CHAPTER FIVE

LONDON'S RESPONSE TO CLIMATE CHANGE

5.1 The Mayor is committed to making London a world leader in tackling climate change and the policies in this chapter will support delivery of the Mayor's vision for London and the objectives set out in Chapter 1, in particular that London should be:

- **A city that becomes a world leader in improving the environment** locally and globally, taking the lead in tackling climate change, reducing pollution, developing a low carbon economy, consuming fewer resources and using them more effectively.

5.2 This chapter sets out a comprehensive range of policies to underpin London's response to climate change, including underlying issues of resource management. These policies cover climate change mitigation and adaptation, waste, aggregates, contaminated land and hazardous substances. Rising to the challenge of climate change is a theme that runs through this Plan, and there are relevant policies in all its chapters – particularly those on London's Economy (Chapter 4), Transport (Chapter 6) and Living Places and Spaces (Chapter 7).

5.3 Climate change – the rise in average global temperature due to increasing levels of greenhouse gases in the earth's atmosphere – is a fundamental challenge facing the world. There is mounting evidence of its seriousness and its potential impacts. It is caused by the emission of greenhouse gases (primarily carbon dioxide) that prevent the radiation of heat into space. Unless these are reduced, temperatures will continue to rise. Eventually, a tipping point could be reached, overcoming the earth's natural buffering systems, bringing catastrophic climate change.

5.4 Even if all greenhouse gas emissions stopped now, it is projected that the world would still need to adapt to at least a century of irreversible climate change. London is already feeling the effects. It is particularly vulnerable to flooding, overheating and drought conditions which can lead to water supply shortfalls. Climate change will increase the probability and severity of these effects through rising sea levels, heavier winter rainfall, higher tidal surges, hotter summers and less summer rainfall. The effects of climate change could seriously harm Londoners' quality of life, particularly the health and social and economic welfare of vulnerable people.

5.5 The latest UK Climate Projections 2009 (UKCP09)[1] have helped inform the development of the London Plan. Like previous projections (UKCP02) these show how the UK's climate is likely to change over the next century but provide greater detail regarding London's future temperature, rainfall and seasonal changes. They point to warmer and drier summers, and wetter winters, with appreciable changes seen by the 2020s. UKCP09 suggests that London could:

- by the 2020s, see an increase in summer mean temperature of 1.5 degrees Celsius, a decrease in mean summer rainfall of six per cent and an increase in mean winter rainfall of six per cent, all from a 1961–1990 baseline
- by the 2050s, see an increase in mean summer temperature of 2.7 degrees, an increase in mean winter rainfall of 15 per cent and a decrease in mean summer rainfall of 18 per cent
- by the 2080s, see an increase in mean summer temperature of 3.9 degrees, an increase of 20 per cent in mean winter rainfall and a decrease in mean summer rainfall of 22 per cent.

5.6 The Mayor is taking steps to tackle climate change through policies and programmes seeking to reduce London's carbon dioxide emissions and to manage resources more

effectively. Under the Greater London Authority Act 2007, the Mayor has a new statutory duty to contribute towards the mitigation of, and adaptation to, climate change in the UK. The Mayor will use all of his powers, resources and influence to work with other agencies to raise awareness and promote behavioural change. He has already produced a strategy for Climate Change Adaptation[2] (the first for a major world city) and a strategy for Climate Change Mitigation and Energy[3]. He has also produced other strategies related to Waste Management, Air Quality, Water and Biodiversity, to manage London's resources and to protect and enhance its environment. The Mayor will ensure that policies in this Plan are complemented by those in other mayoral strategies (particularly the Mayor's Transport Strategy, which sets carbon dioxide reduction targets to be achieved in the transport system), and by supportive national, European Union and international policies and programmes (such as the Kyoto Protocol or any successor).

5.7 The London Plan supports the Mayor's strategies for tackling climate change particularly in relation to the built environment. The biggest challenge for London is to improve the contribution of the existing building stock (80 per cent of which will be still standing in 2050) to mitigating and adapting to climate change. While the London Plan's influence may be limited in this regard, its policies can strongly influence the way in which new development in London responds to the challenge of climate change, and creates opportunities for existing areas with respect to both mitigation and adaptation.

5.8 For development proposals the early design stage is the most cost effective time to incorporate relevant design and technological measures, enabling proposals to realise their full potential to reduce carbon dioxide emissions and adapt to climate change. Responding to climate change has to be an integral and essential part of the development process and not a set of 'bolt-ons' – increasingly, this will be seen as a key part of ensuring buildings are fit for purpose into the future. Preventative and adaptive measures will generate long-term savings (particularly for energy and water use), and over time the inclusion of such measures should have positive impacts on property values as occupiers become more aware of the impacts of climate change on their environment. The costs and feasibility of measures to tackle climate change within developments need to be balanced against the potential cumulative costs that would come from failing to respond to the need for mitigation and adaptation.

5.9 Tackling climate change will also require a move towards more sustainable energy sources, and the London Plan seeks to support the development of decentralised energy systems, including the use of low carbon and renewable energy and the greater utilisation of energy generated from waste. This will also allow London to generate more of its own energy needs and enhance the security of its energy supply.

5.10 The Mayor believes that making better use of waste and careful husbandry of London's limited aggregate reserves have major roles to play in tackling climate change. He believes that London's waste is potentially a valuable resource that can be exploited for London's environmental, economic and social benefit.

Climate Change Mitigation

5.11 The Mayor expects all development to make the fullest contribution to the mitigation of climate change – that is limiting the extent of

future change beyond what is already locked in. The following policies seek to reduce the emissions of carbon dioxide, primarily by reducing emissions from new development and supporting development of low carbon energy infrastructure to produce energy more efficiently and exploit the opportunities to utilise energy from waste. These policies also have the potential to enhance the security of London's energy supply and reduce overall energy consumption.

5.12 The Mayor's Climate Change Mitigation and Energy Strategy contains further proposals to reduce carbon dioxide emissions and to tackle climate change through decarbonising London's energy supply, reducing the energy consumption of London's existing building stock and moving towards zero emission transport in London (see also Chapter 5.22 in the Mayor's Transport Strategy).

POLICY 5.1
CLIMATE CHANGE MITIGATION

Strategic

A The Mayor seeks to achieve an overall reduction in London's carbon dioxide emissions of 60 per cent (below 1990 levels) by 2025. It is expected that the GLA Group, London boroughs and other organisations will contribute to meeting this strategic reduction target, and the GLA will monitor progress towards its achievement annually.

LDF preparation

B Within LDFs boroughs should develop detailed policies and proposals that promote and are consistent with the achievement of the Mayor's strategic carbon dioxide emissions reduction target for London.

5.13 The UK is the world's eighth largest emitter of carbon dioxide, and London is responsible for 8.4 per cent of these emissions (the latest annual estimate is 44.71 million tonnes[4]). On a business as usual basis it is expected that annual carbon dioxide emissions will actually fall to 40.34 million tonnes by 2025 (a 10 per cent decrease on 1990 levels)[5]. London also has the lowest domestic carbon dioxide emissions per person per year, at 2.26 tonnes, and the joint lowest transport emission rate per person, at 1.38 tonnes, of all the UK regions[6]. This is largely due to the higher use of public transport and the density of development in London.

5.14 There is growing scientific consensus that stabilising atmospheric carbon dioxide emissions to levels at or below 450 parts per million is required to avoid catastrophic climate change. The strategic target in Policy 5.1 represents the emissions reduction required in London as a contribution to stabilising the world's emissions at this level by 2050. As part of the Climate Change Act 2008 the Government established a target to reduce the UK's greenhouse gas emissions by 80 per cent by 2050 and has proposed carbon budgets as a means to work towards this UK target.

5.15 The strategic target in Policy 5.1 will be extremely challenging but it will be achievable with the full commitment and collaboration of all stakeholders, particularly national government. Progress will be kept under review to ensure that policies and programmes set out in the Climate Change Mitigation and Energy Strategy are on track. Overall, the most substantial emissions savings London can make will come from initiatives to decarbonise its energy supply and to reduce the emissions from the existing building stock. In the planning context, the Mayor expects that all new development will fully contribute towards the reduction

of carbon dioxide emissions, and this will be principally achieved through the application of Policy 5.2 and the Mayor's energy hierarchy. Further information regarding how the Mayor expects London to achieve this strategic target is outlined in the Mayor's Climate Change Mitigation and Energy Strategy.

POLICY 5.2 MINIMISING CARBON DIOXIDE EMISSIONS

Planning decisions

A Development proposals should make the fullest contribution to minimising carbon dioxide emissions in accordance with the following energy hierarchy:

1 Be lean: use less energy
2 Be clean: supply energy efficiently
3 Be green: use renewable energy

B The Mayor will work with boroughs and developers to ensure that major developments meet the following targets for carbon dioxide emissions reduction in buildings. These targets are expressed as minimum improvements over the Target Emission Rate (TER) outlined in the national Building Regulations leading to zero carbon residential buildings from 2016 and zero carbon non-domestic buildings from 2019.

Residential buildings:

Year	Improvement on 2010 Building Regulations
2010 – 2013	25 per cent (Code for Sustainable Homes level 4)
2013 – 2016	40 per cent
2016 – 2031	Zero carbon

Non-domestic buildings:

Year	Improvement on 2010 Building Regulations
2010 – 2013	25 per cent
2013 – 2016	40 per cent
2016 – 2019	As per building regulations requirements
2019 – 2031	Zero carbon

C Major development proposals should include a detailed energy assessment to demonstrate how the targets for carbon dioxide emissions reduction outlined above are to be met within the framework of the energy hierarchy.

D As a minimum, energy assessments should include the following details:

a calculation of the energy demand and carbon dioxide emissions covered by the Building Regulations and, separately, the energy demand and carbon dioxide emissions from any other part of the development, including plant or equipment, that are not covered by the Building Regulations (see paragraph 5.22) at each stage of the energy hierarchy
b proposals to reduce carbon dioxide emissions through the energy efficient design of the site, buildings and services
c proposals to further reduce carbon dioxide emissions through the use of decentralised energy where feasible, such as district heating and cooling and combined heat and power (CHP)
d proposals to further reduce carbon dioxide emissions through the use of on-site renewable energy technologies.

E The carbon dioxide reduction targets should be met on-site. Where it is clearly demonstrated that the specific targets cannot be fully achieved on-site, any shortfall may be provided off-site or

through a cash in lieu contribution to the relevant borough to be ring fenced to secure delivery of carbon dioxide savings elsewhere.

