AIR QUALITY AND CLIMATE CHANGE STRATEGY

2017 - 2022

Creating a clean and green environment for everyone

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1 Foreword

To be completed prior to publication

2 Executive Summary

The state of the environment affects everyone who lives, works and visits Tower Hamlets.

Air Quality has an impact on the health and quality of life of all in Tower Hamlets and London. The Council has a statutory duty to comply with the London Local Air Quality Management (LLAQM) Regime under the Environment Act 1995 and have subsequently adopted an Air Quality Action Plan (AQAP).

Tower Hamlets is declared as a whole borough Air Quality Management Area (AQMA) for two air pollutants, Particulate Matter and Nitrogen Dioxide. We have an AQMA declaration order with the Mayor's seal as the requirement of the Local Air Quality Management process.

There is overwhelming scientific consensus that significant climate change is happening. The Climate Change Act 2008, EU Directive (2010/31/EU) and the recent Paris Agreement (2015) commits the UK to make efforts to reduce Greenhouse Gas (GHG) emissions.

Greenhouse gas emissions in the borough are falling, however we still remain as one of the highest emitters of carbon dioxide emissions in London. There is growing public awareness and concern about climate change. As such Tower Hamlets Council has a clear focus and responsibility for explaining, reducing and responding to the risks associated with climate change as a key part of its community leadership.

This strategy brings together these two important areas of work together combining our approach and taking a range of actions to improve the borough's environment.

Climate Change

Action by local authorities is critical to the achievement of the Government's climate change objectives. Local authorities are uniquely placed to provide vision and leadership to local communities by raising awareness and to influence behaviour change. In addition, through their powers and responsibilities (housing, planning, local transport and powers to promote well-being) and by working with their stakeholders, local authorities can have significant influence over carbon dioxide (CO2) emissions in their local areas. It is important that local authorities contribute to national and regional targets for mitigating and adapting to climate change.

63% of the boroughs emissions come from the industry and commercial sector, 19% from the domestic sector and 18% from transport. These emissions are outside the direct control of the Council. In comparison to the borough wide emissions, the emissions from council operations accounts for 0.6% of the overall total which the Council has direct control over.

Therefore to effectively tackle climate change and reduce emissions in Tower Hamlets the Council is reliant on exercising its powers and responsibilities in housing, local transport and the powers to promote well-being.

Air Quality

Air pollution often originates from the same activities that contribute to climate change so it makes sense to consider how the overlap between air quality and climate change policy areas can be managed to best effect.

Tower Hamlets is committed to improving local air quality and improving public health. Our Air Quality Action Plan (AQAP) was updated and the consultation process has been completed.

The Council has secured funding from the London Mayor's Air Quality Fund for several air quality projects. However these projects are match funded internally by the Council through various sources and it must be recognised that as we move forward into 2017-2021, this match funding may be more difficult to locate.

The aim of the projects is to deliver improvements in local air quality and reduce public exposure to pollution. Subsequently we have been declared a Cleaner Air Borough by the London Mayor. The projects currently underpin the Air Quality Action Plan.

Measures which benefit both air quality and climate change can be realised through actions such as promoting low-carbon vehicles and renewable sources of energy that do not involve combustion. At the same time, actions that tackle climate change but damage air quality must be avoided.

Air Quality has an impact on the health and quality of life of all in Tower Hamlets and London. The Council has a statutory duty to comply with the London Local Air Quality Management (LLAQM) Regime under the Environment Act 1995 and have subsequently adopted an Air Quality Action Plan (AQAP).

Tower Hamlets is declared as a whole borough Air Quality Management Area (AQMA) for two air pollutants, Particulate Matter and Nitrogen Dioxide. We have an AQMA declaration order with the Mayor's seal as the requirement of the Local Air Quality Management process.

Air pollution has a significant negative impact on health with effects ranging from worsening respiratory symptoms and poorer quality of life, to premature deaths, from cardiovascular and respiratory diseases. In Tower Hamlets 7.4% of all deaths in people over 30 are attributable to particulate air pollution. Air pollution contributes to widening health inequalities as levels of particulate matter and NO2 are higher on the most heavily trafficked roads which are used more by disadvantaged people as places where they live, work and shop. There is also evidence that these same people are more susceptible to the adverse health impacts of air pollution. A six year study, observed evidence of reduced lung volume in school children relating to long term exposure to traffic pollutants was consistent with impaired lung growth.

