Tower Hamlets Local Development Framework:

DRAFT

Climate Change Mitigation and Adaptation Evidence Base

August 2009
Executive Summary

This document is a Climate Change Mitigation and Adaptation Evidence Base in support of Tower Hamlets' Local Development Framework Core Strategy. It starts by briefly reviewing the need to tackle climate change at a local (borough) level. It then identifies the main sources of the main greenhouse gases – carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) – at the London and borough levels, in order to help set a baseline for the action. It should be noted though that the principal source of local data, the National Atmospheric Emissions Inventory (for 2005 and 2006) showed a major jump of over 15% in CO₂ emissions between the two years, almost certainly not explicable by any increases on the ground, for example arising from new developments. The effects of manmade climate change on London and the fuel poor are then briefly considered.

The next section reviews the policy context, from an international level down to a borough level including the latest development from the UK national government. It then considers how this can be used in Developing and Delivering a Climate Change Mitigation and Adaptation Strategy within the Local Development Framework. A number of options and targets are considered, including the key recommendation that Tower Hamlets should set a Borough-wide carbon emission reduction target of 60% by 2025 (along with interim targets) within its Core Strategy. This is in line with the Mayor's Climate Change Action Programme, although this document (along with the earlier Energy Strategy) are both under review and likely to be re-issued as a combined document later in 2009.

A number of specific options and recommendations are then offered in the areas of standards for new homes (built largely around the Code for Sustainable Homes), new non-domestic buildings, and the existing housing stock, as well as a brief review of the opportunity for decentralised electricity supply in the Borough.

The document concludes with a review of some of the adaptation options that may be necessary, especially in the areas of flooding, drought and combating overheating in summer.
The Case for Tackling Climate Change through Tower Hamlets’ LDF

Climate change is rapidly climbing the political agenda, being acknowledged as an urgent and serious global issue which must be addressed now. A growing body of scientific evidence has made an undeniable case for addressing Climate Change.

Tower Hamlets Council is required to address Climate Change through its Local Development Framework (LDF) – the plan that will guide development and regeneration in the Borough over the next 15 years and beyond. Planning Policy Statement 1: Planning and Climate Change – Supplement to PPS1\(^1\) provides guidance on how this should be done.

Development plays a significant role in contributing to Climate Change, but with effective policy and implementation measures in place, it can help with the mitigation of and adaptation to Climate Change.

Climate change is not the only issue around the use and supply of energy. It is also important to ensure a secure supply of energy for our future and to tackle fuel poverty, and these are also addressed as part of this report.

This report seeks to identify a strategy to be integrated into the Council’s Local Development Framework for the mitigation and adaptation to climate change in Tower Hamlets.

Insert info on Tower Hamlets context (incl. deprivation)

What is Climate Change?

The Earth’s climate is rapidly changing as a result of increased greenhouse gas emissions caused by human activity.\(^2\) Carbon dioxide is the key greenhouse gas causing climate change, making up 85% of the United Kingdom’s greenhouse gas emissions.\(^3\) Other gases such as methane and nitrous oxide are also key contributors. Carbon dioxide emissions come from a range of activities, including road transportation, energy supply, aviation, industry and from our homes.

Greenhouse gases occur naturally in the Earth’s atmosphere. They act as a natural insulator, retaining some of the sun’s radiation and emitting it slowly. Increased greenhouse gas emissions have caused an imbalance in this natural process, resulting in an ‘enhanced greenhouse effect’, where more of the sun’s radiation is being retained, causing rising global temperatures.

The Need for Immediate Action: Avoiding Catastrophic Climate Change

\(^1\) DCLG 2007.


\(^3\) Defra 2006.
Carbon dioxide concentration levels in the atmosphere are rapidly increasing towards a point of no return, beyond which **irreversible and catastrophic climate change will occur**. Concentration levels of carbon dioxide are currently at 380 parts per million (ppm), up from 280 ppm in pre-industrial times. Burning of fossil fuels, deforestation and other land use changes have contributed to this rise.4

The warming effect of all greenhouse gases (including methane and nitrous oxide) is currently equivalent to approximately 430 ppm of carbon dioxide. The increased concentration levels of greenhouse gas emissions in the atmosphere have already caused global temperatures to rise by 0.74 degrees Celsius over the last century, and will lead to at least a further half a degree of warming over the coming decades, regardless of action taken now to reduce emissions.5 Concentration levels are currently rising by about 2.3 ppm per year.6 If action is not taken now, global emissions are set to accelerate as a result of increased energy demands.7 Reaching a greenhouse gas concentration level equivalent to 550ppm of carbon dioxide is likely to result in a rise of global mean temperatures of over 2 degrees Celsius.8 This level could be reached as early as 2035.9

Such an increase in temperatures would have significant and wide reaching impacts on the Earth, including melting glaciers and ice sheets, declining crop yields, rising sea levels, high levels of species extinction. These impacts will lead to other issues, such as human settlement displacement, malnutrition and heat stress.10

It is the European Union’s objective to limit the increase of global average temperature to less than 2 degrees Celsius compared to pre-industrial levels.11 Strong action is required now to avoid these levels being reached.

**Greenhouse Gas Emissions**

In order to identify actions to be taken to reduce our greenhouse gas emissions, there is a need to understand in more detail where they come from.

- **Carbon Emissions**

As stated above, 85% (xxxxx tonnes) of the United Kingdom’s greenhouse gases are carbon dioxide. In London, the breakdown of where these emissions come from is shown in Figure 1.

**Figure 1: London’s Carbon Emissions 2006**

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7 Energy White Paper, 2003, para 1.5.
11 Commission of the European Communities, Communication from the Commission - Limiting Global Climate Change to 2 degrees Celsius The way ahead for 2020 and beyond, Brussels, 10.1.2007.
Aviation

London is a hub city for aviation, with two international airports (Heathrow and London City airport). However, tackling aviation emissions is considered outside the remit of the Council, particularly as there is no airport in Tower Hamlets. The Mayor of London’s Climate Change Action Plan sets out actions to tackle emissions from aviation.

Residential

Excluding aviation, energy use in existing homes is the largest single source of carbon dioxide emissions in London, contributing 38% of emissions.\(^\text{12}\) Space heating and water heating account for three-quarters of these domestic carbon emissions.

Currently, cooling of homes only accounts for less than 1% of domestic carbon emissions in London; however, as the climate continues to warm, energy emissions resulting from cooling buildings could become increasingly significant.

Business

The commercial and public sector account for a further 33% of emissions, and the industrial sector for 7%.

Transport

Road based transport accounts for 22% of emissions. Of these road based transport emissions, 72% are from cars, motorcycles and freight.\(^\text{13}\)

Tower Hamlets’ Carbon Emissions

Of the 33 Local Authorities in Greater London, Tower Hamlets produces the second highest level of total carbon emissions (2,348 ktCO\(_2\)), after Westminster.\(^\text{14}\)
Tower Hamlets also produces the second highest level of carbon emissions from the industrial and commercial sectors (1,666 ktCO₂). The growing international business and financial centre at Canary Wharf are a significant contributor to these emissions – in both cases the Borough’s ranking has increased by one place compared to the previous year’s data, overtaking Hillingdon (total emissions) and the City of London (industry & commerce). In these sectors, Tower Hamlets produces the second highest carbon emissions per employee, behind Newham. This figure is an indication of the relatively low office employment densities in the Borough and the high specification nature of much of the stock (air conditioned, high IT loadings etc.).

In contrast, the Borough is the fourth lowest emitter of carbon dioxide from the domestic sector. The Borough ranks 18th for its carbon emissions from road transport – just below the median, and almost exactly equal to London’s average per capita (1.45tCO₂). This is however the highest per capita figure for the Inner London boroughs (excluding the City), reflecting historically poorer public transport provision and passenger vehicle use by the large number of office-based staff in the Canary Wharf area by non-resident workers.

On a per capita basis, Tower Hamlets has the third highest level of emissions at 11.0 tonnes per annum, after the City of London and Westminster. The Greater London average is 6.6 tonnes.

### Methane and Nitrous Oxide Emissions

18 ibid.
19 ibid.
• **Methane**

In 2006, methane accounted for 7.5% of the UK’s greenhouse gas emissions.\(^{20}\) Key contributors include waste management (41.2% of methane emissions) and agriculture (38%). Other contributors include business (8.5%), residential (7.4%), transport (2%) and the public sector (1.1%).

In Tower Hamlets, the key sector to tackle in order to reduce methane emissions is waste management, mainly arising at landfill sites outside the Borough but disposing of residents’ or commercial waste. These emissions may be tackled in two ways: at source, by reducing the volumes of waste, and by ensuring that waste received at landfill is not allowed to decompose naturally, but is processed to capture energy content.

Direct emissions of methane are low, estimated by NAEI at 569 tonnes\(^{21}\) in 2006, equivalent to emissions of just 12ktCO\(_2\)e (ie. 0.5% of the global warming potential of the borough's CO\(_2\) emissions).

• **Nitrous Oxide**

In 2006, nitrous oxide accounted for 6% of the UK’s greenhouse gas emissions.\(^{22}\) Key contributors include agriculture (83.5%), transport (19%), industry (7.8%) and business (6.4%). Whist overall levels of nitrous oxide emissions decreased over the period from 2005 to 2006, emissions from the business, residential, waste management and public sectors increased.

In Tower Hamlets, direct emissions of N\(_2\)O are also below the national average, and were estimated by NAEI at 63 tonnes\(^{23}\) in 2006, equivalent to emissions of 20ktCO\(_2\)e (ie. 0.8% of the global warming potential of the borough's CO\(_2\) emissions). This figure reflects the absence of agriculture in the borough.

The burning of biomass, a sustainable fuel supply that can be used in boilers, releases both methane and nitrous oxide. See section xxx for further discussion about Biomass and the role it should play in helping to deliver sustainable energy in Tower Hamlets.

Due to the relatively low importance of methane and nitrous oxide, the rest of this document will focus primarily on carbon dioxide and its mitigation. There is no data available on local emissions of the other three main greenhouse gas groups (hydrofluorocarbons - HFCs, perfluorocarbons and SF6), but as they collectively account for less than 0.5% of national global warming potential, they too will be ignored. (There may be some HFC emissions associated with venting from air conditioning systems in the offices in the borough, but no firm data.)

**How will Climate Change affect London?**


\(^{21}\) NAEI website: http://www.naei.org.uk/datawarehouse/8_59_208_71825_355_ch406.txt

\(^{22}\) Defra e-digest environmental statistics website: http://www.defra.gov.uk/environment/statistics/

\(^{23}\) NAEI website: http://www.naei.org.uk/datawarehouse/8_59_207_71391_355_n2o06.txt
The effects of the increase in greenhouse gas emissions since industrialisation can already be felt in London, with milder winters and hotter summers being experienced. Some other effects of climate change on London which can be expected include -

- Heat waves and other extreme weather events
- An increase in the Urban Heat Island effect
- Increased risk of flooding
- Extra pressure on London's water resources
- Increased health risks for vulnerable groups, including the elderly
- Impacts on biodiversity, including loss of species

The Urban Heat Island Effect\(^{24}\) is where temperatures in the capital are typically 6-8°C higher than surrounding rural temperatures due to impervious engineered surfaces trapping solar energy in the air above the city. This effect is most pronounced at night and leads to summer demand for air-conditioning, stress on plants and, in the warmest weather, excess summer deaths, especially among the elderly. Warmer nights also limit opportunities for natural cooling of offices when unoccupied, thereby increasing daytime demand for cooling. Tower Hamlets is especially at risk due to its low levels of vegetation cover and proximity to the centre of the city, where the effect is strongest.

Tower Hamlets’ location on the Thames and its highly urbanised environment mean that the risks of flooding and overheating are greater in the Borough than for some other parts of London. The Council commissioned Capita Symonds to undertake a Strategic Flood Risk Assessment as part of the evidence base for the LDF, published in August 2008. In accordance with Defra guidelines\(^{25}\), this considered the possible effects of a 20% increase in river flows, as well as the results of tidal surges based on a mean sea level rise of 0.35m by 2052, assuming that the Thames Barrier remains in operation. The work also recommended sensitivity ranges for peak rainfall intensities as a result of climate change. Although the exact effects of climate change are uncertain, it is clear that there is an increased risk of fluvial flooding in the Lower Lea Valley (especially in South Bromley and Blackwall areas), and a significantly greater risk from tidal flooding across the entire Isle of Dogs including the route of the Docklands Light Railway and Aspen Way, as well as in Blackwall and near to Bartlett Park.

\(^{25}\) Defra FCDPAG3 Economic Appraisal Supplementary Note to Authorities – Climate Change Impacts, October 2006
Population and economic growth is occurring in London and Tower Hamlets, which is expected to continue over the next few decades. Tower Hamlets is particularly likely to receive new migrants if Climate Change leads to large areas of countries such as Bangladesh becoming uninhabitable, owing to rising sea levels, given the borough’s traditional links to South Asia and its willingness to accept new migrants. Even without additional inward migration Tower Hamlets is expected to deliver 31,500 new homes to 2017 and a further 100,000 new jobs during this period. Without action, this growth will lead to further rises in greenhouse gas emissions. Without intervention, London’s carbon emissions are predicted to rise by a further 15% by 2025, making it even more critical to take action now.

**Climate Change Adaptation**

Even if strong action was taken now to reduce carbon emissions, some degree of climate change as a result of the existing stock of greenhouse gases in the atmosphere is inevitable. It is expected that the current greenhouse gas concentration levels will result in a further half a degree rise in global mean temperature. This highlights the need to ensure we adapt to climate change as well as adopt mitigation measures. The LDF must help plan for this adaptation. For more detail on Climate Change Adaptation see Section xxxx.

**Economics of Climate Change**

The Stern Review on the Economics of Climate Change identifies that ignoring climate change will eventually damage economic growth and that ‘the benefits of strong, early action on Climate Change outweigh the costs’.

However, there will be substantial financial costs involved in addressing Climate Change now. It is estimated that the annual global cost of stabilising greenhouse gases in the atmosphere to a level that will prevent catastrophic climate change will be around 1 percent of Gross Domestic Product in 2050.