5.16 Carbon dioxide emissions from new development should be reduced by sustainable use of energy in accordance with the Mayor's energy hierarchy. The first step in the hierarchy, to reduce energy demand, should be met through adopting sustainable design principles outlined in Policy 5.3. The second step, to supply energy efficiently, should be met by prioritising decentralised energy, as outlined in Policies 5.5 and 5.6. The third step, to use renewable energy, is outlined in Policy 5.7.

5.17 Over time both the Mayor and the Government expect all new development will be zero carbon. The Government has expressed the aim that all new homes should be zero carbon by 2016 and new non-domestic buildings should be zero carbon by 2019. This will result in a significant step change in the national Building Regulations (Part L) in terms of the minimum improvements over the Target Emission Rate (TER)[7] for new development.

5.18 The targets set out in Policy 5.2 are minimum improvements over the TER for London as advances are made towards zero carbon development. This approach conforms to the Government's Code for Sustainable Homes (CSH), which outlines targeted improvements, as individual code levels for residential buildings, towards the achievement of zero carbon housing.

5.19 The targets for 2010 to 2013 in Policy 5.2 are equivalent to the energy requirements for code level 4 of the CSH for residential buildings. These targets are informed by the observed performance of new development since the London Plan was first published in 2004, and have been established as achievable and suitable for London. The GLA's most recent monitoring information[8] shows that on average development proposals approved by the Mayor since September 2007 have achieved typical savings of between 30 and 40 per cent above Building Regulation requirements, with about a quarter of applications meeting or exceeding 40 per cent savings.

5.20 The targets outlined apply to all major development proposals. The highest level of carbon dioxide emissions reduction will be sought in every proposal, and the Mayor will actively encourage zero carbon development where appropriate. Overall carbon dioxide emissions reductions should reflect the context of each proposal, taking account of its size, nature, location, accessibility and expected operation. The targets will be used by the Mayor in the consideration of proposals that come before him for determination and to guide the development of proposals within opportunity and intensification areas as well as for monitoring purposes. They may also influence proposals falling within the ambit of the wider GLA Group. At borough level, the steeper trajectory towards meeting the Government's target of zero carbon residential development by 2016 and non-domestic buildings by 2019 should be sought from major developments taking account of such factors as ease and practicability of connection to existing networks, context, size, nature, location, accessibility and expected operation.

5.21 Every major development proposal should be accompanied by an energy assessment demonstrating how the targets for carbon dioxide emissions reduction will be met within the framework of the energy hierarchy. Boroughs are also encouraged to require energy assessments for other development proposals where appropriate. Full details

regarding how to prepare an energy assessment are outlined in Appendix D of the supplementary planning guidance on Sustainable Design and Construction.

5.22 Some developments (such as offices, industrial units and hospitals) have significant carbon dioxide emissions related to energy consumption from electrical equipment and portable appliances that are not accounted for in Building Regulations, and therefore are not included within the calculations for the Target Emissions Rate. The strategic aim is to reduce carbon dioxide emissions overall, so that while planning decisions and monitoring requirements will be underpinned by the targets expressed in Policy 5.2B, the requirement in Policy 5.2Da for energy assessments to include separate details of unregulated emissions is to recognise explicitly the additional contribution that can be made though use of efficient equipment, building controls and good management practices, including green leases.

5.23 Where it is demonstrated that the specific targets for carbon dioxide emissions reduction cannot be fully achieved on-site the shortfall may be provided off-site, but only in cases where there is an alternative proposal identified and delivery is certain, or where funding can be pooled to support specific carbon dioxide reduction projects or programmes. Further guidance on the criteria for off-site provision, the types of acceptable projects and programmes and a London wide funding scheme will be set out for boroughs.

POLICY 5.3 SUSTAINABLE DESIGN AND CONSTRUCTION

Strategic

A The highest standards of sustainable design and construction should be achieved in London to improve the environmental performance of new developments and to adapt to the effects of climate change over their lifetime.

Planning decisions

B Development proposals should demonstrate that sustainable design standards are integral to the proposal, including its construction and operation, and ensure that they are considered at the beginning of the design process.

C Major development proposals should meet the minimum standards outlined in the Mayor's supplementary planning guidance and this should be clearly demonstrated within a design and access statement. The standards include measures to achieve other policies in this Plan and the following sustainable design principles:

a minimising carbon dioxide emissions across the site, including the building and services (such as heating and cooling systems)
b avoiding internal overheating and contributing to the urban heat island effect
c efficient use of natural resources (including water), including making the most of natural systems both within and around buildings
d minimising pollution (including noise, air and urban run-off)
e minimising the generation of waste and maximising reuse or recycling
f avoiding impacts from natural hazards (including flooding)

g ensuring developments are comfortable and secure for users, including avoiding the creation of adverse local climatic conditions
h securing sustainable procurement of materials, using local supplies where feasible, and
i promoting and protecting biodiversity and green infrastructure.

LDF preparation

D Within LDFs boroughs should consider the need to develop more detailed policies and proposals based on the sustainable design principles outlined above and those which are outlined in the Mayor's supplementary planning guidance that are specific to their local circumstances.

5.24 The principles underlying sustainable design and construction reflect a number of policies in this Plan. In particular they seek to improve the environmental performance of buildings, including consideration of climate change mitigation and adaptation. Policy 5.3 is intended to ensure that buildings minimise carbon dioxide emissions; are efficient in resource use; protect the environment; recognise the uniqueness of locations; are healthy and adaptable; and make the most of natural systems including, for example, the use of passive solar design or local ecosystems. It should be considered alongside policies dealing with architecture and design in Chapter 7.

5.25 Design features such as green roofs (see Policy 5.11) can enhance biodiversity, absorb rainfall, improve the performance of the building, reduce the urban heat island effect and improve the appearance of a development. Use of appropriate materials is also key, and where practicable those with a high embodied energy (see Glossary) should be avoided. The Mayor's supplementary planning guidance on Sustainable Design and Construction and on Housing reflect key sustainable design principles and outline the standards that are applicable to all developments. These standards should be considered early in the design process and should be addressed in the design and access statement to show how they have been integrated into the development proposal.

5.26 The Government has implemented the Code for Sustainable Homes (CSH) as a national standard for the sustainable design and construction of new homes. The Mayor's approach is compatible with this, and it is expected that new development in London will seek to achieve the highest code levels possible (in particular for energy, see Policy 5.2, and water, see Policy 5.15). The London Housing Strategy[9] outlines the minimum CSH levels required to comply with Government requirements for publicly funded housing developments, and sets out the requirement to meet code level 4 from 2011. It is also expected that the Government will publish a Code for Sustainable Buildings as a national standard for non-domestic buildings with which the Mayor will also seek to be consistent.

5.27 In support of the London Housing Strategy the Mayor has produced a *Housing Design Guide*[10] (see Chapter 3), which provides further guidance to support the move towards CSH levels and also the standards outlined in the Mayor's supplementary planning guidance.

5.28 Sustainable construction is also a key consideration. The Mayor's supplementary planning guidance on Sustainable Design and Construction outlines key principles and standards that are applicable to the construction phase of new development. It suggests developers refer to the Mayor and London Councils' best practice guidance on the control of dust and emissions during

demolition and construction (also see Policy 7.14). This addresses the environmental impact of construction[11], including minimising emissions of dust and construction plant and vehicles emissions. The Mayor also encourages the use of the Demolition Protocol[12] developed by London Remade to support recycling and reuse of construction materials.

POLICY 5.4 RETROFITTING

Strategic

A The environmental impact of existing urban areas should be reduced through policies and programmes that bring existing buildings up to the Mayor's standards on sustainable design and construction. In particular, programmes should reduce carbon dioxide emissions, improve the efficiency of resource use (such as water) and minimise the generation of pollution and waste from existing building stock.

LDF preparation

B Within LDFs boroughs should develop policies and proposals regarding the sustainable retrofitting of existing buildings. In particular they should identify opportunities for reducing carbon dioxide emissions from the existing building stock by identifying potential synergies between new developments and existing buildings through the retrofitting of energy efficiency measures, decentralised energy and renewable energy opportunities (see Policies 5.5 and 5.7).

5.29 Retrofitting buildings can make a significant contribution to the climate change and resource management aims of this Plan – for example, London's existing domestic buildings contribute 36 per cent of the region's carbon dioxide emissions alone. Along with other non-domestic buildings, retrofitting the existing building stock presents a significant opportunity to help meet the strategic carbon dioxide reduction target of 60 per cent by 2025.

5.30 Policy 5.4 applies the principles in Policy 5.3 to existing building stock where retrofit opportunities arise (for example, large estate refurbishments). The Mayor supports an integrated, multi-agency approach, to promote the retrofitting of existing buildings, and where possible policies and programmes supporting zero carbon development and deployment of decentralised energy should also be applied to existing buildings. The Mayor will support measures through the Building Regulations and other regulatory and funding mechanisms to improve the performance of London's existing buildings, increase energy and water efficiency, and to make full use of technologies such as decentralised energy and renewable energy.

5.31 Further details regarding programmes for retrofitting can be found in the Mayor's Climate Change Mitigation and Energy Strategy and in the London Climate Change Adaptation Strategy. The London Housing Strategy also outlines actions to retrofit existing homes with an emphasis on increasing energy efficiency and reducing carbon dioxide emissions. In addition, useful guidance for retrofitting existing homes is provided in the report *Your home in a changing climate* published by the Three Regions Climate Change Group[13], and on English Heritage's climate change website[14].

POLICY 5.5 DECENTRALISED ENERGY NETWORKS

Strategic

A The Mayor expects 25 per cent of the heat and power used in London to be generated through the use of localised decentralised energy systems by 2025. In order to

achieve this target the Mayor prioritises the development of decentralised heating and cooling networks at the development and area wide levels, including larger scale heat transmission networks.