Through the LLAQM, we have also been declared a Cleaner Air Borough as we have and continue to meet the GLA's Cleaner Air Borough Criteria to improve local air quality and improve public health

Further action is now required in delivering local improvements to reduce emissions and human exposure at busy vehicular locations like high streets, schools and hospitals. A local targeted approach, in collaboration with partner organisations and a high level of community engagement to establish long term awareness around health benefits is required. With the introduction of appropriate measures this could deliver tangible improvements.

London, including Tower Hamlets is exceeding the limit values contained within the European Union's Ambient Air Quality Directive (2008/50/EC) and therefore is required to implement measures to reduce air pollution. The two human health pollutants of concern are Nitrogen Dioxide and Particulate Matter (PM10 & PM2.5).

Air Quality and Climate Change Strategy

This strategy is divided into nine sections providing a vision and a set of priorities for achieving each vision.

(i) Energy Supply

London Borough of Tower Hamlets produces one of the highest levels of CO2 emissions in London, where nearly 65% of the boroughs emissions come from the industry and commercial sector. The borough has made good progress so far in achieving a reduction of 34% from 1990 levels up to 2015.

There is still much work to be done to achieve the 60% CO2 emissions reductions by 2025 on 1990 levels.

The strategy also contributes to the tackling fuel poverty in the borough by reducing domestic energy consumption.

(ii) Low Carbon Development

The quality of the built environment is of crucial importance to our contribution to climate change, through reducing the amount energy we use in our buildings. Tower Hamlets has some of the best policies in the country in creating sustainable developments; the borough has won a national award for delivering the most code for sustainable homes in the country.

The local authority is leading the way in allowable solutions and holds one of the most advanced studies in the country helping to set up a carbon fund currently holding over £8m in section 106 agreements, with £1.8M already paid in to our accounts.

(iii) Carbon Management Plan

Getting your own house in order is extremely important; the council working with the Carbon Trust developed the Carbon Management Plan outlining the Councils vision and carbon reductions targets up to 2020. A reduction in carbon emissions results in reduction in energy usage and therefore a reduction in energy costs too.

From a 2007 carbon footprint baseline, in 2016/17 the Council has achieved a 48% reduction and is on course to achieve the 60% reduction by 2020.

Monies secured in the carbon fund will be spent on carbon reduction projects with £250,000 already pledged to deliver the identified projects.

(iv) Air Quality

Climate Change and air pollutants share common sources. The challenge in addressing air pollution and climate change will require synergistic policies, while striving to minimise conflict between policies and to manage residual negative impacts.

It is recognised that the problems caused from air pollution and climate change need to be addressed together. Not least because the emissions that pollute our air and warm our planet are from common sources such as vehicles, buildings, power generation and industry.

Air pollution is associated with a number of adverse health impacts; it is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas.

The annual health costs to society of the impacts of air pollution in the UK are estimated to be roughly £15 billion. Tower Hamlets is committed to reducing the exposure of people in the borough to poor air quality in order to improve health. The major source of air pollution in the borough is vehicle emissions and actions taken to reduce emissions benefit both cleaning the air and reducing carbon.

As a result of continually breaching air quality objectives an Air Quality Management Area was declared for the whole of the borough. Consequently, Tower Hamlets has a statutory duty to adopt and implement an Air Quality Action Plan to reduce air pollution (Appendix 1). This strategy combines actions which benefit both issues.

This strategy will seek opportunities to influence air quality policy across the borough to secure lower levels of air pollution. When delivering projects the impact on climate change and quality will be assessed.

(v) Transport

Transport is a significant producer of carbon emissions. Through its transport policy Tower Hamlets is attempting to create a cleaner, greener and more attractive borough, where it is safe and easy to travel and where the environment is protected for future generations. Making Connections is the green transport strategy of the council; the climate change strategy supports the vision and objectives of the green transport strategy.

The Air Quality Management Plan has identified the introduction of cleaner vehicles as a priority and the Electric Vehicle Charging Point Delivery have been developed to inform and direct action towards delivery of that objective over the next three years.

(vi) Natural Environment, Water supply and Flooding

The natural environment plays a key role in making our urban spaces liveable. The borough has a biodiversity action plan in place which aims to protect and enhance the biodiversity of the borough.

The demand for water is placing increasing pressure on rivers and waterways, affecting water table heights and raising new land use issues. The water market is due to be deregulated in April 2017.

Approximately 31% of the properties in Tower Hamlets are in areas at risk of flooding, mainly from tidal flooding. Flood defences can only protect London from fluvial and tidal flood risk. The city is still vulnerable to surface water and sewer flooding from storm and heavy rainfall events.