In comparison, the loss in GDP as a result of climate change could be in the range of 5-10 percent, with poorer countries suffering even greater losses. Economically, there is a strong case to act now and mitigate climate change.

Not only are there likely to be significant economic costs as a result of climate change, but there will also be major social and environmental costs, which will

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26 London Plan/IPG
27 IPG
28 London’s Climate Change Action Plan (2007); p.xi forecasts an increase from 41MtCO₂ to 55MtCO₂ by 2025.
29 Stern Review on the Economics of Climate Change, 2006. Latest reports suggest that this may well be an under-estimate, due to negative feedbacks (e.g. from decreasing albedo on former glaciers and the inability of the Amazon rain forest to cope with quite small temperature variations)
30 2006.
impact more heavily on the poor due to a greater proportion of their expenditure being on food and fuel, both of which are likely to increase in real cost.\textsuperscript{33}

Some of the significant financial costs, such as certain renewable energy technologies, will reduce over time as technologies improve and economies of scale take effect. Some measures (especially those involving better energy management, controls and insulation) have negative financial costs, with improvements paying for themselves over time in reduced energy bills.\textsuperscript{34}

With the huge range of existing priorities for investment in Tower Hamlets, the benefits and crucial nature of investing now in addressing Climate Change are an important consideration.

**Security of Energy Supply: Moving towards decentralisation**

Until the recent credit crunch, world-wide demand for energy has been increasing, and in the medium-term demand is predicted to continue to rise as the world’s population continues to grow and industrialisation spreads.

With a finite supply of fossil fuels, energy prices are likely to rise again after their recent falls. The UK is increasingly reliant on imported fuel supplies, some which come from less politically stable parts of the world.\textsuperscript{35} These issues raise significant concerns about the future security and affordability of energy supplies for the UK.

The Government’s strategy for addressing these issues is set out in the Energy White Paper (See section xxx below). Part of the Government’s strategy includes moving towards decentralised and renewable sources of energy. There is also a strong push from Mayor of London for the decentralisation of energy supplies.

The current approach of using energy from the National Grid is highly inefficient, wasting two thirds of primary energy input, largely in the form of waste heat through the cooling towers of large power plants. Losses are also made in the transmission of energy to the point of use. Decentralised systems either avoid waste heat generation or re-use it. They also generate energy closer to the point of use, reducing losses from transmission.

A range of technologies are suitable for use in decentralised energy systems including combined heat and power, solar thermal, waste to energy systems, wind turbines and photovoltaics. In comparison to the National Grid, with 35% efficiency, good quality CHP can have an efficiency of 80% or more.\textsuperscript{36}

**Fuel Poverty**

\textsuperscript{33} Energy White Paper 2007.
\textsuperscript{34} Stern Report
\textsuperscript{35} Energy White Paper 2007. In the past decade Britain has again become a net importer of gas and oil, and over 50% of its coal is imported, principally from open cast mines in low-cost countries.
\textsuperscript{36} .......
Fuel Poverty (where residents have to spend in excess of 10% of their disposable income in order to heat their home to an acceptable minimum standard) remains a problem in Tower Hamlets, despite vigorous interventions on public sector rental property. Fuel poverty tends to affect those in the worst performing homes (low energy efficiency), those on the lowest incomes (especially single parents on benefits and pensioners reliant solely on the state pension), the elderly (who may need to maintain a higher living room temperature for safety) and those in under-occupation (typically older people living alone in a former family home, although this final category is less common in Tower Hamlets).

Recognising that the worst cases of fuel poverty are often in older privately rented property, the Council's Private Housing Improvement Team (PHIT) has set up an advice and assessment service to:

- survey homes for potential energy improvements
- organise the work, via the landlord and helping tenants access grants
- check that tenants receive all the benefits they are entitled to
- check that residents are on an appropriate electricity and gas tariff
- provide residents with tailored energy advice, based on individual circumstances

Climate Change may exacerbate fuel poverty through:

- greater weather variability, not necessarily reducing heating demand
- potential need for cooling for vulnerable elderly residents in summer
- a general increase in poverty (which is one of the strongest factors in determining fuel poverty)
- higher fuel prices imposed in an attempt to limit overall energy use (and carbon emissions) or as a consequence of the need to move towards higher cost renewable energy sources.

The Council's work to combat Climate Change will be viewed in the context of ensuring that it does not inadvertently lead to an increase in fuel poverty, or make matters worse for those already suffering from fuel poverty,

### Legislative and Policy Context

#### International

**The United Nations Framework Convention on Climate Change (1994)**

The Convention recognises that the stability of the climate system can be affected by emissions of carbon dioxide and other greenhouse gases from industry and other sources. The Convention sets an overall framework for intergovernmental efforts to tackle climate change and the challenges it poses. The Convention promotes the gathering and sharing of information, the launch of national strategies to tackle greenhouse gas emissions, and cooperation in preparing to adapt to the impacts of climate change. The Convention came into force on 21 March 1994 and has been ratified by 192 countries.
Kyoto Protocol to the UN Framework Convention on Climate Change (1997)

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. Key objectives relevant to planning of sustainable communities are:

- Enhance energy efficiency in relevant sectors of the national economy.
- Promotion of sustainable forms of agriculture.
- Promotion of new renewable forms of energy, carbon dioxide sequestration technologies and innovative sound technologies.
- Measures to limit/reduce emissions of greenhouse gases in the transport sector.
- Limitation and/or reduction of methane emissions through waste management, as well as in the production, transport and distribution of energy.

A key feature of the Protocol is that it sets binding targets for 37 industrialised countries and the European community for reducing greenhouse gas (GHG) emissions.

### International Targets

Under the Kyoto Protocol, the United Kingdom has a legally binding commitment to reduce its greenhouse gas emissions. The UK has agreed to reduce greenhouse gas emissions by 12.5 per cent below base year levels (1990 for CO₂) over the period 2008-2012. The UK is currently on track to meet its commitment under the Protocol, although this is partly due to non-recurring factors such as a switch to gas-fired electricity generation in the 1990s, the reduction in the country's industrial base (as manufacturing plants shifted to Eastern Europe and East Asia) and large cuts in non-CO₂ emissions such as methane and N₂O.

The Kyoto Protocol entered into force on 16 February 2005 after Russia ratified the treaty. However it will be short-lived, with another agreement and targets will be drawn up for the post 2012 period. The ongoing review of local policy will need to take into account this revised agreement.

### The Second European Climate Change Programme

The main goal of the ECCP is to ensure that the EU meets its targets under the Kyoto Protocol. The first ECCP ran from 2000 to 2004. The second programme commenced in October 2005. A range of policies and measures fall under this programme, including –

- EU emissions trading scheme (Directive 2003/87/EC)

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37 [http://unfccc.int/kyoto_protocol/items/2830.php](http://unfccc.int/kyoto_protocol/items/2830.php): the main Conference aiming to do this will be in Copenhagen in December 2009
• Promotion of electricity produced from renewable energy sources (Directive 2001/77/EC)
• Promotion of cogeneration of heat and electricity (Directive 2004/8/EC)
• Biomass Action Plan
• Energy performance of buildings (Directive 2002/91/EC)
• Reductions of methane emissions from landfills (Landfill Directive 1999/31/EC)
• Support scheme for energy crops under the EU’s Common Agricultural Policy (Regulation 795/2004/EC)

National

UK Climate Change Programme 2006

This programme sets out the Government’s commitments at international and domestic levels to meet the challenge of climate change. It seeks to -
• Deliver emissions reductions of the six greenhouse gases, including going beyond the Kyoto Protocol targets, setting a target to reduce the 1990 greenhouse gas emissions levels by 20 per cent by 2010.
• Cut carbon dioxide emissions by 80 per cent by 2050\(^{38}\)
• Reduce emissions through collaborative action in business, residential, transport, domestic, energy supply, agriculture, forestry, land management and the public sector.

Planning Policy Statement 1 – Delivering Sustainable Development

Key Messages of PPS1 are:

• Make suitable land available for development in line with economic, social and environmental objectives to improve quality of life.
• Protect and where possible enhance the natural and historic environment, and existing successful communities.
• Ensure high quality development through good design.
• Ensure that development supports existing communities and contributes to the creation of safe, sustainable and liveable communities with good access to jobs and key services.

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

This PPS supplement states that all planning authorities should prepare and deliver spatial strategies that:

\(^{38}\) Was originally set at 60%, but increased to 80% by the Climate Change Act, 2008
• Make a full contribution to delivering the Government’s Climate Change Programme and energy policies, and in doing so contribute to global sustainability;
• In enabling the provision of new homes, jobs, services and infrastructure and shaping the places where people live and work, secure the highest viable standards of resource and energy efficiency and reduction in carbon emissions;
• Deliver patterns of urban growth that help secure the fullest possible use of sustainable transport for moving freight, public transport, cycling and walking; and, overall, reduce the need to travel, especially by car;
• Secure new development and shape places resilient to the effects of climate change in ways consistent with social cohesion and inclusion;
• Sustain biodiversity, and in doing so recognise that the distribution of habitats and species will be affected by climate change;
• Reflect the development needs and interests of communities and enable them to contribute effectively to tackling climate change; and
• Respond to the concerns of business and encourage competitiveness and technological innovation.

Also see Working Draft of Practice Guidance to support the Planning Policy Statement: Planning and Climate Change, prepared by ERM and Faber Maunsell, published by DCLG 17 December 2007.

Planning and Energy Act, 2008

This Act, introduced as a Private Members' Bill, has brought into legislation the ability of local authorities such as Tower Hamlets to establish local planning requirements through their LDF including "reasonable requirements for-

(a) a proportion of energy used in development in their area to be energy from renewable sources in the locality of the development;
(b) a proportion of energy used in development in their area to be low carbon energy from sources in the locality of the development;
(c) development in their area to comply with energy efficiency standards that exceed the energy requirements of building regulations.

Essentially, this places the so-called Merton Rule" onto a clear legal footing and removes one of the barriers towards locally set standards.

TO ADD - The Climate Change Act 2008


Planning Policy Statement 12: Local Spatial Planning

This PPS sets out the National spatial planning framework. This PPS embeds community responsive policy-making at its heart and makes contributing to the achievement of sustainable development a statutory objective.
This PPS identifies that Spatial Planning is a process of place shaping and delivery, which aims to:

- produce a vision for the future of places that responds to the local challenges and opportunities;
- translate this vision into a set of priorities, programmes, policies, and land allocations together with the public sector resources to deliver them;
- create a framework for private investment and regeneration that promotes economic, environmental and social well being for the area;
- coordinate and deliver the public sector components of this vision with other agencies and processes [eg LAAs];
- create a positive framework for action on climate change; and
- contribute to the achievement of Sustainable Development.

PPS 12 requires every local planning authority to produce a core strategy which includes:

- an overall vision which sets out how the area and the places within it should develop;
- strategic objectives for the area focusing on the key issues to be addressed;
- a delivery strategy for achieving these objectives.
- clear arrangements for managing and monitoring the delivery of the strategy.

The vision should be informed by an analysis of the characteristics of the area and the key issues and challenges it faces. The vision should be in general conformity with the Regional Spatial Strategy (or in the case of London – with the London Plan) and it should closely relate to any Sustainable Community Strategy for the area (Tower Hamlet’s Community Plan).


Key messages –

- Local Development Documents should contain policies designed to promote and encourage, rather than restrict, the development of renewable energy resources.
- planning authorities should set out the criteria that will be applied in assessing applications for planning permission for renewable energy projects.
- Planning policies that rule out or place constraints on the development of all, or specific types of, renewable energy technologies should not be included in Local Development Documents without sufficient reasoned justification.
- local planning authorities should not make assumptions about the technical and commercial feasibility of renewable energy projects (e.g. identifying generalised locations for development based on mean wind speeds). Technological change can mean that sites currently excluded as locations for particular types of renewable energy development may in future be suitable.
- Local planning authorities should foster community involvement in renewable energy projects and seek to promote knowledge of and greater acceptance
by the public of prospective renewable energy developments that are appropriately located.

Under the Town & Country Planning (General Permitted Development) (Amendment) Orders, 2008\(^{39}\), certain small-scale renewable energy installations (including photovoltaics – PV, solar water heating, ground and water source heat pumps and flues for biomass or CHP heating systems) were exempted from the need to obtain planning permission in most circumstances.

**PPS25: Development and Flood Risk**

- identifying land at risk and the degree of risk of flooding from river, sea and other sources in their areas;
- preparing Regional Flood Risk Appraisals (RFRAs) or Strategic Flood Risk Assessments (SFRAs) as appropriate, as freestanding assessments that contribute to the Sustainability Appraisal of their plans;
- framing policies for the location of development which avoid flood risk to people and property where possible, and manage any residual risk, taking account of the impacts of climate change;
- only permitting development in areas of flood risk when there are no reasonably available sites in areas of lower flood risk and benefits of the development outweigh the risks from flooding;
- safeguarding land from development that is required for current and future flood management eg conveyance and storage of flood water, and flood defences;
- reducing flood risk to and from new development through location, layout and design, incorporating sustainable drainage systems (SUDS);
- using opportunities offered by new development to reduce the causes and impacts of flooding eg surface water management plans; making the most of the benefits of green infrastructure for flood storage, conveyance and SUDS; re-creating functional floodplain; and setting back defences;
- working effectively with the Environment Agency, other operating authorities and other stakeholders to ensure that best use is made of their expertise and information so that plans are effective and decisions on planning applications can be delivered expeditiously; and
- ensuring spatial planning supports flood risk management policies and plans, River Basin Management Plans and emergency planning.


The White Paper outlines that we face two long-term energy challenges:
- tackling climate change by reducing carbon dioxide emissions both within the UK and abroad; and

\(^{39}\) Statutory Instrument Town & Country Planning (General Permitted Development) (Amendment) (England) Order 2008 No. 675 as amended by the No. 2 order.
ensuring secure, clean and affordable energy as we become increasingly dependent on imported fuel.

