and Further Education in London , *GLA* http://www.london.gov.uk/mayor/education/review.jsp	February 2004	Regional
Skills for a Low Carbon London: Summary Report and Recommendations on the Skills Gaps in the Energy Efficiency and Renewable Energy Sector in London, *London Energy Partnership* http://www.lep.org.uk/uploads/070316-LEP%20Skills%20Research%20-%20FINAL%20Summary%20Report%20%20Recommendations.pdf	March 2007	Regional
Skills and Jobs from Renewable Energy: Policies and Targets, *London Energy Partnership* http://www.london.gov.uk/mayor/environment/energy/docs/renew_skills.pdf	September 2004	Regional
A UK indicator of education for sustainable development, *UK SDC* http://www.sd-commission.org.uk/publications/downloads/UK_Education_Indicator.pdf	July 2006	National

5.18.3 Employment, Training, Skills and Education – Baseline Information

Information	**Source**
The average weekly hours worked for fulltime male employees in London is 39.9 hours (for females is 37.2 hours), compared to UK average of 40.4 for males (36.9 for females)	New Earning Survey, ONS
Total employment in London fell by just under 40,000 in 2002, (the latest year for which data is available).	London Development Agency (2005) *London Economic Snapshot, Sustaining Success*
The average gross weekly earnings of male full-time, non-manual London employees is a third higher than in the UK as a whole, and yet 20 per cent of wards in London are in the 10 per cent most deprived wards in England	www.statistics.gov.uk
London has the highest rates in England for participation in education and training for 16 and 17 year olds	ODPM, 2005
Nearly half of London's business owners see skills shortages	Business Link for London

as their number one concern	
Thirty-one per cent of working age adults in London are non-employed compared to 25 per cent in the rest of the UK	London Plan, GLA, 2008, p35

5.18.4 Employment, Training, Skills and Education – issues associated with the development of the Mayor's Climate Change Mitigation and Energy Strategy

- The development of a low carbon economy will require new skills and new forms of employment, and this will require investment and development.
- Climate change and energy are involved in a range of existing job roles, but may not have been considered so explicitly in the past. For example, facilities managers are increasingly being asked about the energy and carbon management of their buildings, which may previously have been a minor element of their role. This requires additional up-skilling in a range of professions.
- The green skills sector is being regarded as an area for growth during the current economic downturn, and this could be an opportunity for London. Event President US Barack Obama has identified this opportunity and has said that the creation of millions of new green jobs, including public works to ensure buildings are energy efficient, would be an engine for economic recovery rather than an impediment on growth as America embarks on a "journey to a new frontier".[135]
- In 2008, the installation of insulation in London was held up significantly because of a lack of installers prepared to come into London to do the work. Some schemes overcome this by paying more than is paid outside of London for the same work.

5.18.5 Employment, Training, Skills and Education – issues associated with the development of the Mayor's Air Quality Strategy

- Education and awareness are key issues that provide for empowerment of an individual and an organization. To date, there is a general lack of awareness of the impacts of poor air quality on the health of an individual or on the environment. Moreover, individuals are reluctant to accept that their individual actions may contribute to poor air quality. Regional, local and central government have a rule to increase awareness of air quality issues. This increased awareness will generate impetus to take action. Some of these actions will involve technological developments, many of which will require considerable research and development. A skilled workforce will be required to meet these needs.

5.20.6 Employment, Training, Skills and Education – issues associated with the development of the Mayor's Municipal and Business Waste Management Strategies

- New waste facilities that are needed to support the waste infrastructure in London will require employees with skills in waste management. As such, training in waste management is needed to enable people to take advantage of new employment opportunities in waste management.