This strategy will work to enhance and protect the borough's biodiversity safeguarding the borough's water resources and minimising the risk of flooding.

(vii) Purchasing Supply and Consumption

The purchasing, supply and consumption of goods effects climate change in a variety of ways, both directly through the greenhouse emissions from manufacture and transport of goods.

Most consumers do not have a good understanding of how their choices can help combat climate change.

This strategy will help people and organisations understand the need for action on climate change and adjust their purchasing, supply and consumption choices accordingly, both individually and collectively.

Reducing waste going to landfill through producing less waste, expanding the market in recycling and re-use of products and by generating energy from waste.

(viii) Education Communication and Influencing Behaviours

Climate change affects everyone and everyone is able to play part in helping tackle it. By thinking about how we live, work and play, and making simple changes to our behaviours to reduce energy consumption.

We need to ensure people and organisations in the borough understand the reasons for action on climate change and aware what collective actions can achieve. Provide people with the knowledge and skills that will increase access to employment into 'green jobs'.

(ix) Community

Communities can play a central role in developing a more sustainable way of life that reduces the impact of our lifestyles on the global climate. Collective actions at community level can help to reduce the effects of climate change and can help people to adapt to a changing climate.

Helping residents to understand how their local environment contributes towards a better quality of life will help them have commitment at community capacity to support each other to lead more sustainable lives.

3.4 Air Quality Action Plan

The Air Quality Action Plan has been produced as part of our statutory duty to London Local Air Quality Management and outlines the proposed actions we intend to undertake to improve air quality in Tower Hamlets between 2017-2022.

Air pollution is associated with a number of adverse health impacts; it is recognised as a contributing factor in the onset of heart disease, cancer and respiratory conditions. Air pollution particularly affects the most vulnerable in society, children and older people. There is often a strong correlation with equalities issues, because areas with poor air quality are also in the less affluent areas.

The UK Air Quality Strategy provides the overarching framework for air quality management and contains national air quality standards and objectives to protect human health. Tower Hamlets is meeting all of the national air quality standards apart from those relating to NO2. We are currently meeting the current objectives for particulate matter, PM10 and PM2.5, but as this pollutant is damaging to health at any level. It remains a pollutant of concern as although we are meeting the EU limits.

The Air Quality Action Plan considers priorities under nine broad headings;

- LLAQM
- Developments and buildings
- Major infrastructure projects
- Public Health and awareness raising
- Delivery servicing and freight
- Borough fleet actions
- Localised solutions and projects
- Cleaner transport
- Lobbying and Partnership Working

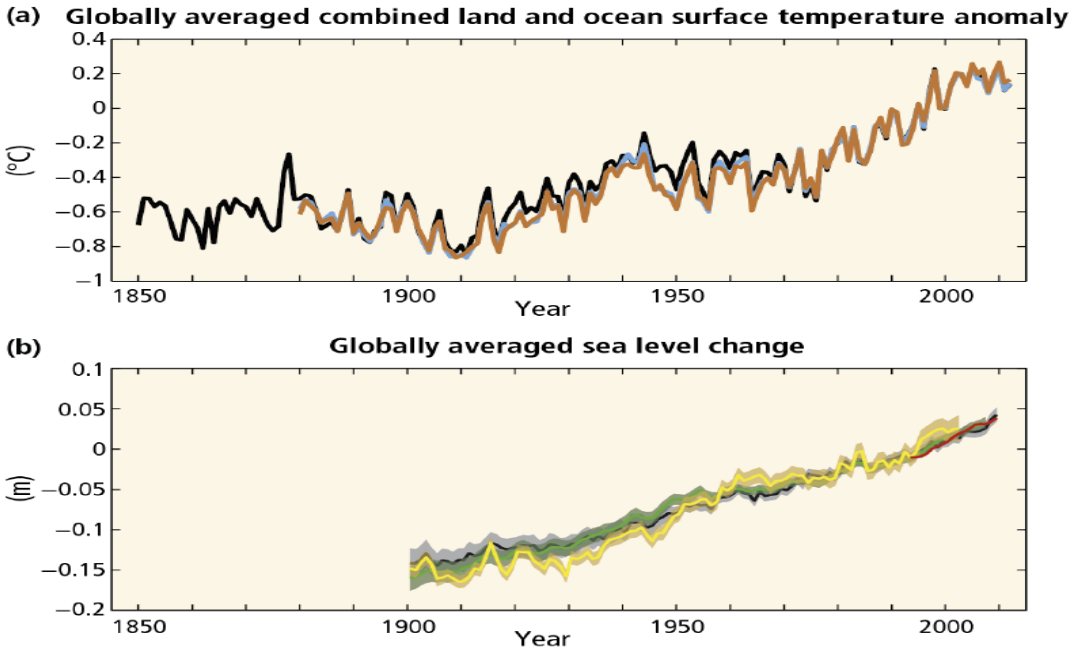
Pollution in Tower Hamlets comes from a variety of sources. The main source of NO2 emissions in the Borough is from transport and domestic emissions. The main source for particulates is from traffic emissions, re-suspension of particles from traffic sources e.g. brake or tyre wear and construction sites.