The White Paper sets out the Government’s framework for energy policy and puts climate change at its heart. Key Goals of the White Paper were –

1. To put the UK on a path to achieving a 60 (now 80) per cent reduction in CO₂ emissions relative to 2000, by 2050, with real progress by 2020.
2. To maintain the reliability of energy supplies by encouraging the development of low carbon electricity generation technologies and a market framework that encourages companies to invest in them, thereby helping to ensure a more diverse and secure electricity mix for the future.
3. To promote competitive markets in the UK and beyond.
4. To ensure that every home is adequately and affordably heated.

Many of the legislative aspects of the Energy White Paper, including the requirement for feed-in tariffs for small-scale renewables, the framework for storage of CO2 and the introduction of smart meters, were included in the Energy Act 2008. The 80 per cent target was enacted through a separate Climate Change Act, 2008, that also established the framework for national carbon budgets, reporting on climate impacts, carbon trading schemes and the Committee on Climate Change.

**Building a Greener Future: Policy Statement (July 2007)**

This policy statement sets out the Government’s strategy for delivering zero carbon homes by 2016 in the context of ensuring housing supply is increased. This statement confirms the Government’s commitment to tightening the Building Regulations in 2010, 2013 and 2016 to reach zero carbon. This statement sits alongside other policy documents, such as PPS1: Planning and Climate Change and the Code for Sustainable Homes.

After a consultation process in summer 2008, the Government appeared to have identified that it would not be possible to meet its aims of zero-carbon homes using the relatively narrow definition of using onsite (or on-development) renewable energy to meet residual energy demand after all energy efficiency measures have been made. In December 2008 it launched a further consultation seeking views on extending the approach to a formal hierarchy, including “allowable solutions".
Allowable Solutions

Developers will need to employ some combination of the following ‘allowable solutions’ in order to deal with the residual emissions remaining after taking account of the minimum carbon compliance standard set out in the preceding section:

- carbon compliance beyond the minimum standard (towards or all the way up to mitigating 100 per cent of regulated emissions plus emissions from cooking and appliances)
- a credit for any energy efficient appliances or advanced forms of building control system installed by the house builder that reduce the anticipated energy demand from appliances or reduce regulated emissions below the level assumed by SAP
- where, as a result of the development, low carbon or renewable heat (or cooling) is exported from the development itself, or from an installation that is connected to the development, to existing properties that were previously heated (or cooled) by fossil fuels, then credit will be given for the resulting carbon savings
- a credit for S106 Planning Obligations paid by the developer towards local LZC energy infrastructure
- retrofitting works undertaken by the developer to transform the energy efficiency of existing buildings in the vicinity of the development
- any investment by the developer in LZC energy infrastructure (limited to the UK and UK waters) where the benefits of ownership of that investment are passed to the purchaser of the home
- where offsite renewable electricity is connected to the development by a direct physical connection (and without prejudice to any regulatory restrictions on private wire), a credit for any carbon savings relative to grid electricity; and
- any other measures that Government might in future announce as being eligible.

Consultation for Amending Part L and Part E of the Building Regulations

ADD

National Targets

Carbon Emission Reduction Targets

The Government set an 80% reduction in CO₂ emissions by 2050 as the main national target in the Climate Change Act 2008. This went beyond earlier indications of a 60% target and was based on growing concern about the likely impacts of unchecked climate change. A series of five year carbon budgets were also mandated under the Act, with an interim target of a 26% cut in CO₂ emissions by 2020.

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40 Definition of Zero Carbon Homes and Non Domestic Buildings; DCLG, December 2008
41 Examples might include ‘smart’ systems which automatically adjust energy settings or turn off appliances if the home is unoccupied
42 SAP does not at present include any assumptions about appliances
43 Strictly speaking all the targets are expressed in CO2 equivalents, based on the basket of the six main greenhouse gases and the 80% cut relates to all GHGs expressed in carbon units.
This national target has to a considerable extent superseded earlier ones, including the commitment made in 1997, to go beyond the target established under the Kyoto Protocol by setting a national target to reduce carbon dioxide emissions by 20% below 1990 levels by 2010.

While the UK is on track to meet its Kyoto Protocol target, much more needs to be done to meet the more challenging domestic targets.44

Renewable and Sustainable Energy Targets

In 2006, 4% of the electricity generated in the UK came from renewable sources. The Government has set a target to meet 10 percent of the UK’s electricity demand from renewable energy by 2010. The Renewables Obligation is the key mechanism to help meet this target. The Government intends to increase this target to 20 percent of electricity demand by 2020.45

The Government also has a target of having at least 10GW_e of “good quality” combined heat and power capacity in the UK by 2010.46

There are a number of EU Directives that contain additional targets. These include the so-called 20:20:20 target adopted in December 2008 (cutting greenhouse gas emissions by 20% and meeting 20% of EU electricity demand from renewables, both by 2020); the renewables element for the UK will be set at 15% in recognition of the low baseline. The End Use and Energy Services Directive47 requires an improvement in energy efficiency of 9% by 2016 across all sectors, although even this lesser target is mired by issues surrounding its definition and measurement. Europe has also set targets on the minimum use of biofuels in the road transport sector.

Regional Policy

London Plan

The London Plan forms part of the Development Plan for Tower Hamlets, along with the Unitary Development Plan (which will be replaced by the LDF). Policy within the LDF must be in general conformity with policies in the London Plan.

The mitigation and adaptation to Climate Change is high on the policy priorities within the London Plan. Some of the key policy messages include -

- Development must make the fullest contribution to the mitigation of and adaptation to climate change, including minimising carbon dioxide emissions (Policy 4A.1)

44 http://www.defra.gov.uk/environment/climatechange/uk/progress/index.htm
45 Energy White Paper 2007
46 Energy White Paper 2003; confirmed in the CHP Strategy
• The Mayor will work towards the long-term reduction of carbon dioxide emissions by 60 per cent by 2050 (Policy 4A.2)

• Development applications will need to demonstrate that the following hierarchy has been used in the design of development –
  o using less energy (in particular by adopting sustainable design and construction measures)
  o supplying energy efficiently, in particular by prioritising decentralised energy generation
  o using renewable energy (Policy 4A.1)

• Ensure development meets the highest standards of sustainable design and construction, throughout the lifetime of development including demolition, construction and long-term management (4A.3)

• Boroughs should require an assessment of the energy demand and carbon dioxide emissions from proposed major developments (4A.4)

• Boroughs are required to identify and safeguard existing heating and cooling networks within their DPDs (4A.5)

• Boroughs should ensure that all new development is designed to connect to heating and cooling networks. (4A.5)

• Boroughs should work in partnership to identify and establish opportunities for heating and cooling networks and to maximise the potential for existing developments to connect to them. (4A.5)

• Boroughs should require development to achieve a reduction in carbon dioxide emissions of 20% from on site renewable energy generation (which can include sources of decentralised renewable energy) unless it can be demonstrated that such provision is not feasible. (4A.7)

• Boroughs in their DPDs should identify broad areas where the development of specific renewable energy technologies is appropriate. (4A.7)

• The Mayor will work in partnership to support and encourage the more widespread use of hydrogen as an alternative to fossil fuels (4A.8)

• Boroughs should strongly encourage development that avoids internal overheating and excessive heat generation. (4A.10)

• Boroughs should expect major developments to incorporate living roofs and walls where feasible and encourage their inclusion in smaller developments and extensions. (4A.11)

• Boroughs should undertake a Strategic Flood Risk assessment and manage flood risk in accordance with PPS25 (4A.12, 13 & 14)

• Boroughs should apply a maximum water use target of 105 litres per person per day for residential development (4A.16)

Green Light to Clean Power: the Mayor’s Energy Strategy, February 2004

The key aim of the Energy Strategy is to ‘minimise the effect of London’s energy production and use on health, and the local and global environment, improve social equity, and economic performance.’ In particular -

48 It is presumed that the Mayor will amend these targets in respect of the Climate Change Act target for an 80% reduction, in line with the Mayor’s Climate Change Action Plan which sets an interim target of 60% cuts by 2025.
to reduce London’s contribution to climate change by minimising emissions of carbon dioxide from all sectors (commercial, domestic, industrial and transport) through energy efficiency, combined heat and power, renewable energy and hydrogen;

to help eradicate fuel poverty, by giving Londoners, particularly the most vulnerable groups, access to affordable warmth; and

to contribute to London’s economy by increasing job opportunities, by innovation in delivering sustainable energy and by improving London’s housing and other building stock.

**Act Today to Protect Tomorrow: The Mayor’s Climate Change Action Plan, 2007**

This document established new, more ambitious targets for CO2 reductions than in the earlier energy strategy, although it did not formally replace the earlier document. It drew on ten years of experience since the signing of the Kyoto Agreement, and the increasing evidence base that urgent action was needed to set an cumulative target for emissions of 600 MtCO2 between 2007 and 2025, at which point it is intended that annual emissions will be 60% lower than today. This reduction, equivalent to an annual year on year cut in emissions of around 4%, is only likely to be met by concerted action at the Borough, GLA and national levels.

The Plan identifies target emissions by sector – domestic, commercial/public and ground based transport, as well as indicating what would need to be done in aviation. Among the key actions identified are:

- the Green Homes Programme, raising standards in existing dwellings;
- the Better Buildings Partnership and Green Badge Scheme for the non-domestic sector;
- necessary upgrades to the London Plan requirements for new developments;
- greater emphasis on energy efficiency through both the Mayor’s planning role and at borough level;
- demonstration zero-carbon developments, prior to being phased in nationally by 2016;
- decentralised energy generation (including on-site renewables, energy from waste without incineration and combined cooling heat and power - CCHP);
- changing the way that Londoners travel;
- operating vehicles more efficiently, including freight, taxis and public transport such as the tube;
- carbon pricing, through the congestion charge;
- action on the Mayoral group buildings and among GLA employees.

The new Mayor is currently reviewing both the Climate Change Action Plan and the earlier Energy Strategy, prior to creating a combined policy, probably in Autumn 2009. It is likely that most elements of the earlier plan will be retained, including the percentage target reductions, although there may be a reduction in the scope of the congestion charge.
London-wide Targets

The Mayor of London is committed to tackling climate change. The Mayor’s Energy Strategy\textsuperscript{49} set out five-yearly carbon emission reduction targets to ensure the capital reaches the Government’s earlier 60\% target for 2050.

These targets were also included in the London Plan 2008 (Consolidated with Alterations since 2004). However, more recent evidence, prepared in support of the Mayor’s Climate Change Action Plan\textsuperscript{50} warns that current targets are not stringent enough to prevent catastrophic climate change and as noted elsewhere, it is presumed that the new CCAP targets will replace the earlier energy strategy ones.

The Mayor’s new ambitious target for London, therefore, is to stabilise carbon dioxide emissions in 2025 at 60 per cent below 1990 levels, with steady progress towards this over the next 20 years. The Mayor’s Climate Change Action Plan makes the point that without international and national action, the measures outlined in the Climate Change Action Plan would only achieve a 30 per cent reduction in 2025, just half the London target of 60 per cent\textsuperscript{51}. Regulatory and fiscal change at the national level will be key in London meeting its 60 per cent target by 2025. So in effect the target in the London Plan of 30\% is what London alone could achieve and the target in CCAP of 60\% is what London plus national action could achieve.

The London Plan also sets out London-wide targets for the number and electricity output of different renewable energy technologies to be developed by 2010 and 2020. See Table 4A.1 of the London Plan for further details.

Lower Lea Valley Opportunity Area Planning Framework

The London Plan identifies the Lower Lea Valley as a key area for regeneration. The LLV OAPF sets out the vision and strategic planning guidance for this area. It is a material consideration in planning decisions, and are to be taken into account in the preparation of the LDF.

The OAPF sets out a range of development principles for the area. The OAPF sets high sustainability standards for new development in the area. In addition, the OAPF promotes environmental industries in the area, including local energy production, and giving support to the use of waste to energy processes in the area.

Draft City Fringe Opportunity Area Planning Framework

The London Plan identifies the City Fringe as an opportunity area. This draft OAPF sets out a sustainable development programme to be reflected in the Development Plans of the local authorities that contain the City Fringe (Tower Hamlets, City Corporation, Islington and Hackney).

\textsuperscript{49} 2004.
\textsuperscript{50} Action Today to Protect Tomorrow, The Mayor’s Climate Change Action Plan, 2007
\textsuperscript{51} \textit{ibid}, see pages xiii and xxx of the Executive Summary
The draft OAPF emphasises the importance of water efficiency and rainwater harvesting in the area. It seeks to assist with the application of London Plan sustainability policies by identifying development site clusters which provide opportunities for energy centres. In Tower Hamlets, these areas are Bishopsgate, Aldgate, News International and Whitechapel.

**Tower Hamlets Policy Context**

**Community Plan (Sustainable Community Strategy)**

The Council and the Local Strategic Partnership recently revised the Community Plan for Tower Hamlets, which now sets out a vision and priorities to 2020. This revised Plan was published in January 2009.\(^52\) Climate Change is noted as an emerging priority not captured by the earlier community plan. The Plan sets a target to reduce the level of CO\(_2\) emissions that are produced in the borough by 10\%, and emphasises how the wider community can help Tower Hamlets’ fight against climate change by reducing the amount of energy and water used in the home, cutting back on waste, and recycling wherever possible.

The Core Strategy and the Community Plan are required to be closely aligned. The Core Strategy should be a spatial representation of the Community Plan.\(^53\) The revised Community Plan has a three year carbon emission reduction target. The Council’s commitment to meeting this target is set out in its Local Area Agreement,\(^54\) which is updated every three years.

**Unitary Development Plan**

The Council’s Unitary Development Plan was adopted in 1998. Policy DEV2 is the key policy relevant to sustainability. It states that ‘all development should seek to incorporate the principle of sustainable development including use of energy efficient design and materials…’

**Interim Planning Guidance**

The Council adopted Interim Planning Guidance (IPG) in October 2007 for the purpose of development control. The following are key relevant IPG policies -

**CP3 Sustainable Environment** states that ‘the Council will proactively work to protect and enhance the quality of the environment, ensure the prudent use of natural resources, and contribute to tackling climate change.’

**DEV5 Sustainable Design** requires all major development to use best practice sustainable design measures, including maximising the use of natural systems by minimising energy use. Policy DEV 5 also requires development other than major

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\(^{52}\) The public version was released in January 2009

\(^{53}\) PPS12.