LDF preparation

B Within LDFs boroughs should develop policies and proposals to identify and establish decentralised energy network opportunities. Boroughs may choose to develop this as a supplementary planning document and work jointly with neighbouring boroughs to realise wider decentralised energy network opportunities. As a minimum boroughs should:

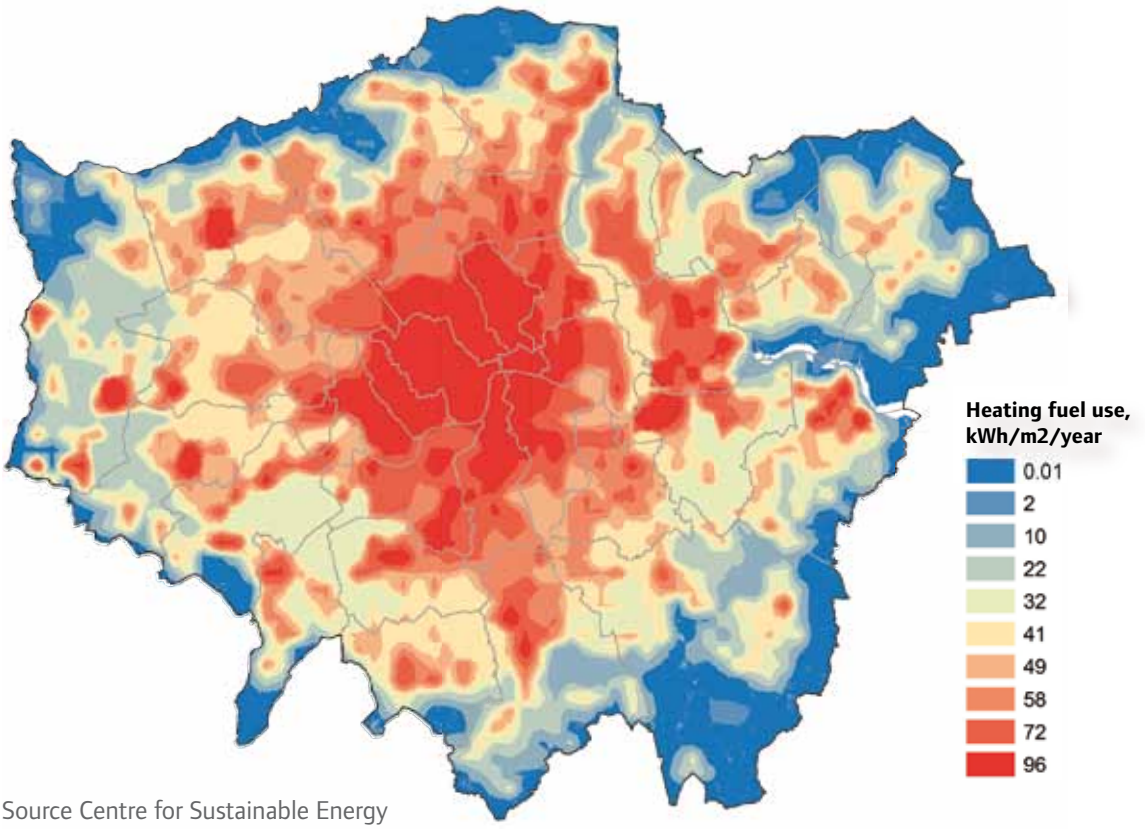
a identify and safeguard existing heating and cooling networks
b identify opportunities for expanding existing networks and establishing new networks. Boroughs should use the London Heat Map tool and consider any new developments, planned major infrastructure works and energy supply opportunities which may arise
c develop energy master plans for specific decentralised energy opportunities which identify:
  - major heat loads (including anchor heat loads, with particular reference to sites such as universities, hospitals and social housing)
  - major heat supply plant
  - possible opportunities to utilise energy from waste
  - possible heating and cooling network routes
  - implementation options for delivering feasible projects, considering issues of procurement, funding and risk and the role of the public sector
d require developers to prioritise connection to existing or planned decentralised energy networks where feasible.

5.32 The Mayor supports the greater use of renewable and low carbon generation technologies, and has set a target for London to generate 25 per cent of its heat and power requirements through the use of local, decentralised energy (DE) systems by 2025. These will predominantly be based around the use of gas-fired combined heat and power (CHP), district heating and cooling in the first instance. DE generates power at point of use, making more efficient use of primary energy by utilising generated heat that would otherwise be wasted in large-scale thermal power generation plants. Renewable energy DE opportunities including the use of energy from waste and biomass schemes are also supported. Shifting 25 per cent of London's energy demand to be supplied through decentralised systems could save up to 2.57 million tonnes of carbon dioxide a year. Greater use of DE will also help London become more self-sufficient and secure in relation to its energy needs.

5.33 London has the potential to increase its DE capacity ten-fold[15]. The Mayor is working to stimulate a major increase in investment in the necessary district energy infrastructure required to maximise the opportunities it can deliver. Map 5.1 shows heat demand density across London, which when used in conjunction with other relevant spatial factors (such as social housing density, major development and regeneration areas) can help identify opportunities for DE networks (see paragraph 5.35).

5.34 Some boroughs have already undertaken technical and financial feasibility work to progress district-wide heat and power schemes, and it is expected all boroughs will actively promote DE in their LDFs. This will enable systematic identification of key opportunities across London for different types of DE systems. The scale of opportunity can vary from CHP systems on specific

Map 5.1 Heat density in London (relative heat demand based on fuel use kWh/m2/year)



Source Centre for Sustainable Energy

development sites, through town centre wide district energy projects such as Elephant and Castle and the Olympic Park/Village schemes, to connecting into large scale infrastructure such as the London Thames Gateway Heat Network. This could ultimately extend to 23 kilometres and supply the heat requirements of 120,000 homes and properties, saving approximately 100,000 tonnes of carbon dioxide each year.

5.35 The Mayor has developed an online London Heat Map tool[16], which will help boroughs and developers identify and develop key DE opportunities. Boroughs and others (including developers) are encouraged to update information to this tool and utilise the heat map to develop more detailed local energy masterplans. The tool continues to be developed and updated as boroughs and others add further information into the map on heat loads, heat supply plants and networks in their areas. The Mayor and London Councils have also developed a comprehensive decentralised energy masterplanning support package, tailored to boroughs' individual requirements and ranging from organisational capacity building to the identification, development and implementation of specific projects.

5.36 Boroughs should work with significant energy users, potential energy providers and Energy Services Companies (ESCOs)[17] to identify and develop DE network opportunities. Where an opportunity for a DE network is taken forward, the borough should connect its own buildings to the network wherever possible and identify potential sites for energy centres on either council owned land or in buildings. The GLA are developing decentralised energy technical specifications and standards in conjunction with the boroughs and other relevant stakeholders to ensure compatibility between decentralised energy networks as they are developed in

London. Boroughs are encouraged to make use of these specifications and standards when developing network opportunities in their borough. They may also wish to explore the use of local development orders (LDOs) for implementation purposes. Further information on proposals to support the wider uptake of DE systems in London can be found in the Mayor's Climate Change Mitigation and Energy Strategy.

POLICY 5.6 DECENTRALISED ENERGY IN DEVELOPMENT PROPOSALS

Planning decisions

A Development proposals should evaluate the feasibility of Combined Heat and Power (CHP) systems, and where a new CHP system is appropriate also examine opportunities to extend the system beyond the site boundary to adjacent sites.

B Major development proposals should select energy systems in accordance with the following hierarchy:

1 Connection to existing heating or cooling networks
2 Site wide CHP network
3 Communal heating and cooling.

C Potential opportunities to meet the first priority in this hierarchy are outlined in the London Heat Map tool. Where future network opportunities are identified, proposals should be designed to connect to these networks.

5.37 Development proposals should seek to connect to existing or planned DE networks. Linking a new development to an existing CHP system may be the most resource efficient option, allowing more effective use to be made of heat, power and cooling. If it is not possible to link to an existing system, the feasibility of CHP needs to be considered on a site-wide basis connecting different uses and/or group of buildings or an individual building. Investment in heat and cooling distribution infrastructure should be considered in all developments. CHP systems must be designed to run efficiently and be optimally sized to maximise carbon dioxide savings.

5.38 Opportunities to incorporate energy from waste or, where technically feasible, renewable energy should be investigated. However, the design of such systems should also seek to minimise impacts on air quality (see Policy 7.14). Where a district CHP system provides part of a development's power and/or heating and/or cooling demand, suitable renewable energy technologies should be considered in addition, in accordance with Policy 5.7 and the Mayor's energy hierarchy. In this area of policy, as all others, feasibility includes questions of financial and technical viability. There are recognised ways of identifying and assessing these. These will ensure that requirements are not imposed on the development that could lead to uneconomic costs on occupiers.

POLICY 5.7 RENEWABLE ENERGY

Strategic

A The Mayor seeks to increase the proportion of energy generated from renewable sources, and expects that the projections for installed renewable energy capacity outlined in the Climate Change Mitigation and Energy Strategy and in supplementary planning guidance will be achieved in London.

Planning decisions

B Within the framework of the energy hierarchy (see Policy 5.2), major development proposals should provide a reduction in expected carbon dioxide emissions through the use of on-site renewable energy generation, where feasible.

LDF preparation

C Within LDFs boroughs should, and other agencies may wish to, develop more detailed policies and proposals to support the development of renewable energy in London – in particular, to identify broad areas where specific renewable energy technologies, including large scale systems and the large scale deployment of small scale systems, are appropriate. The identification of areas should be consistent with any guidelines and criteria outlined by the Mayor.

D All renewable energy systems should be located and designed to minimise any potential adverse impacts on biodiversity, the natural environment and historical assets, and to avoid any adverse impacts on air quality.

5.39 Use of renewable energy presents a significant opportunity to reduce carbon dioxide emissions, and its development will also contribute to the security of energy supply in London. Energy generated from waste provides a particularly significant opportunity for London to exploit in the future. Preference should be given to using advanced conversion technologies including anaerobic digestion, gasification and pyrolysis (see Glossary) that have the potential to achieve greater efficiencies and carbon dioxide emissions savings.

5.40 The Mayor has outlined in the Climate Change Mitigation and Energy Strategy projections for the installation of different renewable energy technologies to increase London's generation of both electricity and heat from such sources up to 2031. These projections will be supported by supplementary planning guidance. The Government has adopted a UK wide target for 15 per cent of total energy to be generated by renewable sources by 2020, and these projections represent London's contribution to this 2020 target and beyond. Further detail is set out in the Climate Change Mitigation Strategy and alterations to the Plan will be brought forward as appropriate.

5.41 Boroughs are encouraged to identify opportunities for developing renewable energy systems in their areas, including large scale systems. Where land is needed for the provision of renewable energy technologies, such as anaerobic digesters and biomass plants, boroughs should encourage this provision through their inclusion in development briefs and area action plans. The Mayor's supplementary planning guidance will set out broad guidelines to assist boroughs to define locations where stand-alone renewable energy schemes would be appropriate. The increased use of renewable heat will also significantly depend on the growth of heat networks.

5.42 Individual development proposals will also help to achieve these targets by applying the energy hierarchy in Policy 5.2. There is a presumption that all major development proposals will seek to reduce carbon dioxide emissions by at least 20 per cent through the use of on-site renewable energy generation wherever feasible. Development proposals should seek to utilise renewable energy technologies such as: biomass heating; cooling and electricity; renewable energy from waste; photovoltaics; solar water heating; wind and heat pumps. The

Mayor encourages the use of a full range of renewable energy technologies, which should be incorporated wherever site conditions make them feasible and where they contribute to the highest overall and most cost effective carbon dioxide emissions savings for a development proposal.