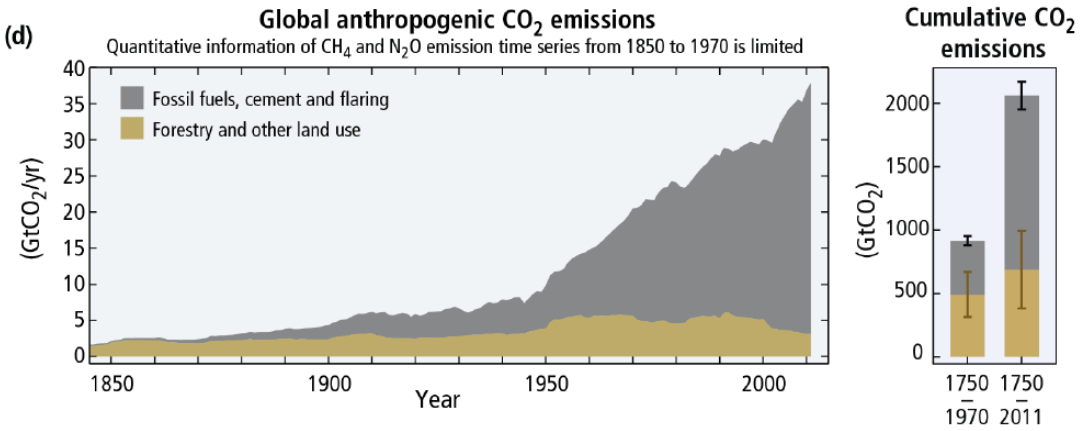
The air quality action plan is striving to go beyond compliance with the Council's commitment and responsibility to reduce emissions from our own operations and jurisdiction. The action plan looks at committing to a range of projects and localised measures to improve air quality and work towards reducing exposure to air pollution.

3 INTRODUCTION

3.1 Climate Change

There is overwhelming scientific consensus that significant climate change is happening. This is evidenced in the latest assessment of the Intergovernmental Panel on Climate Change (IPCC AR5). Climate change is leading to rising temperatures and sea levels, causing extreme weather, damaging ecosystems, reducing the productivity of crops and changing natural environment. Many impacts are being detected globally.





The diagrams above show surface temperatures, sea levels and anthropogenic CO2 emissions.

Public action is needed to substantially reduce GHGs, which would not happen at sufficient scale without intervention. Those who produce GHG emissions do not directly face the consequences of their actions, or take into account these consequences when taking decisions. Climate change is also a global phenomenon in both its causes and consequence and its impacts are long-term and persistent. It is considered by the Government as one of the most serious long-term risks to our economic and national security.

3.2 International context

The UK's commitments are set in the context of global efforts to reduce GHG emissions.

The Paris climate agreement is an agreement within the United Nations Framework Convention on Climate Change (UNFCCC) dealing with greenhouse gas emissions mitigation, adaptation and finance starting in the year 2020. The language of the agreement was negotiated by representatives of 196 parties. As of September 2017, 195 UNFCCC members have signed the agreement, 162 of which have ratified it.

In the Paris Agreement, each country determines plans and regularly reports its own contribution it should make in order to mitigate global warming. This agreement reaffirmed global ambition to limit temperature rises to below 2°C and binds every country to the collective ambition which should guide national plans to reduce emissions. The Agreement also contained a further collective aspirational goal to reduce emissions in line with keeping the temperature increase to 1.5°C.

The UK role in meeting the 2°C objective - The Paris Agreement committed countries to a collective global temperature target of 'well below 2°C' and obliges them to 'pursue efforts' to limit temperature rise to 1.5°C. Analysis suggests that the appropriate

contribution from the UK to the global 2°C objective could be equivalent to a 58% to 62% reduction in emissions from 1990 levels by 2030.