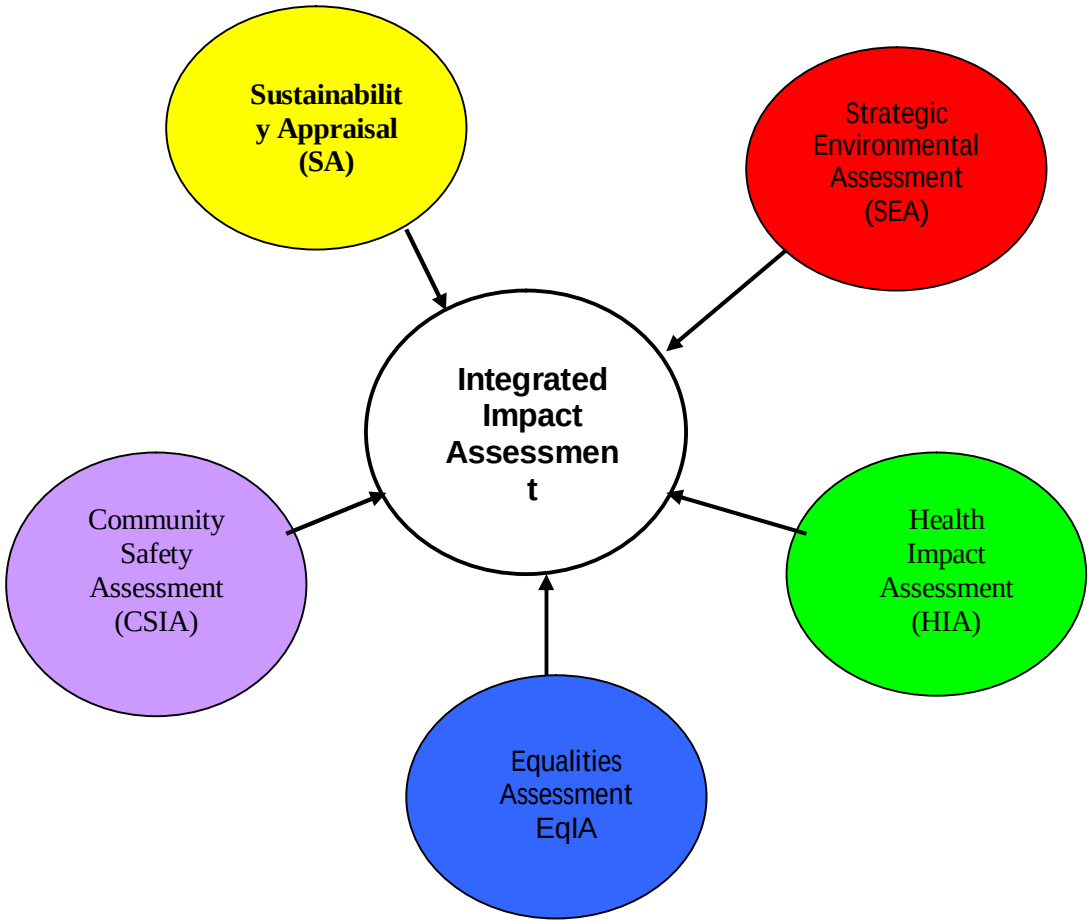
[135] http://www.timesonline.co.uk/tol/news/world/us_and_americas/article5349809.ece

6. IIA Framework

6.1 The Framework

The IIA Framework integrates a Sustainability Appraisal, Strategic Environmental Assessment, Health Impact Assessment, Equalities Impact Assessment and Community Safety Impact Assessment into one single framework. This is set out in the diagram below:

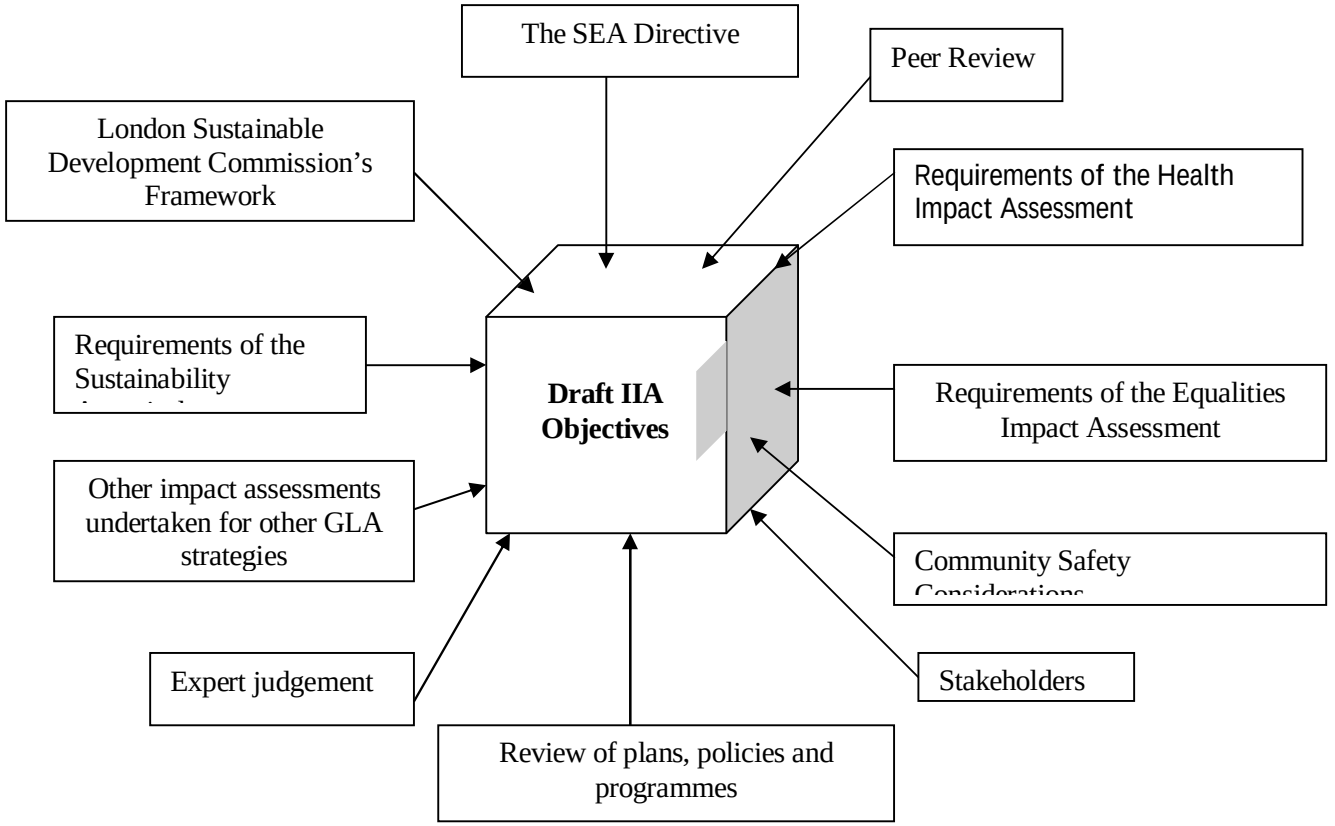
Figure 6.1



6.2 Assessing the impact of the strategies

Table 6.1 below sets out the proposed themes, objectives, criteria and indicators that will be used to analyse the impact of the Climate Change Mitigation and Energy Strategy, the Air Quality Strategy and the Waste Strategy on the IIA Framework. The objectives, criteria and indicators were derived by integrating the requirements of each of the impact assessments, through the process of reviewing existing plans, policies, and programmes, by reviewing previous impact assessments that have been undertaken for other strategies that the GLA has produced, by taking the London Sustainable Development Commission's Framework, through discussions with stakeholders, peer review and using expert judgement. This is illustrated in the diagram below.

Figure 6.2



6.3 Appraisal objectives

The following set of objectives are intended to encapsulate the full range of sustainability issues, including health, equalities and community safety, which the Mayor of London's Climate Change Mitigation and Energy Strategy, Air Quality Strategy and Municipal and Business Waste Management Strategies could potentially influence.

They are drawn from a range of sources, including:

- Regulatory requirements and good practice guidance from various appraisals
- Previous integrated appraisals and single topic appraisals of mayoral strategies and other plans and strategies
- The London Sustainable Development Commission's Sustainable Development Framework for London
- Discussions within the consultant team and with GLA officers.

The first column lists 12 high level objectives. These express ideal results or outcomes. No Mayoral strategy can achieve these by itself, but the appraisal will ask 'Does the strategy do as much as it reasonably can to work towards this objective?' The answer will depend on context. Some mayoral strategies may be able to do very little for some objectives, for example because of lack of powers or disproportionate costs. The appraisal will consider how far such barriers prevent action, make suggestions for avoiding or overcoming them (for example ways to better reconcile apparently inconsistent policy objectives), and assess the strategy in the light of the context, not against some absolute standard of perfection.

The second column expands on the overall objectives. Not all these points will be applicable to all strategies: they are prompts for opportunities that may be relevant to consider, not mandatory requirements.

These objectives will be used to 'test' the impact of the objectives and proposals in the CCMES, the AQS and the MWMS. Where there appears to be a negative impact on the IIA objectives, other options will be considered, their impacts assessed, and a preferred option agreed. Possible changes to the preferred options will be suggested that take account of the assessment's findings.

Mayoral strategies will very properly concentrate on achieving things in London and for Londoners, but the appraisal will consider both effects in London and the implications and consequences elsewhere. For example if a strategy achieved a reduction in greenhouse gas emissions in London only at the expense of increasing them elsewhere (for example by making energy intensive manufacturing move out of London – to elsewhere in England, or, for that matter, to China) the appraisal should point out that this achieves no net benefit for climate change mitigation (though there might, of course, be benefits for other objectives, such as reducing human exposure to air pollution.) Therefore in general these *appraisal* objectives are not specific to London (or any other location) although *strategy* objectives very reasonably can be.