\(^{54}\) National Indicator NI186
development to demonstrate consideration of incorporating sustainable design measures.

**DEV6 Energy Efficiency and Renewable Energy** requires all planning applications will to include an assessment demonstrating how the development minimises energy demand and carbon dioxide emissions. It also requires major development to incorporate renewable energy production, to provide at least 10% of the predicted energy requirements on site. This policy also encourages the development of facilities that generate energy or produce renewable energy locally.

This 10% renewables requirement has now been superseded by the requirements of the London Plan 2008 (Consolidated with Alterations since 2004).

**Environmental Strategy**


The Council’s vision is to become a council with progressively lower environmental impacts and which sets an excellent example of leadership in environmental good practice to the community.

The key areas covered in the Strategy and Action Plan are -

- Transport
- Energy management
- Water management
- Waste management
- Procurement

**Tower Hamlets’ Targets**

The Council has committed to reducing carbon emissions across the Borough, as part of its latest Local Area Agreement (LAA) and as noted above has an interim target of 10% in its Community Plan. Tower Hamlets will also need to establish annual targets for National Indicator - NI 186 Per Capita reduction in carbon dioxide emissions. Levels of emission reductions are measured as a percentage against a baseline year, and are to be assessed annually across housing, road transport and business/public sectors. As there was a 15.5% increase in the reported per capita emissions figures for 2005 and 2006, the first two years’ data available from Defra, it is proving difficult to estimate any likely trend. A provisional target of a 2% cut has been set for 2008, but final data is unlikely to be available before mid 2009 (for 2007 emissions) and late 2009 for 2008. This figure should also be seen in the light of the Mayor’s 4% annual target in his Climate Change Action Plan, necessary to achieve a 60% reduction by 2025.

- **Council Operations**
The Council will also be monitoring National Indicator NI185 (CO₂ reduction from local authority operations) and reporting on this to the DCLG on an annual basis. This indicator includes all CO₂ emissions from all the authority’s own operations as well as those from outsourced services.

In order to help reduce carbon emissions from its own operations, the Council signed up to the Carbon Trust’s Local Authority Carbon Management programme, a 10 month programme which ran from May 2008. The programme culminated with the adoption of the Council’s Carbon Management Plan with the following ambitious targets adopted by Cabinet:

- 25% reduction by 2012 (on 2007 levels)
- 40% reduction by 2016 (on 2007 levels)
- 60% reduction by 2020 (on 2007 levels)

The Carbon Management Programme is now in its implementation phase. The Council will also be reporting on NI187 Fuel Poverty, although its targets are generally set around a minimum SAP⁵⁵ level for homes in the borough occupied by potentially vulnerable groups.

**Setting a Carbon Emission Reduction Target within the Core Strategy**

In order to contribute towards meeting London’s carbon emission reduction target, the Council should set a Borough-wide target to be met. This target must help implement National, regional and local targets that have been set.

The main target should be long-term, covering at least the lifetime of the plan (to 2025). Interim targets should also be included to assist with ensuring the Borough is on track to meet its main target, monitored and reported on annually through the Annual Monitoring Report.

In terms of setting Borough-wide carbon emission reduction targets, there are two key options –

1. **Adopt the London Plan target of 30% by 2025 (along with interim targets); or**
2. **Adopt the target in the Mayor’s Climate Change Action Plan of 60% by 2025.**

Evidence already indicates that the London Plan carbon emission reduction targets are inadequate to help London avoid contributing to catastrophic climate change. The Mayor’s Climate Change Action Plan sets a more ambitious target of a 60% reduction in carbon emissions by 2025. However, it has been acknowledged that the more ambitious target within the Mayor’s Climate Change Action Plan has not been through a suitable consultation process, and that the achievement of this target would require changes to National policy. National and regional carbon emission

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⁵⁵ Tower Hamlets is seeking to achieve a minimum SAP of 35 and a target SAP of 65, borough wide.
⁵⁶ Evidence to CCAP
targets are to be kept under review\textsuperscript{57} this approach also needs to be taken. Local target reviews should be informed by changes to National and regional targets, emerging scientific evidence and technological advances in order to determine necessary and deliverable carbon emission reductions in the Borough.

The more ambitious 60% target also fits well with the 60% target the Council has set itself in its own operations to achieve 5 years earlier, by 2020.

\begin{tabular}{|l|}
\hline
**Recommendation** –  \\
The Council should include a Borough-wide carbon emission reduction target of 60\% by 2025 (along with interim targets) within its Core Strategy. Future revisions of the Local Area Agreement should ensure NI186 targets help deliver this 60\% target. \\
\hline
\end{tabular}

\textsuperscript{57} Budget, EIP report/LP??
Developing and Delivering a Climate Change Mitigation and Adaptation Strategy within the Local Development Framework

In developing a strategy for reducing carbon emissions, the Council should recognise where there are opportunities for change (and hence make improvements to deliver carbon reductions), where the Council has the greatest ability to ensure these improvements happen, and where these improvements are going to have the biggest impact in terms of delivering carbon reduction.

Development and Regeneration Opportunities

There are significant opportunities for development and regeneration in Tower Hamlets, which are bringing high levels of investment to the Borough. These opportunities include -

- The 2012 Olympic and Paralympic Games
- Thames Gateway housing growth, and the Mayor of London’s housing targets
- Opportunity Areas and Areas for Regeneration identified in the London Plan
- Employment growth in Canary Wharf and City expansion
- Housing estate renewal, to deliver Decent Homes
- Building Schools for the Future programme
- Implementation of NHS Tower Hamlets Health and Well-Being Strategy
- Identified development sites

These development and regeneration opportunities should be regarded as key opportunities to deliver carbon emission reductions and new low and zero carbon development.

The Council’s Sphere of Influence

The Council’s influence over different types, and tenures of building stock and other carbon emitters in the Borough can be shown in the table below, which ranges from those which the Council has the greatest influence over, to those that it has no influence over.
Climate Change Mitigation: Reducing Carbon Emissions

In order to tackle Climate Change by reducing carbon emissions, there are a range of measures that the Council can adopt through its Core Strategy. Measures will need to address new and existing residential and non-residential development, transport and waste management. Some key policy options are set out below.

Options, rather than a final recommended strategy, have been set down below, as the community needs to be consulted on these options, and they need to be assessed through a Sustainability Appraisal, before a strategy for reducing carbon emissions in the LDF Core Strategy can be finalised.

In relation to transport and waste management, the Council is preparing other strategies and research to inform the LDF policies on these topics. This report will succinctly cover some of the key waste transport and waste management options to minimise carbon emissions from these sectors.
Some options will require higher levels of intervention and involvement from the Council than others. Note that the options below are not necessarily mutually exclusive. In some cases, multiple options could be implemented together. For example, a ‘low carbon’ area for new development could also be an area to target the retrofit of existing buildings to improve their energy efficiency.

It should also be noted that PPS12: Local Spatial Planning seeks to ensure that LDFs do not repeat National and Regional policy and guidance; however, LDFs can interpret, or tailor, National and Regional policy to meet the needs of the local area. The sections below seek to identify cases where it is appropriate to apply existing, higher level policy, and where it will be appropriate to tailor policy to deliver the best outcomes in Tower Hamlets.

**New Development**

As identified in Section xxx, buildings and their need for energy result in a significant proportion of carbon emissions. Therefore, a key element of any strategy for reducing carbon emissions should be minimising the need for energy through the appropriate location, orientation and design of new development.

**Location**

New development should be directed to areas close to jobs, shops and services to reduce the need to travel. Major developments must also be located in areas with good access to public transport to ensure travel that is undertaken can be done via public transport. National and regional planning policy requires such an approach to be undertaken within the Local Development Framework, and should therefore underpin the spatial policies within Tower Hamlets’ Core Strategy and Site Allocations Development Plan Documents.

**Recommendation:**

When identifying appropriate development densities and broad locations for different uses in the Core Strategy, or development sites and appropriate uses as part of any Site Allocations Development Plan Document, the Council needs to consider site/area Public Transport Accessibility Levels (PTALs), and the accessibility of services and town centres.

**Design through to Demolition**

Tower Hamlets is set to experience significant growth, development and regeneration over the next 15 years and beyond, which will include new

58 See PPS1 and the London Plan.
homes, employment space and new community facilities. If not managed carefully, this growth could greatly add to the carbon emissions already produced by the Borough.

Improving the design of buildings can significantly reduce the energy required to comfortably run them throughout the year, and hence will ensure cost savings on energy bills.

All development in Tower Hamlets happens on brownfield land, and so often involves the demolition of existing buildings. Careful planning and management is required to seek opportunities for the reuse of materials and for the sustainable sourcing of building materials to minimise the indirect greenhouse gas emissions caused by development.

Consideration must also be given to the retention and reuse of existing buildings, wherever practicable. The Mayor’s Supplementary Planning Guidance on Sustainable Design and Construction provides further guidance on the reuse of buildings and the sustainability standards they should meet in order to be considered for reuse (e.g. they optimise site density and have the potential to be improved to meet the standards set out in the SPG).

Recommendation:
Whilst specific building design requirements would be too detailed for inclusion in the LDF Core Strategy, it should include a policy requiring the design, construction (including building materials), ongoing management and demolition of buildings to minimise the carbon footprint of development.

The LDF should also seek the retention of reuse of existing buildings, wherever practicable.

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Zero Carbon Development

As set out in the Government’s policy statement Building a Greener Future, the Government is committed to delivering zero carbon development by 2016.

See new definition just announced on Zero Carbon:
http://www.sustainablehomes.co.uk/news_detail.aspx?nid=074f0802-afe7-4caf-b09e-740925e47cef&dm_i=8T3,1OW9,WE1YX,5DYG,1

A Zero Carbon development is one that achieves zero net carbon emissions from energy use on site, on an annual basis. This includes the energy consumed in the operation of the space heating/cooling and hot-water systems, ventilation, all internal lighting, cooking and all electrical appliances. Heating (or cooling) imported from off-site sources and electricity where

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connected by private wire may be counted as zero or low carbon if it has been generated from zero or low carbon sources

Refer to the London Energy Partnership’s Towards Zero Carbon Developments: Supportive Information for Boroughs. In relation to zero carbon homes, a more detailed definition can be found in the Code for Sustainable Homes Technical Guide.

It should be emphasised that every new building in Tower Hamlets that is not zero carbon will contribute to the growing concentration of carbon emissions in the atmosphere.

The Mayor of London’s Sustainable Design and Construction Supplementary Planning Guidance identifies ‘zero carbon’ as the Mayor’s preferred standard for energy. This SPG will be revised to reflect the revised London Plan and to provide further guidance to developers.

The Council should identify its approach for delivering low and zero carbon development through its Core Strategy. The following are broad spatial options for the delivery of zero carbon development. Further options for the delivery of zero carbon residential and non-residential development are identified in the following sections.

**Option 1. Identify areas (including through site allocations) within the Borough to deliver zero carbon development**

As the Government has a target of delivering zero carbon by 2016, and the Core Strategy will have a 15 year lifetime, the Council must seek to incorporate the delivery of zero carbon within the Core Strategy. Whilst there are currently many financial and technological barriers to achieving zero carbon, it may be possible to identify some areas in the Borough for zero carbon, particularly those areas that are unlikely to come forward for development within the next 5-8 years. Delivering all new development in the Borough as zero carbon development is unlikely to be a viable option.

However, as it is difficult to determine the development aspirations of all development site owners, this approach could potentially blight a site which would have otherwise come forward earlier for development, leaving it undeveloped until technology costs have reduced and it becomes financially viable to deliver zero carbon development on the site.

Through the London Plan, the Mayor is seeking each Borough to identify a site for zero-carbon development within their Development Plan Documents.

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60 July 2006.
61 DCLG April 2008.
62 Unless, of course, it replaces a demolished building with higher emissions. However it still represents a missed opportunity to deliver high quality, sustainable development.
63 London Plan, para 4.16.
The Council could ensure this site (or one of them if there are several) is a zero carbon demonstration project, enabling public access to part of it for educational and awareness raising purposes. The Council should consider using its own property estate to help deliver such a project.

As tackling climate change through carbon emission reductions should be central to the Local Development Framework, it may be appropriate to identify low or zero carbon areas within the Core Strategy and consider identifying specific sites to deliver zero carbon development in the site allocations DPD.

The Code for Sustainable Homes recognises that combined heat and power (CHP) can be a low carbon technology and gives credit for its installation. Additional credits can be gained if a scheme uses biomass CHP. The Energy Saving Trust has published energy efficiency guidance demonstrating ways of achieving various levels of the Code, including a gas CHP solution that can meet levels 5 and 6. Pure district heating, where there is no cogeneration, unless fuelled by biomass generally fares less well under the code.

CHP v CSH

Option 2. Identify areas (including allocating sites) within the Borough to deliver new low carbon development

In this context, ‘low carbon development’ refers to development that achieves a reduction in carbon emissions of 50% or more from energy use on site, on an annual basis, compared to the requirements of Part L of the Building Regulations 2006.

Achieving zero carbon is currently technically possible, but very expensive to achieve. It may be appropriate to seek low carbon development, and put into place actions in the future to make these areas zero carbon when technologies are further advanced and less expensive.

This approach could include, for example, meeting Code for Sustainable Homes level 4 with gas-fired CHP, with a view to converting the CHP to renewable energy when appropriate technology is available. Development would need to be ‘future-proofed’ i.e. designed to be able to connect to larger district heating networks in the future to enable them to achieve greater carbon emission reductions or zero carbon status in the future.

Options to encourage or secure the future replacement of energy supplies with sustainable sources should be explored, e.g. the use of legal agreements to commit the feasibility of replacement to be explored on a regular basis.

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64 EST Best Practice guides CE290 to CE292, May 2008
65 Note: the 50% reduction definition was developed prior to the adoption of Part L of the Building Regulations 2006, which achieve between a 20% and 28% carbon reduction compared to the requirements under the Building Regulations 2002. The London Energy Partnership recommended that the definition of ‘Low Carbon’ be revised in light of the tightened Building Regulations; however, this has not been carried out. The Council will assume ‘Low Carbon’ still refers to a 50% reduction on current standards.
**Recommendation**

The use of Site allocations, and whether or not they are appropriate to use for achieving carbon emission reductions/delivering zero carbon development, should be discussed with the DCLG/GOL.