3.3 Climate Change Act 2008

The aim of the Climate Change Act 2008 is to enable the UK to become a low carbon economy and reduce carbon emissions by 80% by 2050 compared with a 1990 baseline. This target was advised by the Committee on Climate Change as an appropriate share of global action to limit global surface warming to around 2°C above pre-industrial levels by 2100. The Act also establishes the supporting framework of carbon budgets.

The 5th Carbon Budget - As required by the Climate Change Act 2008 the Government has set the fifth carbon budget, a five-year cumulative limit on the level of the net UK carbon account over 2028-32, in order to meet the UK's 2050 target. In its advice for the fifth carbon budget level, the Climate Change Committee reaffirmed the appropriateness of the UK's 80% target for a global 2° Celsius pathway. The fifth carbon budget was published on 30 June 2016. The budget level is 1,765 million tonnes of carbon dioxide equivalent (MtCO2e). It is equivalent to a 56.9% reduction on 1990 levels by 2030.

3.4 Previous Impacts on Tower Hamlets from Climate Change

BROMLEY BY BOW FLOODING ON THE LEE ON 7TH APRIL 2012

Tower Hamlets is exposed to a relatively even distribution of snowfall, heat-wave, high winds and heavy rainfall events. Severe dry weather has also occurred whilst the frequency of such an event is not as great, the impacts on the borough are still notable. Periods of high temperatures and dry conditions impacted on the health of residents, with large numbers suffering heat-related and respiratory illnesses. Recently the summer of 2016 has been the hottest in 100 years. Snowfall and low temperatures increases the number of deaths occurring during the winter.

Tower Hamlets is expected to experience significant changes in climate over the coming decades including hotter, drier summers; milder, wetter winters; more frequent heavy downpours of rain; possible higher wind speeds; and more frequent extreme high temperatures. Climate change projections suggest that winters will become milder and wetter.

3.5 Future Impacts

Climate change is a major contributor to flood risk. The Isle of Dogs and eastern areas of the borough are located in Medium and High Probability Flood Zones, whereas the western and northern areas away from the River Thames and River Lea are in Low Probability Flood Zones. The borough's flood risk zones also fall within the opportunity areas which will experience high growth in the next 10-15 years. Therefore it's important to ensure that future developments reduce flood risk where possible through design.

In addition to risk from flooding from the borough's rivers, surface water flooding is thought to pose the greatest risk of flooding within the borough. Through urbanisation, most of the borough is paved and surface water rainfall is drained away via piped systems and into the combined sewer system.

London experienced water shortages during heatwaves; the threat of future water shortage is a serious issue as demand increases due to increasing population, securing sustainable water sources, reducing losses and improving domestic and commercial water efficiency are essential to adapting to climate change.

Our average summer temperatures are predicted to keep rising. London also generates its own microclimate, known as the Urban Heat Island (UHI), which can result in the centre of London being up to 10°C warmer than the rural areas around London.

Summer heatwaves may make our homes, workplaces and public transport uncomfortable, and can have an effect on health, particularly of vulnerable people.

4 ENERGY SUPPLY

4.1 UK Energy Mix

London by night seen from the International Space Station

Fossil fuels, in the form of natural gas, oil and coal, are still the dominant source of energy in the UK, although the UK's reliance on fossil fuels has been slowly but steadily decreasing. In 2015, fossil fuels accounted for 82% of supply. The balance of energy supply comes from low-carbon sources, including nuclear energy and renewables such as wind, solar, hydro and biofuels. If analysed by fuel type, then based on 2015 figures, petroleum products, such as petrol, top the list at 47.5% of all fuel used by final consumers, followed by natural gas at 28.9%, and electricity at 17.9%.

In terms of electricity generation, the UK currently has a varied generation mix. According to statistics collated by the Department for Business, Energy and Industrial Strategy (BEIS), in 2015, 24.6% of electricity was generated from renewables, 21% from nuclear, 29% from gas and 22% from coal.

The share of generation from coal has been subject to some fluctuations resulting from economic and policy factors. Coal generation is now declining, as a result of coal plants closing or converting to biomass. In 2015, generation from coal decreased by 25%, due to the closure of several power stations. Any new power plants are likely to be a mix of gas, nuclear and renewables.

4.2 Borough wide Carbon Emissions

Of the 33 Local Authorities in Greater London, Tower Hamlets produces the third highest level of total carbon emissions. The table below shows borough wide carbon emissions from 2005 to 2015.