Table 6.1

Objective	Appraisal Questions: will the strategy help to …
1. Health and well-being To maximise the mental and physical health and well-being of the population and reduce inequalities in health.	Improve mental health? Improve physical health? Reduce health inequalities? Improve health equity? Encourage and provide opportunities for active lifestyles (including cultural, leisure, sporting and recreational activities for all)? Reduce exposure to pollution, noise, damp, cold and heat? Improve access to health services and information?
2. Community Safety To enhance community safety by reducing crime and the fear of crime, anti-social behaviour and misuse of drugs, alcohol and other substances	Reduce opportunities and motivation for involvement in crime, disorder and anti-social behaviour? Reduce the risk of victimisation and exposure to crime, disorder and anti-social behaviour? Reduce the likelihood that people will move due to both experiences of crime, anti-social behaviour and levels of fear of crime? Reduce noise levels and disturbances from noise? Reduce the risk of a terrorist attack?
3. Equality and diversity To ensure equitable outcomes for all communities, particularly those most at risk to experience discrimination, poverty and social exclusion, and celebrate the unique ethnic and cultural diversity of London's citizens	Impact positively on Equality Target Groups and those living in deprived areas and communities? Reduce inequalities, poverty and social exclusion? Avoid disadvantaging any social group or sector of society? Improve access to services and employment opportunities? Provide and/or support affordable, sustainable warmth and reduce fuel poverty?
4. Liveability and Place To create and sustain liveable environments that promote social cohesion, sustainable lifestyles and a sense of place	Enhance the quality and quantity of open space and the public realm? Improve access to open space and the public realm? Promote community engagement and help to make people feel positive about the area where they live? Provide a sense of community and a sense of place? Promote sustainable construction that minimizes health and environmental impacts?
5. Historical, Green and Cultural Environment To enhance and protect the built, historic and cultural environment	Protect and enhance sites, features and areas of historical, archaeological and cultural value/potential? Conserve and enhance the townscape/cityscape character, including historical, archaeological and cultural value/potential?

Objective	Appraisal Questions: will the strategy help to …
	Enhance the quality of the public realm? Protect and enhance areas of open space? Improve and/or promote publicly accessible green space?
6. Governance democracy, participation, engagement and awareness To ensure that Londoners are respected as citizens, that their voices are heard, and that they are supported, engaged with and allowed to actively participate in changing their lives to be sustainable and low carbon	Involve relevant stakeholders and organisations in decisions? Support and enable individuals, organisations and businesses to make pro-environmental changes to their behaviour? Provide opportunities for local opinions to be heard? Improve the provision of information about the environment?
7. Accessibility and Availability To maximise accessibility for all in London to housing, key services and amenities and increase the proportion of journeys made by public transport, by bicycle and by foot	Reduce the need for travel? Encourage a modal shift to more sustainable forms of travel? Get more benefit from travel services e.g. through car sharing? Ensure environmental services are accessible to all? Promote adequate accessibility for older people or those experiencing a disability? Ensure environmental facilities are accessible and available to all? Promote locally based living? Increase the local provision of key services?
8. Economic Development, Employment, Training, Skills and Life-long Learning To encourage a strong, diverse, low carbon and prosperous economy, with resilient businesses and organisations, so that all Londoner's can enjoy a good quality of life, with rewarding and satisfying employment and the opportunity to develop and improve their skills	Provide secure, satisfying employment to all who want it? Enable people to earn enough to live how they wish without stress or overwork? Enable people to opt for voluntary, cooperative and community activity outside the paid economy? Increase the proportion of business income spent and reinvested locally, especially in poorer areas? Improve the resilience of business and the economy? Improve opportunities and facilities for formal, informal and vocational learning (including volunteering) for all ages? Raise skills and meet skills shortages? Equip Londoner's with the skills they need to live a low environmental impact and low carbon lifestyle? Improve access to jobs and training?