POLICY 5.8 INNOVATIVE ENERGY TECHNOLOGIES

Strategic

A The Mayor supports and encourages the more widespread use of innovative energy technologies to reduce use of fossil fuels and carbon dioxide emissions. In particular the Mayor will seek to work with boroughs and other partners in this respect, for example by stimulating:

a the uptake of electric and hydrogen fuel cell vehicles
b hydrogen supply and distribution infrastructure
c the uptake of advanced conversion technologies such as anaerobic digestion, gasification and pyrolysis for the treatment of waste.

LDF preparation

B Within LDFs boroughs may wish to develop more detailed policies and proposals to support the use of alternative energy technologies (particularly in infrastructure and masterplanning opportunities).

5.43 Use of alternatives to traditional fossil fuels is a way to help improve air quality, reduce greenhouse gas emissions and improve energy security. Opportunities to develop the more widespread use of alternative energy sources include supporting emerging technologies and innovations, and supporting the development of supply chains, infrastructure and associated skill requirements.

5.44 Road vehicles account for around 80 per cent of transport related carbon dioxide emissions, and the Mayor wants to accelerate uptake of greener fuels and vehicles to address this. Hydrogen fuel cell vehicles are being trialled in London and the Mayor actively supports the greater deployment of electric vehicles. Hybrid vehicles are already widely available and offer carbon dioxide emissions reductions of around 30 per cent over vehicles running on fossil fuels. Electric vehicles emit much less carbon dioxide and other pollutants compared to conventional cars, and have zero emissions at point of use. To promote their uptake the Mayor has set up the London Electric Vehicle Partnership and has published an Electric Vehicle Delivery Plan for London. Policy 6.13 also requires the provision of electrical charging points in new developments as part of parking provision requirements.

5.45 The Mayor will work with the London Hydrogen Partnership, boroughs and others to support the development of a Hydrogen Action Plan, and the development of energy infrastructure based on hydrogen as a principal energy carrier. The Mayor will encourage boroughs to identify capacity for such infrastructure. Advanced conversion technologies for treating waste can be linked to highly efficient energy generation methods such as gas engines and hydrogen fuel cells to achieve greater greenhouse gas savings. Through his chairmanship of the London Waste and Recycling Board, the Mayor will allocate funding to projects supporting the development of advanced conversion technologies in London. The Mayor has also set up a Food to Fuel Alliance Programme to promote the development of exemplar projects turning London's food waste into renewable energy including renewable transport fuel.

Climate Change Adaptation

5.46 All developments should make the fullest contribution to London's adaptation to climate change and should be designed for the warmer, wetter winters and hotter, drier summers the city will experience over their lifetime, and to withstand possible natural hazards (such as heatwaves, flooding and droughts) that may occur. The following policies are supported by the London Climate Change Adaptation Strategy that contains further proposals to help London adapt to the major impacts of climate change.

POLICY 5.9 OVERHEATING AND COOLING

Strategic

A The Mayor seeks to reduce the impact of the urban heat island effect in London and encourages the design of places and spaces to avoid overheating and excessive heat generation, and to reduce overheating due to the impacts of climate change and the urban heat island effect on an area wide basis.

Planning decisions

B Major development proposals should reduce potential overheating and reliance on air conditioning systems and demonstrate this in accordance with the following cooling hierarchy:

1 minimise internal heat generation through energy efficient design
2 reduce the amount of heat entering a building in summer through orientation, shading, albedo, fenestration, insulation and green roofs and walls
3 manage the heat within the building through exposed internal thermal mass and high ceilings
4 passive ventilation
5 mechanical ventilation
6 active cooling systems (ensuring they are the lowest carbon options).

C Major development proposals should demonstrate how the design, materials, construction and operation of the development would minimise overheating and also meet its cooling needs. New development in London should also be designed to avoid the need for energy intensive air conditioning systems as much as possible. Further details and guidance regarding overheating and cooling are outlined in the London Climate Change Adaptation Strategy.

LDF preparation

D Within LDFs boroughs should develop more detailed policies and proposals to support the avoidance of overheating and to support the cooling hierarchy.

5.47 London will experience higher average temperatures. This is likely to intensify the urban heat island effect – the way higher ambient temperatures are experienced after sunset in urban areas in comparison with rural areas. This is most intense at night and in London is principally experienced within the Central Activities Zone, as buildings and roads absorb more solar radiation than green space and vegetation. Combined with man-made heat emissions, this can make the centre of London up to eight degrees warmer than the Green Belt on hot summer nights. The GLA is developing with the Chartered Institute of Building Services Engineers (CIBSE) guidance for developers to address the risk of overheating in buildings. The guidance will allow developers to take a risk-based approach to reducing overheating by providing different future hourly weather data to use in building simulation models. These take account of the location of the development with respect to the urban heat island and how sensitive the proposed use

of the development is to overheating. The Mayor encourages the use of this guidance in the preparation of development proposals.

5.48 The cooling hierarchy in Policy 5.9 seeks to reduce any potential overheating and also the need to cool a building through active cooling measures. Air conditioning systems are a very resource intensive form of active cooling, increasing carbon dioxide emissions, and also emitting large amounts of heat into the surrounding area. By incorporating the cooling hierarchy into the design process buildings will be better equipped to manage their cooling needs and to adapt to the changing climate they will experience over their lifetime.

5.49 In accordance with sustainable design and construction principles, development proposals should maximise opportunities to orientate buildings and streets to minimise summer and maximise winter solar gain; use trees and other shading; increase green areas in the envelope of a building, including its roof and environs (see Policy 5.11); maximise natural ventilation; expand green networks across London (see Policy 2.18); and wherever possible incorporate a range of public and/or private outdoor green spaces. The Mayor fully supports urban greening initiatives and further relevant policies are outlined below and in Chapter 7.

POLICY 5.10 URBAN GREENING

Strategic

A The Mayor will promote and support urban greening, such as new planting in the public realm (including streets, squares and plazas) and multifunctional green infrastructure, to contribute to the adaptation to, and reduction of, the effects of climate change.

B The Mayor seeks to increase the amount of surface area greened in the Central Activities Zone by at least five per cent by 2030, and a further five per cent by 2050.[18]

Planning decisions

C Development proposals should integrate green infrastructure from the beginning of the design process to contribute to urban greening, including the public realm. Elements that can contribute to this include tree planting, green roofs and walls, and soft landscaping. Major development proposals within the Central Activities Zone should demonstrate how green infrastructure has been incorporated.

LDF preparation

D Boroughs should identify areas where urban greening and green infrastructure can make a particular contribution to mitigating the effects of climate change, such as the urban heat island.

5.50 The Mayor has an ambitious programme to plant 10,000 street trees by March 2012, and wishes to see an additional two million trees in London by 2025 to help with both mitigation of and adaptation to climate change. Urban greening is also a key element of the much broader Climate Change Adaptation Strategy, which encourages the use of planting, green roofs and walls and soft landscaping. The research undertaken in the LUCID programme (The Development of a Local Urban Climate Model and its Application to the Intelligent Design of Cities)[19] has worked towards providing information on reductions in temperature in London that could be achieved by the addition of different types of urban greening.

5.51 London experienced a heatwave in 2003 that killed at least 600 people and its impact was exacerbated by the urban heat island effect. Cooling the urban environment through

the use of green infrastructure, as part of a package of measures to combat climate change, will have important health and social benefits. It is particularly important to address the urban heat island effect in central London. Further work will be undertaken to establish a methodology by which major developments can be assessed for the contribution that they will need to make to increasing green infrastructure in the Central Activities Zone. Research undertaken in Manchester has shown that increasing urban green space by 10 per cent can help to cool high density areas of the city by around three to four degrees centigrade[20]. Urban greening also contributes to achieving a network of green multifunctional infrastructure across London with the consequent range of benefits that this can bring (see Policy 2.18).

POLICY 5.11
GREEN ROOFS AND DEVELOPMENT SITE ENVIRONS

Planning decisions

A Major development proposals should be designed to include roof, wall and site planting, especially green roofs and walls where feasible, to deliver as many of the following objectives as possible:

a adaptation to climate change (ie aiding cooling)
b sustainable urban drainage
c mitigation of climate change (ie aiding energy efficiency)
d enhancement of biodiversity
e accessible roof space
f improvements to appearance and resilience of the building
g growing food.

LDF preparation

B Within LDFs boroughs may wish to develop more detailed policies and proposals to support the development of green roofs and the greening of development sites. Boroughs should also promote the use of green roofs in smaller developments, renovations and extensions where feasible.

5.52 Green roofs are an essential sustainable design consideration and can take many forms in order to maximise their benefits in a given location. However, the design and operational needs of a green roof should not place undue stress on water supply and other natural resources. Vegetated roofs, including terraces and gardens, can improve the thermal performance of the building, reduce the urban heat island effect, support sustainable urban drainage by absorbing rainfall to reduce flooding, enhance biodiversity, provide amenity for residents who may not have access to private gardens, provide opportunities to grow food and improve appearance.

5.53 High quality designs for green walls incorporating vegetation over a majority of a building's vertical surfaces should also be considered in new developments. The Mayor's supplementary guidance on Sustainable Design and Construction contains further guidance on including green space in development proposals.

POLICY 5.12
FLOOD RISK MANAGEMENT

Strategic

A The Mayor will work with all relevant agencies including the Environment Agency to address current and future flood issues and minimise risks in a sustainable and cost effective way.

Planning decisions

B Development proposals must comply with the flood risk assessment and management requirements set out in PPS25 over the lifetime of the development and have

regard to measures proposed in Thames Estuary 2100 (TE2100 – see paragraph 5.55) and Catchment Flood Management Plans.

C Developments which are required to pass the PPS25 Exceptions Test will need to address flood resilient design and emergency planning by demonstrating that:

a the development will remain safe and operational under flood conditions
b a strategy of either safe evacuation and/or safely remaining in the building is followed under flood conditions
c key services including electricity, water etc will continue to be provided under flood conditions
d buildings are designed for quick recovery following a flood.

D Development adjacent to flood defences will be required to protect the integrity of existing flood defences and wherever possible should aim to be set back from the banks of watercourses and those defences to allow their management, maintenance and upgrading to be undertaken in a sustainable and cost effective way.

LDF preparation

E In line with PPS25, boroughs should, when preparing LDFs, utilise Strategic Flood Risk Appraisals to identify areas where particular flood risk issues exist and develop actions and policy approaches aimed at reducing these risks, particularly through redevelopment of sites at risk of flooding and identifying specific opportunities for flood risk management measures.

5.54 Proper consideration of flood risk is vital to ensuring that London is and continues to be a sustainable city. Approximately 15 per cent of London is already within a recognised flood risk zone from either tidal or fluvial flooding. The Regional Flood Risk Appraisal (RFRA) produced alongside this Plan, investigates flood risk in more detail and identifies that London is at risk from tidal, fluvial, surface water, sewer and groundwater (see Glossary) as sources of flooding. It includes recommendations that will be reported against in the Annual Monitoring Report.