	Year	Industry and Commercial Total	Domestic Total	Transport Total	Grand Total	Population ('000s, mid-year estimate)	Per Capita Emissions (t)
Tower Hamlets	2005	**1,321.8**	**369.7**	**314.6**	**2,006.8**	213.4	9.4
	2006	**1,661.5**	**373.7**	**316.7**	**2,352.5**	218.4	10.8
	2007	**1,645.7**	**372.7**	**316.6**	**2,335.6**	225.3	10.4
	2008	**1,706.0**	**381.8**	**299.8**	**2,388.2**	231.9	10.3
	2009	**1,459.7**	**350.6**	**291.2**	**2,102.1**	240.5	8.7
	2010	**1,573.8**	**375.9**	**292.1**	**2,242.4**	248.5	9.0
	2011	**1,307.6**	**336.7**	**277.2**	**1,922.0**	256.0	7.5
	2012	**1,458.5**	**365.3**	**266.2**	**2,090.4**	263.0	7.9
	2013	**1,342.4**	**349.3**	**262.7**	**1,954.8**	272.9	7.2
	2014	**1,144.0**	**291.1**	**268.0**	**1,703.5**	284.0	6.0
	2015	**894.9**	**269.9**	**261.5**	**1,426.7**	295.2	4.8

From 2006 to 2008 the borough saw an increase in carbon emissions. From 2009 the borough continued to decrease on the carbon emissions being emitted in the borough. 63% emissions come from the industry and commercial sector, 19% from domestic and 18% from transport sector.

4.3 Carbon Reduction Targets

The Climate Change Act established a target for the UK to reduce its emissions by at least 80% from 1990 levels by 2050. This target represents an appropriate UK contribution to global emission reductions consistent with limiting global temperature rise to as little as possible above 2°C

To ensure that regular progress is made towards this long-term target, the Act also established a system of five-yearly carbon budgets, to serve as stepping stones on the way.

The first four carbon budgets, leading to 2027, have been set in law. The UK is currently in the second carbon budget period (2013-17). Meeting the fourth carbon budget (2023-27) will require that emissions to be reduced by 50% on 1990 levels in 2025.

The Mayor of London has pledged to reduce carbon emissions by 60% by 2025 and this is reflected in the London Plan. As a London local authority the London Borough of Tower Hamlets will aim to achieve the London Carbon reduction targets.

4.4 Achieving the targets

It is not simply the level of emissions in a future target year that we should be concerned about. It is cumulative emissions over the whole period that matter. Under a system of carbon budgets, every tonne of GHG emitted between now and 2025 will count.

It is recommended that:

- Energy efficiency improvements are a cost effective way to contribute to emission reductions whilst saving money for individuals and business;
- Fostering innovation in technology, although having some cost in the short term, will contribute substantially to emissions reductions and prove economical in future years
- Other measures with a cost below the Government's projected carbon price should be taken as a cost effective option on the path to the long-term target.

4.5 Adopting a strategic approach

The public sector is in a leading position to demonstrate CO2 reductions through their activities and behaviour as an example of best practice to residents and local businesses. By calculating their own emissions and making in-house reductions, in addition to increasing awareness and supporting local businesses and residents, carbon emissions

can be reduced across each local authority area and therefore across the country as a whole, meeting the government's climate change targets.

4.6 Affordable Warmth

Affordable Warmth means a household is able to afford to heat their home to the level required for their comfort and health. The lack of affordable warmth is known as 'fuel poverty'. A household is in fuel poverty if they cannot keep warm and healthy in their own home at a reasonable cost; defined as spending more than ten percent of their income to do so.

As well as impacts on public health, fuel poverty impacts on climate change because households in fuel poverty have less capital available to make energy efficiency improvements to their homes.

LA Name	Estimated number of households	Estimated number of Fuel Poor Households	Proportion of households fuel poor (%)
City of London	4,456	216	4.8
Greenwich	102,919	9,467	9.2
Hackney	103,419	10,155	9.8
Islington	95,172	9,293	9.8
Lewisham	118,129	12,045	10.2
Newham	103,415	16,195	15.7
Tower Hamlets	**102,982**	**10,871**	**10.6**
Waltham Forest	98,585	13,033	13.2

Table shows fuel poverty statistics of LB Tower Hamlets and its neighbouring boroughs (2015)

The council runs a scheme called the Tower Hamlets Energy (T.H.E.) Community Power, which harnesses the collective buying power of residents to ensure that energy providers provide the best energy rates possible for those who are signed up to the scheme, three energy auctions are held each year with the average household achieving over £250 savings on their current annual energy bills.