Objective	Appraisal Questions: will the strategy help to …
	Encourage ethical and responsible investment in London? Support the development of a low carbon economy?
9. Biodiversity To conserve and enhance local and global natural habitats and wildlife and bring nature closer to people	Conserve and enhance habitats and wildlife? Enhance the resilience of priority habitats and species? Encourage the replacement of valuable lost habitat? Promote awareness of biodiversity?
10. Water Quality, Resources and Management To conserve and enhance the supply and quality of water resources and prevent flooding	Reduce water consumption? Reduce the wastewater load? Maintain and improve the quality of water and water bodies (surface and groundwater)? Promote the recycling of water? Support the efficient management of water resources? Support and promote sustainable urban drainage (SUDs)? Help meet the objectives of the Water Framework Directive? Manage existing flood risks appropriately?
11. Air Quality To improve local, national and international air quality	Reduce the emissions of pollutants including PM10, NOx and ozone depleting substances? Comply with relevant local, national and international standards for air quality? Protect people's heath from air pollutants?
12. Climate Change Mitigation and Energy To address the causes of climate change through minimising the emissions of greenhouse gases by reducing consumption of energy at source, achieving greater energy efficiency, supplying renewable and efficient energy and reducing reliance on fossil fuels	Reduce the emissions of greenhouse gases in and caused by London? Increase the proportion of decentralised and renewable energy used in London? Help London meet its emission reduction targets? Reduce the demand and need for energy?
13. Climate Change Adaptation and Flood Risk To ensure that London is prepared for the impacts of climate change and is taking steps to reduce flood risk	Reduce vulnerability to extreme weather and changed climate including heat, cold, wind, drought, rain, flood, pests and diseases? Reduce dependence on long distance transport and trade? Reduce vulnerability to sea level rise? Improve flood management and reduce flood risk?
14. Resource use and Waste To use resources efficiently, minimise the	Minimise the production of waste? Increase re-use, recycling, and reduce waste going to landfill?

Objective	Appraisal Questions: will the strategy help to …
production of waste across all sectors, and maximise useful recovery of materials and energy	Dispose of remaining waste safely and with least environmental impact? Promote the proximity principal by managing London's waste as close to source as practicable? Reduce resource use and consumption?
15. Education and Young People To provide educational opportunities so that new generations can understand environmental, social and economic issues and take their learning into decision making as adults	Promote educational opportunities? Provide information that is accessible to younger people? Provide opportunities for young people to be engaged?

Appendix 1A

The following table summarises how the contents of the IIA Scoping Report relates to the proposed IIA objectives and Sustainable Development Framework for London objectives. Only substantial and significant correlations are noted. The closest and fullest ones are shown in **bold** type.

The table shows that:

- Fifteen of the twenty Scoping report sections each relate strongly to a single IIA objective, three more relate to parts of several of them, one, 'sustainable development', arguably relates to them all. Only one section does not relate to any of the objectives: the contextual/procedural one on GLA and Functional Bodies;
- All fourteen of the SDFL objectives are covered by the range of IIA objectives, and at last one of them relates to each scoping report section. However though there are fewer strong one-to-one correlations than there are between the scoping report sections and IIA objectives.

Scoping report section	**IIA Objective**	**SDFL**
5.1 GLA and the Functional Bodies	Contextual / procedural: does not map onto any specific objective	*8 Vibrancy*
5.2 Climate Change Mitigation and Energy	**11 Climate change, inc Energy**	***1 Responsibility*** (all IIA objectives include impacts 'on the rest of the UK and beyond' so whole IIA process will further this objective) *10 Resources*
5.3 Climate Change Adaptation and Flood Risk	11 Climate change, inc Energy 13 Climate change adaptation and flood risk 4 Liveability 8 Biodiversity 9 Water quality, resources and management	***9 Environment***
5.4 Biodiversity	**8 Biodiversity**	***9 Environment***
5.5 Water Resources, Quality and Management	**9 Water quality, resources and management**	*9 Environment* ***10 Resources***
5.6 Air Quality	**10 Air Quality**	10 Resources
5.7 Waste	**12 Waste**	***10 Resources***
5.8 Historic Environment	**4 Liveability**	9 Environment
5.9 Transport	**6. Accessibility and Availability**	*14 Access* *10 Resources*

Scoping report section	IIA Objective	SDFL
5.10 Sustainable Development	Aspects covered by all objectives	Aspects covered by all objectives
5.11 Liveability	**4 Liveability**	8 Vibrancy *9 Environment* *14 Access*
5.12 Governance	**5 Governance democracy, participation, engagement and awareness**	***2 Capability*** *3 Creativity* *4 Ownership* *8 Vibrancy*
5.13 Housing, Sustainable Design and Construction	A means rather than an objective: 4 Liveability 9 Water quality and water resources 11 Climate change, inc Energy	*10 Resources* *12 Innovation* ***14 Access***
5.16 Fuel Poverty and Health Inequalities	**1 Health and Wellbeing**	14 Access *10 Resources*
5.17 Inequalities and Diversity	**3 Equality and Diversity**	**6 Diversity** *5 Fulfilment*
5.18 Community Safety	**2 Community Safety**	***7 Safety***
5.19 Economic Development	**7 Economic development and employment**	***5 Fulfilment*** ***11 Progress*** *12 Innovation* ***13 Esteem***
5.20 Training and Skills	**7 Economic development and employment**	*2 Capability* *3 Creativity* *12 Innovation*