5.55 The Environment Agency has produced *Thames Estuary 2100* (TE2100), a study of tidal flood risk management up to 2100. This makes clear that current defences, with some raising of river walls, should provide London with a high standard of protection from tidal floods. However, in order to raise river walls in a sustainable and cost effective way, some land will be needed along the Thames through London. If land is not available, the walls will reduce views across the river and they will be much more expensive to build. There also remains a level of risk, equivalent to 0.1 per cent chance per year – a low risk but not one that could never happen. This means it is still vital at the planning and design stage to consider what would happen to buildings if such a flood were to occur.

5.56 Fluvial flood risk is likely to increase significantly through the century, as a result of climate change. Predictions of increases in peak flows of up to 40 per cent would mean that we would have to expect increased flood risk on all of London's tributary rivers. The Environment Agency has produced Catchment Flood Management Plans that examine the nature of flood risk and the approaches available to manage it. These reinforce the need to follow the approach of steering development to places with lower flooding risk and that new development and redevelopment can often provide a means of reducing flood risk for example by providing flood storage/conveyance or setting development back from rivers.

POLICY 5.13
SUSTAINABLE DRAINAGE

Planning decisions

A Development should utilise sustainable urban drainage systems (SUDS) unless there are practical reasons for not doing so, and should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible in line with the following drainage hierarchy:

1 store rainwater for later use
2 use infiltration techniques, such as porous surfaces in non-clay areas
3 attenuate rainwater in ponds or open water features for gradual release
4 attenuate rainwater by storing in tanks or sealed water features for gradual release
5 discharge rainwater direct to a watercourse
6 discharge rainwater to a surface water sewer/drain
7 discharge rainwater to the combined sewer.

Drainage should be designed and implemented in ways that deliver other policy objectives of this Plan, including water use efficiency and quality, biodiversity, amenity and recreation.

LDF preparation

B Within LDFs boroughs should, in line with the Flood and Water Management Act 2010, utilise Surface Water Management Plans to identify areas where there are particular surface water management issues and develop actions and policy approaches aimed at reducing these risks.

5.57 There will also be increased risk of surface water flood risk, with the likelihood of more intense storms. The RFRA identified this as an area where information is lacking. However, the Flood and Water Management Act 2010 gives London boroughs clearer responsibilities related to surface water flood risk. Moreover, the Mayor has established the Drain London Forum. This has brought together the key agencies involved in managing London's drainage system and has delivered draft Surface Water Management Plans. It is clear that further work is required to understand, map and plan for London's drainage network. In the meantime, the now well established sustainable drainage hierarchy contained within Policy 5.13 will lead to a steady reduction in the overall amount of rainfall being discharged to the drainage system. The sustainable drainage hierarchy in policy 5.13A is intended to ensure that all practical and reasonable measures are taken to manage surface water higher up the hierarchy (1 being the highest) and that the amount of surface water managed at the bottom of the hierarchy is minimised. The hierarchy is designed to apply across the whole of London. In addition, green roofs (see Policy 5.11) can also make a contribution to sustainable urban drainage by absorbing a proportion of surface water and therefore reducing rates of water flow. Implementing such measures will not only reduce run-off but provide multiple benefits to London – amenity, biodiversity and better water quality to name but three. Changes to the General Permitted Development Order 2008 restricting permitted development rights for impermeable surfaces within the curtilage of dwelling houses should also contribute to a reduction of surface water run-off.

POLICY 5.14
WATER QUALITY AND WASTEWATER INFRASTRUCTURE

Strategic

A The Mayor will work in partnership with the boroughs, appropriate agencies within London and adjoining local planning authorities to:

a ensure that London has adequate and appropriate wastewater infrastructure to meet the requirements placed upon it by population growth and climate change

b protect and improve water quality having regard to the Thames River Basin Management Plan.

Planning decisions

B Development proposals must ensure that adequate wastewater infrastructure capacity is available in tandem with development. Proposals that would benefit water quality, the delivery of the policies in this Plan and of the Thames River Basin Management Plan should be supported while those with adverse impacts should be refused.

C Development proposals to upgrade London's sewage (including sludge) treatment capacity should be supported provided they utilise best available techniques and energy capture.

D The development of the Thames Tideway Sewer Tunnels to address London's combined sewer overflows should be supported in principle.

LDF preparation

E Within LDFs boroughs should identify wastewater infrastructure requirements and relevant boroughs should in principle support the Thames Tideway Sewer Tunnels.

5.58 Most of London's waterbodies fail to achieve 'good' ecological status/ potential as set out in the Thames River Basin Management Plan. This sets out the requirements of the Water Framework Directive. Sources of pollution include misconnections of sewerage to surface water drains, contaminated run-off and storm sewage. Spatial planning measures helping to improve London's waterbodies are reflected throughout this Plan (see in particular policies 2.18, 5.10, 5.13, 5.14, 5.15, 7.18 and 7.24). Effective wastewater infrastructure is fundamental to sustainable urban life and therefore investment and expansion are required. Currently, Thames Water is implementing plans for additional sewage treatment capacity at several major works, including additional capacity for the treatment of, and energy recovery from, sewage sludge. While the impacts of these works need to be minimised and mitigated, it is nevertheless essential that a positive planning approach is in place to support this investment. The Mayor supports the ongoing need to tackle sewer flooding.

5.59 In 2007, the Government approved construction of the Thames Tideway Sewer Tunnels in two phases (Lee Valley to Beckton and west London to Beckton). This will address the long-term problem of combined sewer overflows, which has resulted in the discharge of millions of tonnes of untreated sewage into the Thames each year. This is a strategic project for London that should be completed by 2020. Opportunities to reduce the construction and operational impacts, the overall energy demand and the costs of the project should be taken. In addition, there are continuing programmes to deal with problems of sewer flooding in some areas of London; these need to be completed.

POLICY 5.15
WATER USE AND SUPPLIES

Strategic

A The Mayor will work in partnership with appropriate agencies within London and adjoining regional and local planning authorities to protect and conserve water supplies and resources in order to secure London's needs in a sustainable manner by:

a minimising use of mains water
b reaching cost-effective minimum leakage levels
c in conjunction with demand side measures, promoting the provision of additional sustainable water resources in a timely and efficient manner, reducing the water supply deficit and achieving security of supply in London
d minimising the amount of energy consumed in water supply
e promoting the use of rainwater harvesting and using dual potable and grey water recycling systems, where they are energy and cost-effective
f maintaining and upgrading water supply infrastructure
g ensuring the water supplied will not give rise to likely significant adverse effects to the environment, particularly designated sites of European importance for nature conservation.

Planning decisions

B Development should minimise the use of mains water by:

a incorporating water saving measures and equipment
b designing residential development so that mains water consumption would meet a target of 105 litres or less per head per day.

C New development for sustainable water supply infrastructure, which has been selected within water companies' Water Resource Management Plans, will be supported.

5.60 Water supplies are essential to any sustainable city and to the health and welfare of its people. London's consumption of water already outstrips available supplies in dry years and ensuing a sustainable and secure water supply has to be an urgent priority. Some steps have already been taken. Investment in recent years to reduce leakage from Victorian mains supply pipes has had an effect (although Thames Water still has a significantly higher leakage rate than the rest of the country). An additional source of supply, the desalination plant at Beckton, has been operational since 2010. These two measures have eased the pressure on water resources in London.

5.61 But the fundamental problem remains. To remain sustainable, London needs to reduce the level of water consumption per person. Currently the average Londoner consumes 161 litres/day (l/d)[21], seven per cent above the national average of 150 l/d. Projections for population growth in London and in the wider south-east will mean that over the period of this Plan, new strategic water resources will be required. The need for this is exacerbated by the climate change predictions of more sporadic and intense rainfall and a higher likelihood of droughts. Retrofitting water efficiency measures in existing buildings provides scope for considerable water savings (see Policy 5.4). Further detail relating to London's water and wastewater infrastructure is contained in the Mayor's Water Strategy. The Mayor will examine the effectiveness of the Code for Sustainable Homes 'water calculator' approach to water use standards compared to a 'fittings based' approach

such as that suggested by the Association of Environmentally Conscious Builders.

5.62 The Mayor is committed to explore the concept of 'water neutrality' to help to address these issues. The basic premise is that development should not lead to an overall rise in demand for water. The definition of water neutrality used by the Government and the Environment Agency is:

"For every new development, total water use across the wider area after the development must be equal to or less than total water use across the wider area before development."

This concept needs further refinement and examination of its effects and how it could be implemented before it can be used in development plan policy. The London Water Resources Group chaired by the GLA will investigate this and the outcomes will feed into the next review of the London Plan.

5.63 Alternative sources of water, such as rainwater and greywater, particularly for uses other than drinking, will be increasingly important to reducing our consumption of mains water. It is important to have a positive planning approach to providing a more sustainable and secure water supply infrastructure.

5.64 After major industrial abstractions of groundwater stopped, parts of London (including the Underground, basements and underground services) were at risk of groundwater flooding. This issue has now been addressed with abstractions at additional Thames Water boreholes. It is currently thought that groundwater levels will not be particularly affected by climate change. The position will be monitored, and alterations to the London Plan will be brought forward if necessary.

Waste

5.65 The Mayor is committed to a policy framework for waste management which starts from the position that the best approach is to reduce the amount of waste that arises in the first place. Where this is not possible, he supports an approach based on the waste hierarchy that emphasises re-use, and then recycling and composting, before energy recovery and disposal. Generally, applying the waste hierarchy will achieve the greatest carbon dioxide equivalent savings. However, there are certain circumstances where the waste hierarchy conflicts with achieving the greatest climate change benefits. For example, depending on the condition of wood, it may be better to generate energy using wood waste rather than to recycle it. In these cases the approach that will deliver the greater climate change benefits should be given preference. This Plan, and the Mayor's waste strategies, set out policies to achieve this.

5.66 The Mayor believes that making better use of waste has a major role to play in tackling climate change and that London's waste is potentially a valuable resource that can be exploited for London's benefit, and not solely a disposal problem. London cannot deal with these issues in isolation. The Mayor intends to work closely with neighbouring regions and local authorities to ensure these challenges and opportunities are addressed in the most environmentally friendly and effective ways possible. London has a leading part to play in ensuring this.

5.67 With this in mind, London should manage as much of the capital's waste within its own boundaries as practicable, enabling London and Londoners to receive environmental and economic benefits from its management. Likewise, the Mayor believes that boosting recycling performance and recovering energy from biomass will deliver environmental and economic benefits to London.