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**Delivering Zero Carbon Residential Development**

The Government is committed to ensuring all new homes are zero carbon by 2016. As identified in Section xx above, the domestic sector is responsible for a significant proportion of carbon emissions in London. Whilst carbon emissions from the domestic sector do not form as significant a proportion of the Borough’s total emissions as they do for London as a whole, there is significant residential growth expected in Tower Hamlets with an annual target of delivering 3,100 new homes in the Borough. This presents a major challenge and an opportunity to minimise emissions from this new development.

In order to deliver zero carbon homes by 2016, the Government has announced that the energy efficiency requirements for dwellings will be progressively tightened to deliver zero carbon standards by 2016. Reaching zero carbon will require measures such as better insulation, and connecting to decentralised and renewable sources of energy.

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**Code for Sustainable Homes**

The Government has prepared the Code for Sustainable Homes, which will be a key tool in the design, assessment and delivery of zero carbon homes. The Code addresses a range of sustainability issues, not just carbon emissions.

The Code for Sustainable Homes is a new national standard for sustainable design and construction of new homes. The Code can be used to rate new homes against nine areas of sustainability, one of which is energy efficiency. A rating of between Level 1 and 6 can be awarded under the Code. Each Code level includes minimum water and energy efficiency levels. The energy efficiency requirements for meeting Code Levels 3 – 6 are as follows:

- **Code Level 3** = 25% carbon improvement as compared to Part L of the Building Regulations 2006
- **Code Level 4** = 44% carbon improvement as compared to Part L of the Building Regulations 2006

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66 London Plan 2008. This target will be reviewed to reflect a new target to 2025 in the emerging London Plan review.
**Code Level 5**  =  100% carbon improvement as compared to Part L of the Building Regulations 2006

**Code Level 6**  =  Zero Carbon (i.e. 100% carbon improvement on regulated energy + no net emissions from occupancy energy use)


From 1 May 2008, the rating of new homes against this Code became mandatory; however, it will not be mandatory to comply with any particular level within the Code.

There are other assessment tools for measuring sustainability and carbon emissions from new development; however, the Code for Sustainable Homes is widely supported. It was prepared by the Government with the clear aim of helping to deliver ‘zero carbon’ development by 2016.

*Note: PPS: Planning and Climate Change – Supplement to PPS1 identifies that it is acceptable to adopt particular elements of the Code for Sustainable Homes, e.g. the energy efficiency requirements.*

ADD changes to the building regs

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**Options for Delivering Zero Carbon Residential Development**

**Option 1. Rely on the progressive tightening of the Building Regulations to deliver carbon reductions in new homes**

The energy efficiency requirements for new homes within Part L (Conservation of Fuel and Power) of the Building Regulations are proposed to be progressively tightened, towards ‘Zero Carbon’ by 2016. The Government’s commitment to this progressive improvement of the Building Regulations is set out in *Climate Change: The UK Programme 2006*. The timetable is as follows –

<table>
<thead>
<tr>
<th>Year</th>
<th>% carbon improvement as compared to Part L of the Building Regulations 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>25%</td>
</tr>
<tr>
<td>2013</td>
<td>44%</td>
</tr>
<tr>
<td>2016</td>
<td>Zero Carbon</td>
</tr>
</tbody>
</table>

Therefore, by not requiring any additional measures above and beyond the Building Regulations, carbon emission savings will still be made.
ADD current consultation on building regs

One of the benefits of having a nation-wide timetable for delivery is to give more certainty to the development industry and give them the confidence to invest in supply chains.67

However, expected energy savings as a result of progressively tightening the Building Regulations will only deliver one sixth of the necessary domestic savings expected by the Government in its Building a Greener Future document.68 In the short term, this option would also conflict with London Plan energy policies, which uses Part L of the current Building Regulations as the minimum benchmark before applying the Mayor’s energy hierarchy (use less energy, supply energy efficiently, use renewable energy). The first step in the hierarchy requires the use of sustainable design and construction measures to be used to reduce the energy demand of development.

Option 2. Include the Government’s timetable for delivering zero carbon homes within the Core Strategy

This option is aimed at delivering the same outcome as Option 1, but provides more certainty about its delivery on the local level. Whilst the Government is committed to tightening the Building Regulations, this may get delayed for various reasons. Including the Government’s timetable within the LDF Core Strategy will provide a clear statement about the Council’s position and greater certainty for developers.

The Government encourages local authorities to support the Government’s timetable through the planning system, but that the standards should be set through the Building Regulations.69

Therefore, if this option is to be chosen, the dates and carbon performance requirements of dwellings should be included in the Core Strategy, but the detailed standards should not form part of the LDF.

Again, this option would conflict with the energy policies within the London Plan.

Option 3. Set Borough-wide standards for residential development above and beyond the requirements of the Building Regulations

Option 4. Identify areas in the Borough within which residential development must achieve standards above and beyond the requirements of the Building Regulations

The Government does not support local authorities setting their own ad hoc timetables for delivering zero carbon homes. However, the Government is supportive of local authorities seeking to drive the delivery of zero carbon homes further and faster where the local authority can demonstrate that there are clear local opportunities to use renewable or low carbon energy, including through decentralised systems.

The Council commissioned a study with the aim of identifying such opportunities. The study identifies that there are significant opportunities for low carbon and renewable energy in the Borough, including a series of decentralised heat and power networks. Considering that these opportunities tend to be clustered together, it would be more appropriate to take an area based approach (Option 4) and not a Borough-wide approach (Option 3).

The Government already requires all new social housing built by Registered Social Landlords and all new homes developed by English Partnerships (now HCA) to comply with level 3 of the Code for Sustainable Homes. Code for Sustainable Homes Level 4 is achievable now, albeit with an additional cost per unit constructed, and will be required for all developments in the Olympic Village. With the level of residential development anticipated in Tower Hamlets over the next 5 years, it presents an opportunity to ensure this new development achieves high levels of energy efficiency. In bringing forward the date for reaching Code Level 4, impacts on development viability must be taken into account.

In London, applying the first step of the Mayor’s energy hierarchy currently achieves savings between 20-44% improvement on the Building Regulations, and so the equivalent of Code for Sustainable Homes levels 3 and 4 are proving to be feasible and financially viable. As the London Plan policies are already achieving significant energy efficiency improvements, this raises the question about whether or not it is necessary for the Council set standards by reference to the Code for Sustainable Homes, as the London Plan forms part of the development plan for the Borough.

The delivery of zero carbon homes should not jeopardise the Government’s other commitment of delivering more affordable housing, although the Homes & Communities Agency is working to ensure that this should not be an issue. Considering this position, it would not be appropriate to propose bringing forward the date for achieving Code Level 5 or 6 earlier than timetabled, at a Borough-wide level. At the moment, significant costs would generally be incurred to go beyond Code Level 4. There may be opportunities

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72 LUC/NEF
73 Energy White Paper, pg 12; English Partnerships is now part of the Homes & Communities Agency
74 A Cost Review of the Code for Sustainable Homes: Report for English Partnerships and the Housing Corporation by Cyril Sweett, February 2007, estimates costs ranging from £1,600 to £6,000 per dwelling. High rise homes are likely to cost more than single family homes.
75 From discussions with GLA officers.
76 Building a Greener Future: Policy Statement
to deliver some Code Level 5 or 6 compliant development in parts of the Borough; however, further work would need to be done to explore these opportunities and determine whether or not they are viable.

This position should be kept under review as technologies improve, and costs decrease, making the move towards zero carbon development more viable.

**Recommendations:**
Further work should be undertaken to work out appropriate areas for achieving standards above and beyond the Building Regulations, and to identify appropriate standards for these areas. This work would include viability calculations and development industry consultation.

**Option 5. Adopt a higher Code for Sustainable Homes level (or energy efficiency equivalent) for Major residential development than for minor residential development**

Economies of scale enable the cost of delivering carbon emission reductions less expensive on a per unit basis for larger developments than for smaller developments, making it more appropriate to seek higher standards of energy efficiency for major development.

**Recommendations:**
Adopt the Code for Sustainable Homes within the LDF as a tool for the delivery of zero carbon homes.

The LDF should require all development to meet a minimum standard of Code Level 3 and seek Code Level 4 for major development.

**New Non-Domestic Development**

Whilst the Government has prioritised tackling emissions from the domestic sector, in Tower Hamlets around 70% of carbon emissions come from the commercial, public and industrial sectors. Therefore, tackling carbon emissions in the non-domestic sector will need to form a key part of a climate change mitigation strategy for Tower Hamlets.

Over the last 25 years, the energy consumption in commercial and public sector buildings has risen dramatically, in particular in modern offices and retail outlets. In contrast to the residential sector, modern office and retail buildings tend to consume more energy per square metre than older buildings, largely due to the increased use of air-conditioning. This indicates that it is

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78 Defra NAEI data, 2006 – see also pie chart above
79 ??? London CCAP ?? 2.26
80 ??? London CCAP ?? 2.26
critical to make sure new office and retail development meets high standards of energy efficiency.

The Government is currently developing policy on its preferred approach for delivering zero carbon development in the non-domestic sector. The Government commissioned the UK Green Buildings Council to undertake research and make recommendations for an approach.

The research findings suggest that it would be appropriate and viable to take a graduated approach to reaching zero carbon, as opposed to seeking this standard now.\(^8^1\)

Key findings of this research are –
• It is possible to reduce carbon emissions to zero in the majority of new non-domestic buildings, as long as on-site, near-site and off-site renewable energy sources are used;
• Costs for reaching zero carbon range significantly depending on building form and use, and could range from 5-30% above baseline build costs;
• An achievable timeframe of reaching zero carbon for new non-domestic buildings by 2020 could be adopted (including a target of reaching zero regulated emissions by 2016).

One of the key issues with seeking to deliver zero carbon non-domestic development is reaching zero carbon non-regulated emissions (i.e. those from processes and equipment used in the building), in particular if on-site or near-site renewable technologies must be used (as is the case with complying with the London Plan), as opposed to off-site renewables linked to the National Grid.

**Options for Reducing Carbon Emissions in the Non-domestic sector**

**Option 1. Business as usual – apply the Building Regulations until the Government sets its policy position on achieving carbon reductions in the non-domestic sector.**

Similar to its approach in the domestic sector, the Government is likely to set a timetable for the progressive tightening of the Building Regulations towards zero carbon, so by applying the Building Regulations, this will gradually result in more energy efficient new buildings. However, as in the domestic situation, the GLA consider that this option conflicts with the London Plan energy policies, as these require developments to reduce emissions beyond current Building Regulations. This will be increasingly less of an issue as Building Regulations become more stringent in line with Code Levels.

It is possible that the Government’s timetable for delivering zero-carbon non-domestic development will be finalised before the Council’s LDF is adopted. However, there is no guarantee that this timetable will be introduced, nor what the recommended timetable will be, as there appears to be a renewed concern within DCLG about defining standards that cannot readily be met, although an indicative date of 2019 has been set for zero carbon properties.

Option 2. Introduce a timetable for reaching zero carbon non-domestic new development.

This timetable could be based on the research undertaken by the UK Green Buildings Council. Further consultation with the DCLG will be required to determine an appropriate timetable for Tower Hamlets.

As noted above, the 2008 Budget indicated an ambition that all new non-domestic buildings should be zero carbon from 2019 (with new public sector buildings meeting this target from 2018, and all new schools zero carbon from 2016). The Government is setting up a taskforce to advise on how to achieve zero carbon schools, whether the timescale is realistic, and how to reduce carbon emissions in the intervening period. There are key barriers that will have to be overcome to deliver these targets, and there may be areas where achieving zero carbon presents particular challenges, including those in sectors such as hospitals, prisons and defence establishments.

Including a timetable and standards in the LDF for the delivery of zero will help make a strong statement about the importance of achieving non-domestic sector carbon savings in Tower Hamlets.

Option 3. Lead by example and set the energy efficiency standards for public sector buildings higher than for the private sector.

With the anticipated population growth to be experienced in Tower Hamlets over the next 15 years and beyond, new schools, healthcare and other community facilities will be built to support the growing community. This presents an opportunity to deliver high quality low or zero carbon buildings. Ensuring new facilities are energy efficient will help reduce the Council’s energy bills. There is a push from the GLA for the public sector to lead by example.82

If the Council is to expect the private sector to go above and beyond the current Building Regulation requirements, the Council should lead by example and commit to meeting higher standards, and setting this requirement through the LDF.

Setting higher standards for new public sector buildings could extend beyond those owned by the Council, and include other public sector organisations.

82 ……..
Further Work:
Consult with public sector organisations in the Borough to identify non-domestic development they are planning in the Borough over the next 15 years and beyond, and in particular over the next five years. Organisations may include –

- National Health Service and Primary Care Trust
- Fire Service
- Metropolitan Police
- GLA group operations (incl. TFL)
- Queen Mary University of London
- London Metropolitan University

Option 4. Take an area based approach, and identify areas within which new development must achieve higher levels of carbon reductions than for the rest of the Borough.

To enable this option to deliver significant carbon savings would require identifying areas that are likely to experience high levels of non-domestic development in the future. Such areas would include Canary Wharf, Aldgate, Bishopsgate, which are still expanding as centres of employment.

The Canary Wharf Group is currently aiming to deliver BREEAM Excellent rating on all new development, and one building currently being built on the estate is going beyond the minimum required by this standard.\(^{83}\)

In applying an area-based approach, the Council would have to be careful not to cause the development of employment space too expensive to deliver in some areas, or the high costs of development being passed on to Small and Medium Enterprise (SME) occupants.

Recommendations –

Note, the Council must its policy in relation to new non-domestic development when the Government adopts its position.

The options listed above are not mutually exclusive, so that (for example) one of options 1 or 2 could be applied at the same time as either or both of options 3 and 4.