The WARMTH Programme is a free service which aims to reach out to residents and deliver in-home wellbeing and energy efficiency visits, giving health and financial advice to some of Tower Hamlets most vulnerable households – particularly elderly residents and those with multiple health conditions.

The visits provide guidance on efficient energy usage in the home, understanding heating systems and installation of small energy measures such as draught-proofing and energy monitors. Additionally it connects clients to further external services on offer with supported access to grants and funding for larger home improvements where applicable, creating the single-point-of-contact recommended by NICE (National Institute for Health and Care Excellence). These early interventions can reduce the effects of cold homes on people's health and enable local residents to feel more connected to the community.

Fuel Poverty Strategy – The Local Authority has existing fuel poverty with the following key aims;

- To make eradicating Fuel Poverty a corporate priority.
- Provide access to cheap energy for council tenants and residents living in the borough and ensure that homes in the borough are affordable to heat for all including those reliant on state benefits.
- To Empower, Educate and Inform the resident about how to achieve Affordable Warmth
- Actively seek and access funding to deliver energy efficiency projects
- Promote Good practice demonstrations and deliver innovative pilot projects

5 Low Carbon Development

5.1 Built Environment

The quality of the built environment is of crucial importance to our contribution to climate change, through reducing the amount of energy we use in our buildings. Insulating and improving the energy efficiency of our existing buildings and building highly efficient new buildings are critical to reducing our energy consumption and carbon footprint, and to reducing energy costs and addressing fuel poverty.

To adapt to climate change and achieve sustainable development, long term economic, social and environmental strategies must continue to evolve and guide the revision of the Local Plan in development policies for the future.

5.2 Current Planning Policy

Zero Carbon Residential - the guidance from the GLA is for zero carbon residential to be implemented for Stage 1 schemes received by the Mayor on or after the 1st October 2016. The definition of the GLA Zero Carbon, as set out in the Housing SPG, is: 'Zero carbon' homes are homes forming part of major development applications where the residential element of the application achieves at least a 35 per cent reduction in regulated carbon dioxide emissions (beyond Part L 2013) on-site. The remaining regulated carbon dioxide emissions, to 100 per cent, are to be off-set through cash in lieu contribution to the relevant borough to be ring fenced to secure delivery of carbon dioxide savings elsewhere.

From October 2016 LBTH Policy requires major residential developments to achieve zero carbon (with at least 45% reduction achieved through on-site measures). The remaining

regulated carbon emissions (to 100%) are to be offset through cash in lieu contribution to the Carbon Fund.

Major developments for non-domestic development will still be expected (as above) to achieve 45% reduction against Part L 2013 Building Regulations. The remaining regulated carbon dioxide emissions, to 100 per cent, are to be off-set in accordance with the boroughs carbon offset solutions study. The study (LBTH Carbon Offset Fund - identifies the scope of the fund and types of projects to be delivered).

The carbon off-set price of £60 per tonne of carbon dioxide for a period of 30 years is to be applied (i.e. £1,800 per tonne).

Non-residential targets - For non-residential development LBTH will continue to apply the existing 45% CO2 emission reduction requirement. This will require developers to split out the energy loads for the non-residential and residential elements, within the energy strategy, to enable accurate carbon offsetting payments to be calculated for the different uses.

Carbon Offsetting - The Planning Obligations SPD includes the mechanism for any shortfall in CO2 to be met through cash in lieu contribution for carbon offsetting projects. The carbon offsetting mechanism is to be used when all opportunities to reduce emissions on-site have been exhausted.

> This policy is in accordance with Policy of the London Plan 2014 which states:
>
> '…carbon dioxide reduction targets should be met on-site. Where it is clearly demonstrated that the specific targets cannot be fully achieved on-site, any shortfall may be provided off-site or through cash in lieu contribution to the relevant borough to be ring fenced to secure delivery of carbon dioxide savings elsewhere.'

Carbon offset projects are those which deliver carbon emission reductions and are proposed within the Carbon Offsetting Study to include:

- Fuel poverty initiatives to deliver energy efficiency measures to the residential sector.
- Public building energy efficiency retrofit initiatives to reduce carbon emissions and reduce energy costs.
- Carbon reduction community projects to include energy efficiency of buildings or renewables projects.