POLICY 5.16
WASTE SELF-SUFFICIENCY

Strategic

A The Mayor will work with London boroughs and waste authorities, the London Waste and Recycling Board (LWaRB), the Environment Agency, the private sector, voluntary and community sector groups, and neighbouring regions and authorities to:

a manage as much of London's waste within London as practicable, working towards managing the equivalent of 100 per cent of London's waste within London by 2031
b create positive environmental and economic impacts from waste processing
c work towards zero biodegradable or recyclable waste to landfill by 2031.

B This will be achieved by:

a minimising waste
b encouraging the reuse of and reduction in the use of materials
c exceeding recycling/composting levels in municipal solid waste (MSW) of 45 per cent by 2015, 50 per cent by 2020 and aspiring to achieve 60 per cent by 2031
d exceeding recycling/composting levels in commercial and industrial waste of 70 per cent by 2020
e exceeding recycling and reuse levels in construction, excavation and demolition (CE&D) waste of 95 per cent by 2020
f improving London's net self-sufficiency through reducing the proportion of waste exported from the capital over time
g working with neighbouring regional and district authorities to co-ordinate strategic waste management across the greater south-east of England.

5.68 London produced 22 million tonnes of waste in 2008. London's waste arisings are forecast to rise to approximately 34 million tonnes in 2031. There are three major types of waste produced in London:

- municipal household waste (municipal solid waste or MSW), is the waste generated by London's households, collected by or on behalf of local authorities, amounting to approximately 4.2m tonnes in 2008 (19 per cent of all waste)[22]
- commercial & industrial waste (C&I) is waste generated by industry in London, collected largely by the private sector, amounting to approximately 7.5m tonnes in 2008 (34 per cent of all waste)[23]
- construction, excavation and demolition waste (CE&D) is the waste generated by development activity in London (for example, old buildings being demolished or new ones being constructed), primarily dealt with by the private sector and amounting to approximately 10.4m tonnes in 2008 (47 per cent of all waste)[24].

5.69 The Mayor wants to see a step change in London's recycling performance. Although there have been recent improvements in municipal waste recycling rates (up from 8 per cent in 2001 to 21 per cent in 2008)[25], the Mayor wishes to see a doubling to 45 per cent by 2015 and then 50 per cent by 2020. There is also considerable variation in municipal waste recycling performance across London, ranging in 2008 from 14 per cent to 41 per cent, demonstrating that better performance is achievable. Overall, London recycles 57 per cent of all waste[26]. Around 56 per cent of municipal waste goes into landfill sites that are located largely outside London[27]. It is estimated that London currently manages 53 per cent of

its own waste, taking account of total waste arisings[28].

5.70 Although this step change poses a big challenge, the proposed municipal waste recycling targets match those set by the South London Waste Partnership, West London Waste Authority, North London Waste Authority and the East London Waste Authority, which together represent two-thirds of London's municipal waste authorities. The targets also recognise household waste recycling targets that were set by two-thirds of London boroughs under local area agreements to achieve, on average, 36 per cent recycling by 2011. Furthermore DEFRA requires boroughs to commit to 50 per cent household waste recycling performance as a requirement for receiving Private Finance Initiative (PFI) credits for waste procurement. The Mayor's aspiration is for London to achieve 60 per cent recycling of municipal waste by 2031. This performance level is supported by research undertaken by WRAP showing that 68 per cent of household waste is recyclable[29].

5.71 This Plan sets out the spatial policies to support the Mayor's Waste Strategy and includes its targets for recycling and reduction of waste to landfill. Performance should improve for all forms of waste in London in terms of greater efficiency of use, a reduction in amounts generated and an increase in recycling. The greatest need and opportunity for improved performance is the municipal waste collected by boroughs, largely from households. The Mayor believes that recycling and composting targets for commercial and industrial waste are challenging but achievable, and reflect the current relatively high level of commercial and industrial recycling, which in 2008 was estimated to be 42 per cent. Recycling targets are carried forward from the 2008 version of the London Plan.

5.72 The recycling targets included in this Plan and in the Waste Strategy have a direct impact on London's waste self-sufficiency. The Mayor is committed to working towards zero waste to landfill by 2031.

5.73 The key objectives in terms of the spatial distribution of waste facilities within London, as set out in PPS10: Planning for Sustainable Waste Management, are that communities should take more responsibility for the management of their own waste (self-sufficiency), and that waste should be disposed of in one of the nearest appropriate installations (proximity). This means that waste planning authorities should achieve the maximum degree of self-sufficiency possible commensurate with their obligations for managing waste, while recognising that in some instances the nearest appropriate installation might lie outside the Greater London boundary. The Mayor, when determining local authority waste management contracts, will adopt a flexible approach to self-sufficiency. In line with the objective of proximity, preference may be given to facilities outside the Greater London boundary if they are closest to the point of where the waste is produced. More detail on municipal waste management contracts and self-sufficiency is set out in the Mayor's Waste Management Strategy.

5.74 The Mayor will work with London's neighbours in the South East and East of England to co-ordinate strategic waste management across the three regions to reduce the capital's dependence on landfill disposal outside London. He will adopt a flexible approach to how self-sufficiency is achieved, so that the carbon outcome of any treatment method and transportation are given greater consideration in assessing proposals for waste facilities.

5.75 The Mayor wants to make the most of London's waste to harness its energy and employment benefits. For the purposes of meeting self-sufficiency, in addition to prevention, reduction and re-use, waste is deemed to be managed in London if:

- it is used in London for energy recovery (eg through anaerobic digestion, pyrolysis/gasification or through existing incinerators)
- it is compost or recyclate sorted or bulked in London material recycling facilities for reprocessing either in London or elsewhere
- it is a 'biomass fuel' as defined in the Renewable Obligation Order.

POLICY 5.17
WASTE CAPACITY

Strategic

A The Mayor supports the need to increase waste processing capacity in London. He will work with London boroughs and waste authorities to identify opportunities for introducing new waste capacity, including strategically important sites for waste management and treatment, and resource recovery parks/consolidation centres, where recycling, recovery and manufacturing activities can co-locate.

Planning decisions

B Proposals for waste management should be evaluated against the following criteria:

a locational suitability (see LDF preparation paragraphs F and G below)
b proximity to the source of waste
c the nature of activity proposed and its scale
d a positive carbon outcome of waste treatment methods and technologies (including the transportation of waste, recyclates and waste derived products) resulting in greenhouse gas savings, particularly from treatment of waste derived products to generate energy
e the environmental impact on surrounding areas, particularly noise emissions, odour and visual impact and impact on water resources
f the full transport and environmental impact of all collection, transfer and disposal movements and, in particular, the scope to maximise the use of rail and water transport using the Blue Ribbon Network.

The following will be supported:

g developments that include a range of complementary waste facilities on a single site
h developments for manufacturing related to recycled waste
i developments that contribute towards renewable energy generation, in particular the use of technologies that produce a renewable gas
j developments for producing renewable energy from organic/biomass waste.

C Wherever possible, opportunities should be taken to provide combined heat and power and combined cooling heat and power.

D Developments adjacent to waste management sites should be designed to minimise the potential for disturbance and conflicts of use.

E Suitable waste and recycling storage facilities are required in all new developments.

LDF preparation

F Boroughs must allocate sufficient land and identify waste management facilities to provide capacity to manage the tonnages of waste apportioned in this Plan. Boroughs

may wish to collaborate by pooling their apportionment requirements.

G Land to manage borough waste apportionments should be brought forward through:

a protecting and facilitating the maximum use of existing waste sites, particularly waste transfer facilities and landfill sites
b identifying sites in strategic industrial locations (see Policy 2.17)
c identifying sites in locally significant employment areas (see Policy 4.4)
d safeguarding wharves (in accordance with policy 7.26) with an existing or future potential for waste management.

H If, for any reason, an existing waste management site is lost to non-waste use, an additional compensatory site provision will be required that normally meets the maximum throughput that the site could have achieved.

5.76 Increasing London's waste processing capacity is a major mayoral priority. The Mayor will work with all parties to achieve this. Through the London Waste and Recycling Board (LWaRB), he will collaborate with boroughs and other partners to make the capital a global beacon of best practice in waste management.

5.77 PPS10 requires the Mayor through the London Plan to:

- identify the tonnages of municipal and commercial/industrial waste requiring management and to apportion them by waste planning authority area
- evaluate the adequacy of existing strategically important waste management and disposal facilities to meet London's future needs, both for municipal and other waste streams
- identify the number and type of new or enhanced facilities required to meet those needs
- identify opportunities for the location of such facilities and, where appropriate, criteria for the selection of sites.

5.78 Waste issues were thoroughly scrutinised in the London Plan Examinations in Public in 2006 and 2007 and the Mayor sees no benefit in reopening recent debates, particularly those around the borough-level apportionment methodology. However, he has acknowledged that projected MSW and C&I waste arisings at borough level – the key to waste management, apportionment and self-sufficiency – need updating. The GLA has accordingly brought forward new independent borough-level projections of London's waste arisings, and borough-level apportionment of MSW and C&I waste using the 2007 methodology.

5.79 Table 5.2 gives projected MSW and C&I arisings at borough level for key milestones through to 2031. Table 5.3 sets out projected MSW and C&I waste to be managed in London apportioned to boroughs based on the methodology agreed for the 2008 version of the London Plan - ie each borough's percentage share of waste to be managed in London is the same as before. Self-sufficiency (the proportions of total MSW and C&I waste managed in London) at key milestones has been modelled as a linear increase from the 2008 baseline (56 per cent MSW and 68 per cent C&I) to 100 per cent for 2031, in line with the objectives of Policy 5.16.