Existing Residential Building Stock

If Tower Hamlets is to reduce its carbon emissions, significant improvements must be made to the existing residential building stock. The average household could save at least 0.5 tonnes of carbon emissions a year, and

\(^{83}\) 15 Canada Square
lower their energy bills by becoming more energy efficient. The Climate Change Action Plan estimates that implementing the Mayor's home energy efficiency programme would save the average London household £300 per year.

In developing a strategy for improving the existing residential stock, consideration must be given to the current energy efficiency of the stock, the degree to which the Council, in partnership with others, can influence the improvement of this stock, and the potential for opportunities to enable their improvement.

Generally, the older a building is, the less energy efficient it is. The Council has greatest influence over its own stock and that is being transferred from Council ownership to a Registered Social Landlord.

Currently, the greatest opportunity to improve the efficiency of existing stock is through the Government’s Decent Homes programme, whereby the Government expects 95% of all social housing (owned by the Council, Housing Associations and Registered Social Landlords) to meet Decent Homes standards by 2010, with the remainder of stock required to meet these standards soon afterwards. A Decent Home is one which is warm, weatherproof and has reasonably modern facilities. The Decent Homes standard was designed, in part, to tackle fuel poverty.

**Fuel poverty** occurs when a household needs to spend 10% or more of its disposable income on heating. This occurs when the home is hard to heat due to energy inefficiency and/or is under occupied. Low income is also a contributing factor.

To illustrate this point the average UK household spends 3.3% of income on energy whilst the poorest households spend 7% on average.87

Fuel poverty is a big issue in Tower Hamlets, where many households are on low incomes and living in hard to heat homes. Fuel poverty disproportionately affects those in social housing. High fuel costs can result in occupants under-heating their homes, which carries many risks, the greatest being to the health of the occupants.

The Government is also seeking to ensure private sector dwellings that house vulnerable households also meet the Decent Homes standard. Ensuring this happens in the private rental sector may be difficult to achieve, as there is little

84 Energy White Paper
85 ………
86 For further details on the definition of Decent Homes, see DCLG, A Decent Home: Definition and guidance for implementation, June 2006.
87 Tower Hamlets Website: www.towerhamlets.gov.uk
89 The DCLG defines a vulnerable household as one in receipt of a disability-related or means-tested benefit.
incentive for either the occupiers or the owners to make improvements to these properties.

One of the requirements for meeting the Government’s Decent Homes standard is to provide ‘a reasonable degree of thermal comfort’ for occupants. Reasonable Thermal comfort is defined as ‘both efficient heating and effective insulation’. Generally, it would be considered that a home with a Standard Assessment Procedure (SAP) rating\(^90\) of 35 would meet the Thermal Comfort requirement. However, there is evidence that a SAP rating of this level would not be adequate in some cases to combat fuel poverty.\(^91\) The Mayor wants there to be no occupied dwelling in London with a SAP rating of less than 30 by 2010, and less than 40 by 2016.\(^92\) The current London average SAP rating is 53.\(^93\) If we are to combat fuel poverty in Tower Hamlets, there is evidence to suggest that we must go beyond national and regional standards.

The Government recommends that landlords take the opportunity to go over and above the Decent Homes Standard when carrying out work. For example by installing extra insulation, fitting double glazing, replacing old boilers with new condensing ones, and by considering using low carbon, renewable or other innovative technologies.\(^94\) Landlords can seek funding for works from energy suppliers via the Energy Efficiency Commitment (EEC) programme. Funding for private sector improvements can be sought through the Warm Front programme.

The Mayor of London is supporting the adoption of a standard to replace the Decent Homes standard in 2010, which will set a higher benchmark in terms of environmental performance for the existing building stock.\(^95\) The Mayor supports the use of the EcohomesXB standard for minor refurbishments and Ecohomes for larger refurbishments.\(^96\) Ecohomes covers a range of sustainability issues, including management, energy, water, pollution, transport, land use and ecology, and health and well-being.

Not only will improving the existing stock be important for reducing carbon emissions, but it will also be crucial for addressing fuel poverty issues.

Whilst London is set to continue experiencing high levels of new residential development over the coming decade and beyond, it is estimated that 80% of

\(^90\) A SAP rating is a government-specified energy rating for a dwelling. It is based on the calculated annual energy cost for space and water heating. The calculation assumes a standard occupancy pattern, derived from the measured floor area so that the size of the dwelling does not strongly affect the result, which is expressed on a 1-100 scale. The higher the number the better the standard.

\(^91\) NEA, Policy Briefing: Decent Homes Standard, February 2008.

\(^92\) Draft Mayor’s Housing Strategy, September 2007.

\(^93\) Draft Mayor’s Housing Strategy, September 2007.

\(^94\) DCLG website.

\(^95\) Draft Mayor’s Housing Strategy, September 2007.

\(^96\) Draft Mayor’s Housing Strategy, September 2007.
the residential stock that will exist in 2026 already exists today. There is clearly a need to tackle carbon emissions in the existing residential building stock, particularly as this older stock tends to be less energy efficient.

London Plan policy 4B.4 London’s buildings: retrofitting seeks boroughs to support policies and programmes for refurbishment of buildings which will reduce carbon dioxide emissions, increase thermal efficiency, reduce waste and noise impacts, conserve water, materials and other resources.

Options for Improving the Energy Efficiency of Existing Residential Building Stock

Option 1. Meet the Decent Homes standard for all social housing, and where possible, exceed this standard to maximise energy efficiency.

Option 2. Set an energy efficiency standard, which must be met alongside the Decent Homes standard by all social housing stock.

Option 3. Identify the Ocean Estate as an area to deliver exemplar standards of energy efficiency, as part of the renewal of this estate.

Option 2 would enable greater carbon emission reductions and improved thermal comfort for occupants; however, there are significant costs involved in bringing homes up to Decent Homes standards. These improvements often have to be funded through the development and sale of new dwellings on estates, and so setting any additional standards must not result in making the overall regeneration of estates unviable.

The Ocean Estate in Stepney is owned by the Council and managed by Tower Hamlets Homes (the Council’s Arms Length Management Organisation). This estate includes over 50 residential blocks and is in need of regeneration. The regeneration of this estate is currently at the master planning stage. Some housing blocks will be redeveloped and the majority will be refurbished. The site is likely to have a CHP system. There may be an opportunity to refurbish stock to a greater standard than Decent Homes to maximise energy efficiency. However, the estate requires a range of improvements. Detailed financial costings will be required.

Recommendations:
In order to determine an appropriate energy efficiency standard to complement the Decent Homes standard, detailed costings of improvements should be undertaken to identify the most cost-efficient improvements. This standard should be incorporated into the LDF (though not necessarily the

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97 Based on London Plan targets, housing figures in the 2001 Census and demolition rates (London Plan/LEP Carbon Scenarios)
98 ??
Core Strategy) and the Council’s Housing Strategy. The Core Strategy should set the general principle of maximising energy efficiency of refurbished housing stock.

**Option 4. Establish targets and actions for the improvement of energy efficiency standards throughout the entire private housing sector.**

The difficulty of setting and meeting targets for delivering improvements to privately owned housing stock is that the Council has no control over ensuring these improvements take place.

The Council already promotes the refurbishment of privately owned housing stock and offers advice about grants available to help fund improvements. The Council could potentially work more proactively to promote improvements, including highlighting the financial benefits for residents. In particular, it should seek to work with the new Energy Saving Trust Advice Centre London (which has replaced the East London Energy Efficiency Advice Centre), with the GLA in support if its initiatives such as the Green Homes Programme and Green Concierge Service, and with third parties including local community groups and technical providers such as T-Zero.

It may be more difficult to encourage owners of privately rented housing stock to make improvements. It could be beneficial to actively target these landlords, and/or building stock types that have poorer energy efficiency; however, it may be more appropriate to direct staff time and resources into projects that have a greater certainty of delivering carbon savings.

**Existing Non-Domestic Building Stock**

As noted earlier, Tower Hamlets has the second highest level of CO₂ emissions from non-domestic properties of any London borough, with over two thirds of the borough's emissions (1,666ktCO₂ in 2006) arising in this sector. Existing non-domestic building stock has a slow rate of replacement, and therefore the refurbishment of this stock must be tackled if Government targets for carbon reductions are to be met by 2050.99

Businesses in the UK typically waste between 10-20% of the energy that they buy through poor control of heating, air conditioning and ventilation and as result of leaving on lights and appliances when they are not in use.100

**Carbon Reduction Commitment Scheme**

The Government set out its proposal to implement the Carbon Reduction Commitment scheme in the Energy White Paper 2007. This scheme will commence in January 2010 and will apply mandatory emissions trading to cut

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100 Energy White Paper, page 50.
carbon emissions from large commercial and public sector organisations. It will provide incentives for organisations to save money through energy efficiency. It will apply to organisations whose annual half-hourly metered electricity use is above 6,000MWh. As a guide, organisations that spend £500,000 a year or more on electricity are likely to be included. This will include organisations such as supermarket chains, hotel chains, office-based corporations, government departments and large local authorities.\textsuperscript{101} In the first three years of the scheme, carbon allowances will be sold at a fixed price of £12/tCO\textsubscript{2}. In the second phase, allowances will be auctioned.

### Options for Reducing Carbon Emissions in the Existing Non-Domestic Building Stock

**Option 1.** Set a programme and timetable for refurbishing, and improving the management of, buildings in the public sector to reduce carbon emissions.

These buildings could include Council office buildings, Council education facilities, libraries & Idea Stores and community centres. There may be opportunities to get the commitment of other public sector organisations operating in the Borough to make similar improvements to their own stock.

Other public sector organisations in London are already undertaking these works. The GLA, the London Fire Brigade and the Metropolitan Police are all working towards making energy efficiency improvements to their building stock. The GLA has commissioned an energy services company to refurbish its existing buildings to deliver a 25 percent carbon emission reduction level.\textsuperscript{102}

The Council has signed up to the Carbon Trust’s Local Authority Carbon Management programme. The Borough’s two universities - London Metropolitan University and Queen Mary University of London have both participated in the Carbon Trust’s Higher Education Carbon Management Programme, which is similar to the Local Authority programme. There may be opportunities for the Council to work with the universities to deliver carbon emission reductions.

Again, this option will enable the Council to lead by example and encourage other organisations (both in the public and private sectors) to do the same.

<table>
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<th>Further Work:</th>
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<td>• Consult the London Fire Brigade and Metropolitan Police about their planned stock refurbishments.</td>
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<tr>
<td>• Consult LMU and QMUL about opportunities and future partnership</td>
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\textsuperscript{101} [www.green500.co.uk](http://www.green500.co.uk)
Option 2. Work proactively with the voluntary sector and Small and Medium Enterprises (SMEs) to identify opportunities for reducing carbon emissions from their buildings.

The Government has committed to help small and medium-sized businesses to finance energy efficiency. However, a lack of time and information creates barriers to the adoption of energy efficiency measures and the uptake of funding opportunities. The Council, in partnership with other organisations (e.g. London Environment Centre), may be able to help local SMEs access some of these funding opportunities.

Not-for-profit organisations already pay reduced (or are exempted from paying) business rates, but there may be opportunities to enable business rate reductions for SMEs that implement carbon reduction improvements to their buildings and operations.

These actions are largely outside the scope of the LDF to address in any detail, but could be pursued at a corporate level. Not only would this option help deliver carbon emission reductions, it would also help reduce business running costs through reduced energy bills.

Option 3. Seek the commitment of large businesses in the Borough to deliver carbon emission reductions in their buildings.

The Carbon Reduction Commitment will create an incentive for larger organisations to cut their emissions. The sectors with the greatest carbon saving potential are wholesale/retail, manufacturing and financial & business services; in Tower Hamlets the large office buildings around Canary Wharf contribute significantly to the Borough’s carbon emissions and offer the greatest potential savings.

The Mayor of London established the Green 500 programme in 2007, which aims to cut carbon emissions in the private sector. It offers companies that sign up a carbon assessment and help to development a plan to reduce emissions in line with the Mayor’s target of reducing London’s emissions by 60% by 2025.

Firms with multiple sites can often achieve lower costs and greater savings than those with single sites. Large retail multiples operating in the Borough, such as Tescos and Sainsburys could be approached to seek their commitment to improve the energy efficiency of their stock, although moist such firms are already implementing national programmes for carbon reduction.

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103 Energy White Paper...
104 See www.londonenvironment.co.uk
105 Based on the geographical distribution of CO2 emissions from NAEI.
**Recommendations:**
Develop a partnership approach with large businesses operating in the Borough, including those at Canary Wharf, to work with them to lower their carbon emissions.
Improving the Efficiency and Security of Energy Supply

Supplying energy via the national grid is an inefficient use of fuel, with most power stations operating at between 40% and 50% thermal efficiency and typically a further 7% lost through the transmission process\(^\text{106}\).

The efficiency of energy supply can be improved by capturing waste heat for use (for example in homes, offices and other facilities) and by generating energy closer to the point of use to minimise energy losses through transmission.

Security of supply/certainty of supply
Most of the UK’s electricity is generated from gas, nuclear or coal. Although the majority of UK has still comes from the North Sea, Britain is no longer a net exporter of gas. A majority of coal is imported, and although the level of raw fuel required is much lower, the UK has to import all its raw nuclear fuel. As a result, the UK is highly dependent on international markets, especially as new gas supplies tend to come either from Russia (which has shown its willingness to limit supplies for political ends) or as LNG (which has a high associated energy and carbon cost through the compression/decompression cycle).

A move towards decentralised energy generation at higher efficiencies, and to using available renewable energy sources, will simultaneously lower carbon emissions and improve overall security of supply.

Combined Heat and Power/Combined Cooling Heat and Power

Combined Heat and Power (CHP) is a fuel-efficient energy technology, which simultaneously generates useable heat and power in a single process by capturing the waste heat, which is produced as a by-product of the electricity generation process. CHP can use a range of fuels, such as natural gas, biomass and bio-fuels, some of which qualify under the Renewables Obligation.

Combined Cooling Heat and Power is a similar technology which uses waste heat for the purposes of cooling, as well as heating, by using absorption chillers.