Table 5.2 Municipal and commercial/industrial waste projections at borough level at key milestones through to 2031 (thousand tonnes pa)

	2011		2016		2021		2026		2031	
	MSW	C&I	MSW	C&I	MSW	C&I	MSW	C&I	MSW	C&I
Barking and Dagenham	103	74	113	72	123	75	133	79	141	81
Barnet	187	189	202	188	217	189	232	192	244	200
Bexley	135	84	138	77	142	77	145	72	148	69
Brent	136	202	143	200	149	199	156	196	161	194
Bromley	169	180	173	182	178	185	182	187	186	188
Camden	140	411	146	404	153	410	159	417	163	421
City	38	466	41	481	44	496	46	512	48	517
Croydon	184	198	193	198	202	196	211	195	218	196
Ealing	158	232	164	219	170	211	176	209	181	207
Enfield	155	148	159	140	164	136	168	133	172	134
Greenwich	117	105	130	105	144	104	157	105	168	106
Hackney	131	109	140	105	147	101	155	100	162	103
Hammersmith and Fulham	91	184	95	186	99	189	103	195	107	204
Haringey	129	90	135	89	141	87	147	90	151	88
Harrow	120	143	123	139	126	136	129	134	131	133
Havering	135	132	143	130	152	126	160	126	168	125
Hillingdon	152	336	157	335	162	338	167	341	171	348
Hounslow	132	231	136	223	140	215	144	212	147	211
Islington	124	280	132	286	140	289	147	285	153	284
Kensington and Chelsea	102	149	106	151	111	156	115	155	119	153
Kingston upon Thames	68	131	70	131	72	134	74	138	76	143
Lambeth	150	151	158	152	166	150	174	157	180	162
Lewisham	144	85	151	82	158	81	165	80	171	81
Merton	94	117	96	112	99	111	101	109	103	110

Table 5.2 cont'd Municipal and commercial/industrial waste projections at borough level at key milestones through to 2031 (thousand tonnes pa)

	2011		2016		2021		2026		2031	
	MSW	C&I	MSW	C&I	MSW	C&I	MSW	C&I	MSW	C&I
Newham	154	123	170	123	186	124	202	124	215	127
Redbridge	123	114	128	109	134	104	139	98	143	95
Richmond upon Thames	100	143	103	142	105	141	107	141	109	143
Southwark	122	296	132	295	142	291	152	294	160	297
Sutton	93	110	94	108	96	107	98	109	99	110
Tower Hamlets	127	266	142	273	157	282	171	292	183	309
Waltham Forest	130	90	136	87	141	81	147	78	151	79
Wandsworth	126	174	133	178	139	182	145	183	150	187
Westminster	192	744	202	746	212	756	221	767	228	792
London Total	4261	6485	4487	6451	4709	6458	4927	6504	5108	6596

Source: LRS Consultancy for GLA, December 2009

Table 5.3 Waste to be managed in London apportioned by borough (thousand tonnes per annum)

	apportionment (% share of waste to be managed in London)	2011			2016			2021			2026			2031		
		MSW	C&I	Total	MSW	C&I	Total	MSW	C&I	Total	MSW	C&I	Total	MSW	C&I	Total
Barking and Dagenham	6.1	159	283	441	194	309	502	230	336	567	270	366	636	309	399	708
Barnet	2.7	70	125	195	86	136	222	102	149	251	119	162	281	137	176	313
Bexley	5.5	144	256	398	175	279	453	208	304	512	243	331	574	279	361	640
Brent	3.4	90	160	249	109	174	284	130	190	320	152	207	359	175	225	400
Bromley	3.0	77	137	213	94	149	243	112	163	274	131	177	308	150	193	343
Camden	2.3	59	105	164	72	115	187	86	125	211	100	136	237	115	149	264
City	n/a	40	60	100	41	59	100	42	58	100	43	57	100	44	56	100
Croydon	3.0	79	141	219	96	154	250	115	167	282	134	182	317	154	199	353
Ealing	4.4	114	202	315	138	221	359	165	241	405	193	262	455	221	286	507
Enfield	3.7	96	170	265	116	186	302	139	202	341	162	220	383	186	240	426
Greenwich	4.0	106	188	292	128	205	333	153	223	376	179	243	422	205	265	470
Hackney	2.5	65	116	180	79	126	205	94	137	232	110	150	260	126	163	289
Hammersmith and Fulham	3.0	78	139	216	95	152	246	113	165	278	132	180	312	152	196	348
Haringey	2.3	59	105	164	72	115	187	86	125	211	100	136	237	115	149	264
Harrow	2.2	57	101	158	69	110	180	82	120	203	96	131	228	111	143	254
Havering	4.0	105	187	291	128	204	331	152	222	374	178	241	419	204	263	467
Hillingdon	3.7	96	170	265	116	186	302	139	202	341	162	220	382	186	240	426
Hounslow	3.5	92	165	256	112	179	292	134	195	329	157	213	370	180	232	412
Islington	2.4	64	113	176	77	124	201	92	135	227	108	147	255	124	160	284
Kensington and Chelsea	2.4	64	113	176	77	124	201	92	135	227	108	147	255	124	160	284
Kingston upon Thames	1.8	46	81	126	56	89	144	66	97	163	77	105	183	89	115	203
Lambeth	2.7	70	125	195	85	136	222	102	149	250	119	162	281	137	176	313

Table 5.3 cont'd Waste to be managed in London apportioned by borough (thousand tonnes per annum)

	apportionment (% share of waste to be managed in London)	2011			2016			2021			2026			2031		
		MSW	C&I	Total	MSW	C&I	Total	MSW	C&I	Total	MSW	C&I	Total	MSW	C&I	Total
Lewisham	2.5	66	117	182	80	128	207	95	139	234	111	151	263	128	165	293
Merton	2.9	76	136	211	93	148	240	110	161	271	129	175	304	148	191	339
Newham	4.9	129	229	356	156	249	405	186	272	458	218	296	514	250	323	572
Redbridge	1.9	49	87	136	60	95	155	71	104	175	83	113	196	95	123	218
Richmond upon Thames	2.2	56	100	156	68	109	178	81	119	200	95	129	225	109	141	251
Southwark	3.0	77	137	213	94	150	243	112	163	275	131	177	308	150	193	343
Sutton	2.4	63	112	175	77	123	199	91	133	225	107	145	252	123	158	281
Tower Hamlets	3.8	98	175	273	120	191	311	143	208	351	167	227	394	191	247	439
Waltham Forest	2.4	64	113	176	77	123	200	92	134	226	108	146	254	123	159	283
Wandsworth	3.8	99	177	275	121	193	313	144	210	354	168	229	397	193	249	442
Westminster	1.5	40	71	111	49	78	126	58	84	142	68	92	160	78	100	178
London Total	100.0	2646	4698	7321	3211	5117	8322	3816	5568	9387	4460	6055	10519	5108	6596	11705

Note: Boroughs may collaborate by pooling their apportionment requirements. Provided the aggregated total apportionment is met (MSW plus C/I), it is not necessary for boroughs to meet both MSW and C&I apportionment figures individually.

Source: GLA December 2009 – using the apportionment model prepared for the London Plan February 2008 (consolidated with Alterations since 2004) by Jacobs UK Ltd July 2007, waste arisings prepared by LRS Consultancy December 2009, and self-sufficiency (the proportion of waste managed in London) modelled in line with the objectives of Policy 5.16

5.80 Boroughs may collaborate by pooling their apportionment requirements. Provided the aggregated total apportionment figure is met, it is not necessary for boroughs to meet both the municipal and commercial/ industrial waste apportionment figures individually. Boroughs need to examine how capacity can be delivered in detail at the local level as site allocations in LDFs to meet their apportionments. Boroughs working collaboratively must demonstrate that their joint apportionment targets will be met, for example, through the preparation of joint waste DPDs, joint evidence papers or bilateral agreements.

5.81 Boroughs and waste authorities should identify sites which are potentially suitable for a variety of technologies, depending on the particular site's opportunities and constraints, and assess how many facilities and what type of waste processing facilities/ technologies will be required locally to meet their apportionments.

5.82 It is envisaged that land in strategic industrial locations will provide the major opportunities for locating waste treatment facilities (see Annex 3). Boroughs should also look to locally significant industrial sites and existing waste management sites. Existing waste management sites (including safeguarded wharves with waste use or potential) should be clearly identified and safeguarded for waste use. Suitable brownfield sites and contaminated land elsewhere may also provide opportunities.

5.83 Allocations will need to balance the benefits of smaller, local sites against the overall demand for land for waste and for a range of other activities in a situation in which there are severe limitations of land supply, and against the benefits of co-locating a range of facilities together in a smaller number of larger sites. The Mayor will work with boroughs and waste authorities to identify opportunities for introducing new waste capacity, including strategically important sites for waste management and treatment, and resource recovery parks/consolidation centres, where recycling, recovery and manufacturing activities can co-locate.

5.84 For waste that cannot be recycled or composted (including through anaerobic digestion), the Mayor has a preference for advanced conversion waste processing technologies such as gasification and pyrolysis but is keen that proposals for new facilities are evaluated by carbon outcome (end-to-end) to ensure the best possible environmental impact.

5.85 The Mayor wants to develop a minimum greenhouse gas performance for technologies recovering energy from non-recyclable waste. All waste treatment technologies will need to meet this level, or demonstrate they can practically meet it in the future in order to gain Mayoral support. Work is underway with local authorities to agree a common tool for measuring and determining a minimum greenhouse gas performance for the treatment of non-recyclable waste. It is envisaged the minimum greenhouse gas performance will need to achieve at least a positive carbon outcome, whereby the direct emissions from the technology are offset by emissions savings from the generation of energy in the form of heat, electricity and transport fuel. This would, for example, tend to rule out new mass burn incineration facilities of mixed waste generating electricity only, but may allow combustion of biomass waste where both heat and power generated are used. This approach supports anaerobic digestion or gasification technologies able to achieve high efficiencies particularly when linked with gas engines and hydrogen fuel cells.

5.86 Waste processing facilities, including materials recycling facilities and depots, inert waste recycling plants, composting facilities, waste treatment and energy recovery facilities, and reprocessing of recyclables, should be well designed. They need not be bad neighbours and could be a source of new products and new jobs. They should be developed and designed in consultation with local communities, taking account of health and safety within the facility, the site and adjoining neighbourhoods. Energy recovery should be carried out through advanced conversion techniques, ie gasification, pyrolysis or anaerobic digestion, or any combination of these. Developments for manufacturing related to recycled waste, deriving fuel from waste and recovering value from residual waste should be supported. Where movement of waste is required, priority should be given to facilities for movement by river or rail. Opportunities to provide combined heat and power and combined cooling, heat and power should be taken wherever possible (see policies 5.5, 5.6 and 5.8). Developments adjacent to waste management sites should be designed to minimise the potential for disturbance and conflicts of use.

5.87 Although no further landfill proposals in London are identified or anticipated in the Plan, if proposals do come forward for new or extended landfill capacity or for land-raising, boroughs should ensure that the resultant void-space has regard to the Mayor's Municipal Waste Strategy.

POLICY 5.18 CONSTRUCTION, EXCAVATION AND DEMOLITION WASTE

Planning decisions

A New construction, excavation and demolition (CE&D) waste management facilities should be encouraged at existing waste sites, including safeguarded wharves, and supported by:

a using mineral extraction sites for CE&D recycling
b ensuring that major development sites are required to recycle CE&D waste on-site, wherever practicable, supported through planning conditions.

B Waste should be removed from construction sites, and materials brought to the site, by water or rail transport wherever that is practicable.

LDF preparation

C LDFs should require developers to produce site waste management plans to arrange for the efficient handling of CE&D waste and materials.

5.88 Re-use and recycling rates for construction, excavation and demolition (CE&D) waste in London are already high – estimated at 82 per cent for 2008. Nevertheless, the Mayor believes that there is room for improvement. Policy 5.16 sets a target of 95 per cent for recycling/reuse of CE&D waste by 2020, and the Mayor supports more beneficial and higher order uses of this inert waste, for example, in conjunction with land reclamation or coastal defences. A combination of on-site mobile facilities on construction sites, effective use of existing waste processing sites and, where appropriate, safeguarded wharves, and the provision of recycling facilities at aggregate extraction sites, should be capable of meeting the anticipated future requirement within London to achieve a more beneficial re-use of this material.

POLICY 5.19
HAZARDOUS WASTE

Strategic

A The Mayor will prepare a Hazardous Waste Strategy for London and will work in partnership with the 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 the need for hazardous waste management capacity.

Planning Decisions

B Pending outcome of the work proposed in paragraph A of this policy, development proposals that would result in the loss of existing sites for the treatment and/or disposal of hazardous waste should not be permitted unless compensatory site provision has been secured in accordance with Policy 5.17H.

LDF preparation

C LDFs should:

a make provision for hazardous waste treatment plants to achieve, at regional level, the necessary waste management requirements
b identify suitable sites for the storage, treatment and reprocessing of relevant or a range of hazardous waste streams
c identify sites for the temporary storage, treatment and remediation of contaminated soils and demolition waste during major developments.

5.89 In 2007 around 300,000 tonnes of hazardous waste was produced in London – 35 per cent from construction, excavation and demolition waste (containing asbestos and contaminated soil), 21 per cent from oil and oil/water mix waste, and 44 per cent as waste from chemical and other industrial processes. Changes to the definition of hazardous waste mean that the amount of such waste produced will grow in the short and medium term, and London will need more and better hazardous waste treatment facilities to cope with this. Without sustained action there remains the risk of a major shortfall in our capacity to treat and dispose of hazardous waste safely. This could lead to storage problems, illegal disposal (including fly tipping) and rising public concern about health and environmental impacts. There is therefore a need to continue to identify hazardous waste capacity for London. The main requirement is for sites for regional facilities to be identified. Boroughs will need to work together and with neighbouring authorities to consider the necessary regional/local facilities.

Aggregates, contaminated land and hazardous substances

POLICY 5.20
AGGREGATES

Strategic

A The Mayor will work with all relevant partners to ensure an adequate supply of aggregates to support construction in London. This will be achieved by:

1 encouraging re-use and recycling of construction, demolition and excavation waste within London
2 extraction of land-won aggregates within London
3 importing aggregates to London by sustainable transport modes.

B The Mayor will work with strategic partners to achieve targets of:

a 95 per cent recycling/re-use of construction, demolition and excavation waste by 2020

b 80 per cent recycling of that waste as aggregates by 2020.

C London should make provision for the maintenance of a landbank (i.e. seven years' supply) of at least 5 million tonnes of land won aggregates throughout the plan period until 2031.

LDF preparation

D LDFs should make provision for the maintenance of a landbank (i.e. seven years' supply) of at least 5 million tonnes of land won aggregates throughout the plan period to 2031 by a landbank apportionment of:

a at least 1.75 million tonnes to LB Havering
b at least 0.7 million tonnes to LB Redbridge
c at least 1.75 million tonnes to LB Hillingdon
d at least 0.7 million tonnes to LB Hounslow

E Mineral planning authorities in London should:

a identify and safeguard aggregate resources in LDFs
b support the development of aggregate recycling facilities, subject to local amenity conditions.

F To reduce the environmental impact of aggregates, LDFs should:

a ensure that appropriate use is made of planning conditions dealing with aftercare, restoration and re-use of minerals sites following extraction
b safeguard wharves and/or railheads with existing or potential capacity for aggregate distribution
c minimise the movement of aggregates by road and maximise the movement of aggregates via the Blue Ribbon Network
d develop policies that support the protection and enhancement of aggregates recycling facilities.

5.90 London needs a reliable supply of construction materials to support continued growth. These include land-won sand and gravel, crushed rock, marine sand and gravel, and recycled and alternative materials. Most aggregates used in the capital come from outside London, including marine sand and gravel and land-won aggregates, principally crushed rock from other regions. There are relatively small resources of workable land-won sand and gravel in London.

5.91 The Mayor supports the Government's objective of achieving an essential level of supply in the most sustainable fashion, in order to ensure a good supply of locally sourced land-won aggregates. For the 2008 London Plan, the London Aggregates Working Party advised the Mayor that an annual output of 1.0 million tons per annum (mtpa) of land-won sand and gravel, sub-regionally apportioned 50:50 between boroughs in east and west London, was more realistic than the 1.1 mtpa proposed in the 2003 guidelines. This was accepted by the Mayor to inform London policy and was agreed by the Secretary of State.

5.92 The previous Government's land-won sand and gravel guidelines for London for the period 2005-2020 proposed 1.1 mtpa[30]. Recent monitoring suggests that this target remains very challenging for London, and the Mayor is not persuaded that setting the target suggested in the 2009 guidelines would actually increase production. Accordingly, and following discussions with boroughs and the industry on reserve levels, plan allocations and deliverability, the Mayor

supports a realistic landbank figure (i.e. seven years supply) of at least 5 million tonnes of land-won aggregates for London throughout the plan period, apportioned to boroughs as set out in Policy 5.20D.

5.93 There remains some potential for extraction beyond the boroughs identified in the London Aggregates Monitoring report[31], including within the Lee Valley. Other boroughs with aggregates resources should consider opportunities in line with the policies in the plan. Adverse impacts on European biodiversity sites as a result of aggregates activities should be avoided.

5.94 Aggregates are bulky materials and LDF policies should maximise their use and re-use and minimise their movement, especially by road. Policy 5.3 on sustainable design and construction will be important in helping to reduce the demand for natural materials. The objective of proximity dictates the best and most local use of materials that can be extracted in London. Existing and new railhead capacity will be needed to support sustainable forms of movement. Sites for depots may be particularly appropriate in preferred industrial locations and other employment areas. Existing and future wharf capacity is essential, especially for transporting marine-dredged aggregates, and should be protected in accordance with Policy 7.26.

POLICY 5.21 CONTAMINATED LAND

Strategic

A The Mayor supports the remediation of contaminated sites and will work with strategic partners to ensure that the development of brownfield land does not result in significant harm to human health or the environment, and to bring contaminated land to beneficial use.

Planning decisions

B Appropriate measures should be taken to ensure that development on previously contaminated land does not activate or spread contamination.

LDF preparation

C LDFs should encourage the remediation of contaminated sites and set out policy to deal with contamination.

5.95 In a city where space is increasingly at a premium, it is essential that wherever practicable, brownfield sites – including those affected by contamination – should be recycled into new uses. This also provides an opportunity to deal with any threats to health and the environment posed by contamination. Any land that is affected by contamination, whether or not identified under the regulations, may require measures to prevent contamination being activated or spread when building takes place.

POLICY 5.22 HAZARDOUS SUBSTANCES AND INSTALLATIONS

Strategic

A The Mayor will work with all relevant partners to ensure that hazardous substances, installations and materials are managed in ways that limit risks to London's people and environment.

Planning decisions

B When assessing developments near hazardous installations:

a site specific circumstances and proposed mitigation measures should be taken into account when applying the Health and Safety Executive's Planning Advice Developments near Hazardous Installations (PADHI)[32] methodology

b the risks should be balanced with the benefits of development and should take account of existing patterns of development.

LDF preparation

C In preparing LDFs, boroughs should:

a identify the locations of major hazards (including pipelines carrying hazardous substances)
b consult and give due weight to advice from the Health and Safety Executive to ensure that land use allocations take account of proximity to major hazards
c consult utilities to ensure that the timing of decommissioning and the implications for development are reflected in proposals
d ensure that land use allocations for hazardous installations take account of the need to incentivise and fund decommissioning.

5.96 The EU Directive on the prevention of major accidents involving hazardous substances requires land use policies to take prevention and minimisation of consequences into account, and this is reflected in PPS12. Where appropriate, advice should be sought from the Health and Safety Executive. Development decisions should take account of CLG Circular 04/00 Planning Controls for Hazardous Substances.

Endnotes

1 Department for Environment, Food and Rural Affairs (Defra). UK Climate Projections 2009. June 2009
2 Mayor of London. London Climate Change Adaptation Strategy, GLA, Summer 2011
3 Mayor of London. Climate Change Mitigation and Energy Strategy, GLA, Summer 2011
4 Ibid
5 Ibid
6 Greater London Authority. Focus on London. GLA 2009
7 TER is the calculated target carbon dioxide emission rate for a development, expressed in kilograms of carbon dioxide per annum
8 London South Bank University. Review of the Impact of the energy policies in the London Plan on applications referred to the Mayor. GLA, 2009
9 Mayor of London. The London Housing Strategy. GLA 2010
10 Mayor of London. London Housing Design Guide. (LHDG). LDA, 2010.
11 Mayor of London and London Councils. The Control of Dust and Emissions from Construction and Demolition. Best Practice Guide. London Councils and GLA, 2006
12 ICE. Demolition protocol –implementation document. ICE and London Remade, 2003
13 Three Regions Climate Change Group. Your home in a changing climate- report for policy makers. 2008
14 www.climatechangeandyourhome.org.uk
15 DEFRA. Analysis of the UK potential for Combined Heat and Power. Defra, October 2007
16 Details can be found on the Energy Masterplan for London website:www.emplondon.org.uk
17 London Energy Partnership. Making ESCOs Work: Guidance and Advice on setting up and delivering ESCOs. LEP, 2007
18 Mayor of London. Leading to a Greener London. GLA, 2009
19 Further information on: www.lucid-project.org.uk
20 Climate Change and Cities: the Role of Green Infrastructure. Built Environment: Volume 33, Issue 1, 2007
21 Environment Agency. State of the Environment Report. Environment Agency, February 2010
22 DEFRA Municipal Waste Management Statistics 2008
23 London Waste and Recycling Board Business Plan 2009
24 Ibid
25 DEFRA Municipal Waste Management Statistics 2008
26 Ibid
27 GLA 2009
28 Ibid
29 Dr Julian Parfitt, Analysis of Household Waste Composition and Factors Driving Waste Increases WRAP 2002
30 National and Regional Guidelines for Aggregate Provision in England 2005-2020, DCLG June 2009
31 GLA Aggregates Working Party, London Aggregates Monitoring Report 2008, August 2009 http://legacy.london.gov.uk/mayor/planning/lawp/docs/lawp_monitoring2008.pdf
32 PADHI – HSE's Planning Land Use Methodology. Health and Safety Executive, September 2009