CHP significantly increases the overall efficiency of fuel used\(^\text{107}\). This is achieved, not only by using waste heat, but also by generating energy close to its point of use, which avoids the loss of energy through transmission and distribution via the grid\(^\text{108}\). Efficiencies of over 75% can be achieved in comparison to approximately 40% achieved in fossil fuel electricity generation plants\(^\text{109}\).

\(^{106}\) Digest of UK Energy Statistics (DUKES), BERR 2008
The Mayor aims to double London’s CHP capacity by 2010.\textsuperscript{110} The Government has introduced a range of financial incentives for the development of CHP.\textsuperscript{111}

**Options for Improving the Efficiency and Security of Energy Supply in Tower Hamlets**

**Option 1. Work towards establishing a decentralised heat main through the Borough, linking to a new large CHP/CCHP plant.**

The London Community Heating Development Study\textsuperscript{112} identified a potential route for a heat main through Tower Hamlets. This route was identified with the aim of linking up housing estates with existing community heating systems, as well as key buildings in the Borough, to a Biomass powered Combined Heat and Power station. Buildings that could potentially link into the network would include the London Hospital in Whitechapel, other health facilities, schools and leisure facilities.

This option would help alleviate fuel poverty as the heat main would run through the most deprived wards in Tower Hamlets. However, it would be a long-term project to implement.

Further work needs to be undertaken to identify whether or not this option is viable.

**Option 2. Work towards establishing smaller district heat and power networks, including identifying locations appropriate to deliver CHP/CCHP plants**

Consultants commissioned by the Council have identified 15 potential areas in the Borough for decentralised energy generation networks:\textsuperscript{113}

1. Fish Island
2. Bromley-by-Bow
3. Poplar Riverside/Leven Road Gasworks
4. Blackwall Reach and Robin Hood Gardens
5. Leamouth
6. Poplar/Chisp Street
7. Bow Common Lane Gas Works/Limehouse Cut/St Paul’s Way
8. Mile End
9. Barkantine/Canary Wharf/Isle of Dogs
10. Crossharbour District Centre
11. The Highway

\textsuperscript{112} GLA, May 2005.
12. Wapping Printworks (News International)
13. Aldgate and Spitalfields
14. Banglatown and Bricklane
15. Pritchard Road Gasworks

Most of these areas have identified development opportunities, which are typically clustered together. These development opportunities include development sites and estate renewal sites. (Refer to the report by Land Use Consultants & the National Energy Foundation for further details about these areas).

Part of the Barkantine CHP network is already in place. The CHP was implemented in 2001 to serve the Barkantine Estate itself and is now operated by EDF Energy. The Energy Centre at Barkantine contains a 1.3MWe/1.6MWth Combined Heat and Power engine, two 1.4MWth heat-only boilers and two large thermal storage cylinders. The engine was sized to cope with the winter heat load, rather than the summer hot water load. The two large thermal stores have been designed to balance out heat demands. This design feature enables the running hours of the engine to be maximised to produce electricity at times when there is greatest demand for it. Electricity produced by the engine is exported onto the local network and sold to the market. The scheme saves over 1,700 tonnes of CO₂ emissions per year, compared to traditional heating and power systems. Users connected to the Barkantine benefit from cheap energy bills. The Council is seeking new development in the surrounding area to connect to this CHP.

Priority areas for starting this work could focus on linking development near the Barkantine Estate to the existing CHP on this estate, on housing estates with existing community heating systems, and on large development or regeneration areas, for example Blackwall Reach and parts of Leaside.

Prior to seeking to establish any further CHP networks, it would be useful to undertake an appraisal of the Barkantine example to learn from the successful and unsuccessful aspects of this project, in order to shape the future implementation of similar networks in the Borough.

A number of the potential areas identified for decentralised energy generation networks are along Borough boundaries. There may be opportunities to work with adjoining Boroughs and authorities in the area to widen these networks or link into opportunities in neighbouring Boroughs.

**Discussions should be held with the following authorities –**
- The City of London
- London Borough of Hackney
- London Borough of Newham
- London Thames Gateway Development Corporation
- Olympic Delivery Authority
- London Development Agency

Implementation tools include using the site allocations process to identify CHP
Option 3. Work towards establishing smaller district heat and power networks, including identifying locations appropriate to deliver CHP/CCHP plants, with a view to connecting these up to a wider network in the future.

As with Option 2, but working towards linking the smaller networks up in the future to create a wider, borough-wide network. This could include implementing the larger heat main (in Option 1) and connecting up to this.

Option 4. Work on expanding the Barkantine CHP network, seeking opportunities for implementing other district CHP networks and seeking site level CHP.

This approach would focus on the expansion of the Barkantine CHP. This approach would ensure key policies, such as applying the Mayor’s Energy Hierarchy would be applied. It would ensure developers look to implement CHP/CCHP where possible, including seeking opportunities to connect to existing nearby CHP/CCHP plants. This would also include the safeguarding of the Barkantine Estate CHP and any other CHP/CCHP schemes in the Borough.

In addition to the expansion of the Barkantine CHP network, this option would see the delivery of smaller-scale site based CHPs would be easier to deliver than implementing district-wide systems, however they do not enable the efficiency of supply that larger CHPs can deliver.

The evidence prepared by Land Use Consultants and the National Energy Foundation will enable the Council to go beyond this basic policy position and take a more proactive approach than, including the identification of new locations for CHP/CCHP schemes within the LDF.

**Implementation**
- Safeguard the Barkantine CHP through the LDF and any other CHPs that are developed

Option 5. Plan for mixed use communities that provide a constant heat load profile e.g. residential, shops, swimming pools, commercial activities, so that they can be better served by CHP/CCHP.

Smaller schemes, not connected to a wider heat main, may initially be easier to develop and fund. For them to be financially viable, however, they should ideally include an element of year-round demand for heat (or cooling through absorption chillers). The schemes could to some extent be future proofed by routeing any heat main close by them, although it would not be economically sensible to decommission a good standalone CHP system in favour of a heat main connection until such time as the system was in need of replacement.
Renewable Energy Technologies

The PPS1 supplement on Planning and Climate Change states that Local Authorities should set out a target percentage of the energy to be used in new development to come from decentralised and renewable or low-carbon energy sources where it is viable. PPS1 states that Local Authorities should have an evidence-based understanding of the local feasibility and potential for renewable and low-carbon technologies, including microgeneration, to supply new development in their area. It also states that 'where there are particular and demonstrable opportunities for greater use of decentralised and renewable or low-carbon energy than the target percentage, bring forward development area or site-specific targets to secure this potential; and, in bringing forward targets, set out the type and size of development to which the target will be applied; and ensure there is a clear rationale for the target and it is properly tested.'

PPS22 allows Local Authorities to identify a percentage of the energy requirements for residential, commercial and industrial development to come from on-site renewable energy generation.

The London Plan identifies a target of requiring developments to 'achieve a reduction in carbon dioxide emissions of 20% from onsite renewable energy generation.' In line with the Mayor’s Energy Hierarchy, this 20% reduction is to be achieved only after other measures to reduce energy demand and to supply energy efficiently through decentralised means have been implemented.

Biomass

Biomass is solid fuel usually grown from specially cultivate crops. In the UK these are most commonly poplar or willow (grown on short rotation coppice), or miscanthus (elephant grass), although other grasses may also be used. Biomass can be used in boilers or CHP, although the latter is still in a developmental stage in the UK. Biomass may also be produced by chipping woody waste (e.g. from parks, or from softwood plantations), or as a by-product of the saw milling or furniture industries in the form of wood pellets made from compressed sawdust.

The Government considers Biomass as playing a key role in helping to meet the UK commitment to tackle climate change and reduce carbon emissions, and also to meet the EU target of 20% renewables by 2020. To assist the move towards the greater use and supply of this energy source, the Government has prepared a UK Biomass Strategy. The delivery of this strategy will require the increase of non-food crops grown in the UK, which raises wider issues about sustainability.

114 UK Biomass Strategy
The London Plan supports the use of Biomass\textsuperscript{116} and sets targets for installed electricity capacity from Biomass Fuelled CHP across London.\textsuperscript{117}

The Strategy recognises the potential impact that the increased use of biomass could have on air quality, and subsequently on public health.\textsuperscript{118} The whole of the London Borough of Tower Hamlets has been declared an Air Quality Management Area for Nitrogen Dioxide (NO\textsubscript{2}) and Particulate Matter (PM\textsubscript{10}).\textsuperscript{119} Population growth in the Borough will also increase pressure on air quality. Having fewer, larger CHP plants using biomass, than many smaller CHP plants is a better solution in terms of air quality.\textsuperscript{120}

There are also sustainability issues relating to supply – hidden carbon emissions relating to transportation and processing – lack of local supply can lead to sourcing from long distances: in some cases pellets have been imported into Europe from Canada or China. There are additional issues of use of land for crops instead of food supply/use of virgin wood products, although they are less pronounced with biomass than with crops grown as feedstocks for liquid biofuels.

The Sustainable Energy and Biodiversity Enhancement Opportunities Study commissioned by the Council identifies that there is considerable scope to use biomass CHP/CCHP in the Borough. The study recognises concerns relating to local air quality.

A lesser issue relates to storage of supply in a compact environment like Tower Hamlets where space comes at a premium. This would encourage use of processed biomass fuels, such as pellets, which have a greater energy density. The study also identifies that there are 5 local suppliers (within 10 miles of the Borough) of wood or wood pellet materials for Biomass.\textsuperscript{121}

**Options for Delivering Renewable Energy Technologies in Tower Hamlets**

**Option 1.** Adopt the London Plan 20% rule across the Borough (i.e. development must achieve a reduction in carbon emissions of 20% from on-site renewable energy generation)

**Option 2.** Seek a greater reduction than 20% where possible

The supplement to PPS1 requires Local Authorities to set out a target percentage of the energy to be used in new development to come from decentralised and renewable or low-carbon energy sources where it is viable.

\textsuperscript{116} See for example Policy 4A.7 Renewable Energy.

\textsuperscript{117} See Table 4A.1 of the London Plan.

\textsuperscript{118} UK Biomass Strategy, pg 30.

\textsuperscript{119} LBTH Air Quality Review 2000

\textsuperscript{120} Discussions with GLA 9/9/2008. Abdul – further evidence ??

\textsuperscript{121} See page 11.
The London Plan sets a minimum target of 20% reduction in carbon emissions from on-site renewables. This target has been tested through the Examination in Public for the Further Alterations to the London Plan.

**Option 3. Identify areas within the Borough to deliver visible renewable energy technologies.**

Visible evidence that an area is using renewable sources of energy, e.g. wind turbines and solar panels, will help ‘brand’ the area as sustainable and will help promote sustainable lifestyles to people that live in, work in, and visit the area. One potential area could be along ‘High Street 2012’, which is the main route from the City into the site for the 2012 Olympic and Paralympic Games, and runs along Whitechapel High Street, Whitechapel Road, Mile End Road and Bow Road. This area is set to receive increased investment and attention in the lead-up to the Games.

However, some of the more visible forms of renewable energy technologies tend to be some of the more expensive technologies. It would therefore be unreasonable to require that renewable energy technologies used are visible, increasing the cost of development, unless some form of subsidy could be offered.

Visible renewable technologies may not be appropriate in some parts of the Borough. The majority of Conservation Areas are likely to be sensitive to the introduction of such technologies on the streetscape. This issue is discussed in the section below. Due to the built up nature of Tower Hamlets, wind turbines are unlikely to be suitable for the majority of the Borough, as wind speeds would not be adequate.

**Renewable Technologies, Energy Efficiency and the Historic Environment**

Tower Hamlets has a rich historic environment; the borough is home to the World Heritage Listed Tower of London, xxx Listed buildings, over xxx locally listed buildings, 50 Conservation Areas, and other protected historic features. Some of these sites and areas may be sensitive to the introduction of certain renewable energy technologies, such as highly visible wind turbines or photovoltaics.

Older building stock typically has poorer levels of energy efficiency than the levels found in new development.\(^\text{122}\)

*Planning Policy Statement 22: Renewable Energy (PPS22)* states that planning permission for renewable energy developments likely to have an adverse effect on a site of international importance for nature and heritage

\(^{122}\) ????
conservation, such as a World Heritage Site (in Tower Hamlets, this would include the Tower of London and the buffer zone of the Greenwich Maritime World Heritage Site, which extends to Island Gardens on the Isle of Dogs), should only be granted once an assessment has shown that the integrity of the site would not be adversely affected.\(^{123}\)

PPS22 also states that, in sites\(^{124}\) with nationally recognised designations (in Tower Hamlets, this would include Scheduled Monuments, Conservation Areas, Listed Buildings, and Registered Parks and Gardens) planning permission for renewable energy projects should only be granted where it can be demonstrated that the objectives of designation of the area will not be compromised by the development, and any significant adverse effects on the qualities for which the area has been designated are clearly outweighed by the environmental, social and economic benefits.

The London Plan states that renewable energy technologies and energy efficiency measures should not be precluded in areas of heritage, but should be designed sensitively.\(^{125}\)

Reducing Occupant Use of Energy

Option 1. Implement a program of installing smart meters that show occupants energy consumption in existing buildings, and ensure they are incorporated into new buildings.

The Mayor of London supports the use of meters that make energy consumption visible to the consumer. Trials in Europe and North America have shown energy savings of between five and ten percent resulting from the use of meters.\(^{126}\) This programme could be trialled as part of the regeneration of a housing estate.

Reducing Emissions from Transport

The Council has a range of strategies, plans and policies relating to sustainable transport and reducing the need to travel by private vehicle, in order to reduce greenhouse gas emissions, air pollution and congestion. The implementation of these strategies, plans and policies will be critical for ensuring Tower Hamlets delivers a comprehensive approach to tackling Climate Change.

\(^{123}\) Paragraph 9.
\(^{124}\) It is recommended that ‘in sites’ be interpreted in the broad sense to include the setting of these sites as well. To clarify this point, advice should be sought from Central Government.
\(^{125}\) London Plan (consolidated with alterations since 2004) 2008, paragraph 4.25.
\(^{126}\) Draft Mayor's Housing Strategy, September 2007.
The development of detailed options for the reduction of carbon emissions from the transport sector is outside the scope of this report; however any strategy should consider the following -

- Reducing the need for travel (by creating communities that have services, shops, jobs, leisure and community facilities within walking and cycling distance, and that walking and cycling routes are safe, convenient and accessible to all)
- Ensuring that trips that need to be made can be made by public transport (by ensuring the public transport network meets the needs of the community, the travel patterns of the community need to be considered, along with the future capacity requirements for this network, taking into account population growth)
- Where private vehicle trips are made, seek to ensure they are made in Low Emission Vehicles (this could be encouraged through the designation of Local Emission Zones, as has been done in the Greenwich Millennium Village, the creation of car clubs that use low emission/electric vehicles)

Reducing Emissions from Waste/ Waste to Energy Opportunities

As identified in Section xxx, landfill produces carbon and methane emissions. The sustainable management of waste plays an important role in tackling climate change. National and regional policy is seeking communities to take greater responsibility for their own waste management.

The development of detailed options for reducing carbon emissions from waste is outside the scope of this report, as the Council has commissioned a Waste Management Strategy to be prepared, which will inform the options in relation to waste for the LDF Core Strategy, and any related site allocations. This Strategy will be completed later in 2009.

The strategy for waste management in the Borough should consider exploring waste to energy opportunities, as a way to make beneficial use of waste and help deliver a sustainable supply of energy for the Borough. The use of waste to energy processes are supported through the London Plan; however waste should be reused or recycled before it is considered for converting to energy. The increased use of waste incineration capacity in London, as a means of generating energy, is generally not supported through the London Plan. Alternative waste to energy processes, particularly those that produce fuel by-products (e.g. biofuels and hydrogen).

The Lower Lea Valley Opportunity Area Planning Framework states that waste that cannot be recycled should be used for generation of heat and power in accordance with London Plan policy. The LLVOAPPF also states a preference for the use of processes such as gasification and anaerobic

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127 See Policy 4A.21
digestion, which have the potential to produce a renewable source of hydrogen, instead of incineration of waste.\textsuperscript{128}

The Sustainable Energy and Biodiversity Enhancement Opportunities in the London Borough of Tower Hamlets report identifies the potential to develop a waste to energy facility in the Fish Island/Hackney Wick area.

**Recommendations:**
- Waste to energy opportunities should be explored through the Council’s Waste Management Strategy
- If it is deemed appropriate to develop a waste to energy facility in the Borough, areas of search should be identified in the Core Strategy

Reducing waste going to landfill → GHG

Under the suggested proposals to reform the Renewable Obligation Certificates (ROCs) system, waste-fuelled combined heat and power (CHP) plants would be eligible for ROCs, which are issued as verification that the energy was generated by a registered renewable power plant) but plants generating only electricity would not.\textsuperscript{129}

**Waste Strategy for England 2007:** the Waste Strategy restates existing Government policy (Ref 3), reiterating a commitment to EfW and the expectation that 25% of MSW will be accounted for by EfW by 2020. The Strategy confirms the contribution the Government believes that biogas plants and ATT technologies can make and restates the preference for CHP schemes wherever possible.

Consideration of pollutants arising from different technologies and processes and a range of amenity impacts

The Council’s current performance would struggle to achieve a ‘Fair’ assessment in the Local Carbon Management Matrix. To achieve a ‘good’ assessment the Council would need to stretch itself – for example, by setting higher thermal standards than Decent Homes, making Part L assessment a priority focus of Building Control enforcement activity, ring fencing 10% of annual energy spend to improve energy efficiency, ‘Invest to Save’ initiatives, using new and old Council buildings to showcase renewables/CHP/District Heating, etc.\textsuperscript{130}.

\textsuperscript{128} para 2.149
\textsuperscript{129} Source: GLA Costs of Incineration and Non-incineration Energy from Waste Technologies January 2008
\textsuperscript{130} CSE report for DEFRA – Local Carbon Management Matrix
Climate Change Adaptation

As discussed above, a certain level of climate change is inevitable due to the current stock of greenhouse gas emissions in the atmosphere. Ensuring the Borough adapts to the impacts of climate change is therefore critical.

The Council’s strategy for Climate Change adaptation should include –

- Ensuring building design is appropriate for changing weather, and that this design helps minimise the need for mechanical heating and cooling systems
- Where buildings are going to need mechanical cooling, Combined Cooling Heat and Power systems should be used
- Flood risk management (this is being addressed through the Council’s Strategic Flood Risk Assessment)
- Water efficiency and retention measures
- Increasing the amount of green open space, living roofs and permeable surfaces to assist with the adaptation to the Urban Heat Island effect, help biodiversity adapt to climate change, assist with flood management and help insulate buildings.

Assessing vulnerability to climate change

The Mayor recommends that all boroughs and key stakeholders should prepare an adaptation strategy, comprising a climate risk assessment together with an adaptation action plan for the significant risks (draft adaptation strategy pg xiii)

The Mayor’s draft strategy outlines the minimum recommended stages to be included in these strategies (see pxiii of the Executive Summary)

The Code for Sustainable Homes only briefly addresses issues of overheating. This needs to be addressed through the LDF – localise the policy to take into account UHI

Businesses can use the ‘Business Areas Climate Impacts Assessment Tool’ in the UKCIP’s report, *A changing climate for business*; UKCIP is also trialling a programme called “Resilient Organisations” to test preparedness for climate change.
Appendix: Climate Change Adaptation

The following sections are adapted from the Mayor's Adaptation Strategy, with a focus on those elements that are of relevance to Tower Hamlets.

Flooding

As with many urban areas, London has a large area of impermeable urban realm. This means that the city is reliant upon storm drains to conduct rainwater away to prevent flooding. Many of these storm drains speed up the rate at which rainwater discharges into local watercourses, or the combined sewer system, so may contribute to increasing flood risk elsewhere. As noted earlier, Tower Hamlets has recently completed a Strategic Flood Risk Assessment. As an increased risk of fluvial flooding is noted in the Lower Lea Valley, measures such as a reduction of permeable surfaces in front gardens should be combated, although most of the problem arises in upstream boroughs.

The Mayor will and boroughs should improve the permeability and functionality of the urban realm through implementing an ‘urban greening programme’, including creating new and enhancing existing green spaces, reducing ‘garden grabbing’, increasing street tree cover, requiring sustainable urban drainage and permeable materials.

The Mayor will and boroughs should require developers building in areas of flood risk to contribute to the development and maintenance of a local flood emergency response plan (in consultation with the borough flood response plan, where this exists).

Drought

The GLA published a Water Strategy for London and a Water Action Framework to determine what balance of demand and supply side actions will enable London to achieve a more sustainable water supply-demand balance that is resilient to a changing climate

• promote and facilitate the reduction of leakage from water mains in London
• promote and facilitate compulsory water metering in all developments where feasible, accompanied by a tariff structure that incentivises water efficiency, but protects vulnerable households
• promote and facilitate the retrofitting of London’s homes to become more water efficient
• encourage rainwater harvesting and grey water recycling in new development.

The Mayor’s draft Water Strategy proposes a hierarchy for managing water supply and demands in London:
1. Reduce the loss of water through better leakage management.
2. Improve the efficiency of water use in residential and commercial development (new and existing).
3. Use reclaimed water for non-potable uses (grey water recycling and rainwater harvesting).
4. Develop, as necessary, those water resources that have the least environmental and climate impact.

Overheating
London has recently experienced heatwaves that have caused deaths, discomfort and economic losses. Hot weather will become more frequent and more intense. The Mayor proposes the following key actions to manage overheating in London:

- Undertake an ‘urban greening programme’ to cool the city using green spaces, street trees and urban design.
- Create an ‘Urban Heat Island Action Area’ where new development must contribute to offsetting the urban heat island effect.
- Provide London-specific design guidance to enable architects and developers to reduce the risk of new development overheating in future summers.
- Facilitate public access to cool buildings during heatwaves to help vulnerable people avoid and recover from the heat.
- Undertake a scoping study for a London-wide network of weather stations to better understand and monitor London’s climate.

**Intensification due to increasing density**

Figure 4.10 below shows London’s land cover, classified in 17 land use categories. The correlation between the surface heat island (Figure 4.7) and urban development (black squares on the figure below) underlines the strong relationship between the two.

London’s population is expected to increase by 810,000 people by 2026, and Tower Hamlets by over 30,000. The London Plan proposes that much of this growth will be accommodated in a number of ‘Opportunity Areas’, which will increase the area of high-density urban development and may intensify the urban heat island. More than half of the Opportunity Areas are within the central London boroughs including Tower Hamlets where the urban heat island effect is already most intense.

Increasing the density of development in London will increase the intensity of the urban heat island effect locally. If the area of high density development increases without efforts to offset the urban heat island effect, then the size of urban heat island core will increase.

It is not possible to prevent heatwaves from occurring, but it is possible to limit how much the urban realm intensifies a heatwave, and to improve how effectively we prepare for them. It is also possible to design buildings and infrastructure to minimise overheating in hot weather and therefore to avoid mechanical cooling which would otherwise increase the urban heat island. This section of the strategy will therefore focus on achieving five inter-related aims:

1. managing London’s urban heat island
2. designing new, and adapting existing buildings and infrastructure to minimise the need for cooling as far as possible
3. ensuring that where cooling is still required, that low carbon, energy efficient methods are used
4. helping Londoners adapt their behaviour and lifestyles to higher temperatures
5. ensuring that a tried and tested heatwave emergency plan exists to manage extreme events.

**Managing London’s urban heat island**

It is possible to manage London’s urban heat island at three distinct scales. Interventions at each scale will have benefits at all other scales:

- citywide
- neighbourhood
- individual building.

**Citywide management**
At all physical scales, the type of land cover is the key factor determining the strength of the urban heat island effect. This is unsurprising, given the fact that the urban heat island is caused by replacing green space with urban materials that absorb more of the sun’s energy. The simplest method of managing the urban heat island therefore is to increase the area of green space cover through protecting existing green spaces and encouraging new opportunities for urban greening.

The strategy recommends the following actions at a city scale to manage the urban heat island:
• defining an ‘urban heat island action area’ within the central London boroughs (see Figure 4.7) where major new developments will be required to:
  • have a green roof (and where this is not technically feasible a cool roof)
  • vent any waste heat from a mechanical ventilation or cooling systems above the roof level
  • contribute to the planting and maintenance of additional street trees
• initiating a pan-London Urban Greening Programme (see Chapter 6) to identify, prioritise and implement opportunities to enhance and increase opportunities for urban greening
• requiring all London boroughs to use their Open Space Strategies to manage the urban heat island through protecting local green spaces and identifying opportunities for urban greening.

Neighbourhood scale
GLA research into London’s urban heat island shows that maximum urban heat island intensity increases with the percentage of continuous urban development. At 30 per cent continuous development, a maximum intensity of 4°C is observed, at 70 per cent this rises to 6°C. Modelling work based on Manchester suggests that increasing the green space cover by 10 per cent in high-density residential areas and town centres could keep surface temperatures at or below the baseline 1961-1990 level for most of the century. However, removing 10 per cent green cover from these areas, increased maximum surface temperatures by up to 8.2°C by the 2080s, assuming the highest emissions scenario.

Many Mediterranean cities are characterised by their narrow streets that remain cool in summer by limiting the amount of sun that penetrates the street. Changing the street width-to-height ratio has positive and negative effects on the urban heat island which should be considered:
• Reducing the ‘sky view factor’ (narrower streets and/or taller buildings) reduces the amount of solar energy admitted into the street canyon, as the buildings shade one another, so keeping the street cool during summer daytime.
• But reducing the sky view factor also reduces the rate at which heat can escape at night, so potentially increasing the night-time urban heat island.
• Reducing the sky view factor also reduces the amount of, and time for which natural lighting and solar gain can enter a building. In winter this would reduce/remove any winter solar gain, increasing the energy both for heating and lighting.

As the benefit of reducing the sky view factor is about limiting the amount of solar energy entering a street in summer, but the benefits of solar gain in the winter are considerable, on balance wider streets with seasonally variable shading (e.g. deciduous trees) is considered preferable.

At a neighbourhood scale, or for instance in the case of a major redevelopment (such as in the Thames Gateway), opportunities should be taken to:
• create breeze pathways that enhance natural ventilation
• orientate streets to optimise solar gain
• punctuate new development with green spaces
• optimise the street width to allow for appropriate scale deciduous street trees
• use low-albedo (pale and reflective), permeable paving materials.

Building scale
The cumulative benefits from adapting individual buildings to manage their contribution to the urban heat island will have an effect at local and larger scales. The following measures will reduce a building’s contribution to the urban heat island:

• incorporate green roofs and green walls
• avoid high glare facades and finishings
• plant and manage deciduous street and/or garden trees to provide dense summer shade
• ensure that mechanical ventilation or cooling systems vent waste heat above the roof level
• ensure that the intake for ventilation and cooling systems draws cool air (i.e. from the north side or shaded side of the building, or from over a green roof).

Reducing the need for cooling in buildings
Buildings are the ultimate modifiers of our indoor climate. Our indoor climate depends upon how much of the outdoor climate our buildings filter or transmit, and how much heat they internally generate.

Most residential development in the UK has an intended lifespan of 60-80 years, but in practice, given the current rate of housing replacement, has an effective lifespan in excess of 100 years. Twenty-nine per cent of London’s housing stock was built before 1919. This means that the majority of London’s housing stock was designed and built for a climate typical of the last century, but will continue to be around for at least the century to come. Seventy per cent of our existing housing stock will be providing accommodation in the 2050s.

The Chartered Institute of Building Services Engineers (CIBSE) uses an ‘overheating criterion’ to determine if a building is overheating. The criterion has two temperature thresholds, demonstrated in Table 4.3 below.

It should be noted that minimising the need for mechanical cooling of buildings and infrastructure, and reducing water use through water efficiency are common issues for both adaptation and mitigation. Hotter and drier summers may increase the demand for mechanical cooling and water, both of which are energy intensive to provide, and so may lead to an increase in carbon emissions, adding to climate change. It is therefore important for both mitigation and adaptation that where the increased demand cannot be designed out, the provision of any necessary cooling and water is managed through sustainable methods.