Overheating – The GLA's current guidance identifies that 'In most circumstances, it is the GLA's expectation that dynamic thermal modelling is undertaken to demonstrate compliance with London Plan Policy. The implications of meeting these standards needs to be considered early in the design process as it can significantly impact on the design of the building – i.e. orientation and glazing proposals.

Decentralised Energy – The scheme needs to demonstrate that it has been designed in accordance with London Plan policy which sets out the decentralised energy hierarchy

and delivery of schemes with the strategic advantage of being able to connect to a district heating system either immediately or in the future.

Decentralised Energy Hierarchy - Developers should assess the potential for their development to:

- connect to an existing district heating or cooling network;
- expand an existing district heating or cooling network, and connect to it; or
- establish a site wide network, and enable the connection of existing buildings in the vicinity of the development.

Sustainability – In the absence of a Code for Sustainable Homes assessment we require a sustainability statement identifying how the scheme is responding to the GLA Sustainable Design and Construction SPG April 2014.

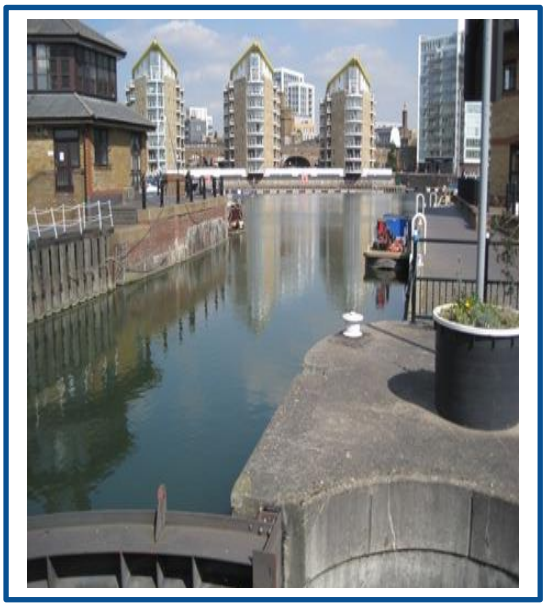
For the commercial elements the submission needs to be accompanied by BREEAM pre-assessments demonstrating that BREEAM Excellent rating is achievable for the scheme.

5.3 A Low Carbon Borough

The overarching vision is to make Tower Hamlets an exemplary borough in mitigating and adapting to climate change, ensuring that predicted economic and population growth does not compromise this vision and that Tower Hamlets plays its full part in achieving the UK target of reducing carbon dioxide emissions.

Renewable energy comes from sources that can be regenerated or naturally replenished. The main sources of renewable energy are:

Water (hydropower and hydrokinetic)

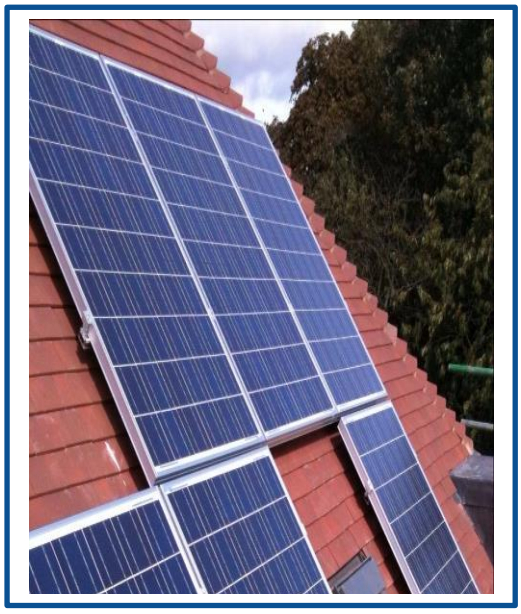


Essentially there are two forms of tidal power that may be appropriate for use in the context of the Thames. The options include: using a tidal basin to store water at high tide and then releasing it through a low head turbine to generate electricity as the tide falls (possibly reversible as the tide comes back in), or using a run of river scheme, with a turbine in the main flow of the Thames. The Southern edge of the Borough follows the banks of the tidal River Thames which could potentially be used for the generation of tidal power. This technology is very limited in LBTH

Wind

Typical wind turbines are rated between 650W and 2kW, with actual output generally well below this in normal wind conditions. The value of the electricity produced depends on whether it is substituting what the consumer would normally pay for mains electricity or whether it is exported and sold to an electricity company. Sites located adjacent to parks and open spaces and canals offer potential for small building mounted wind turbines.

Solar

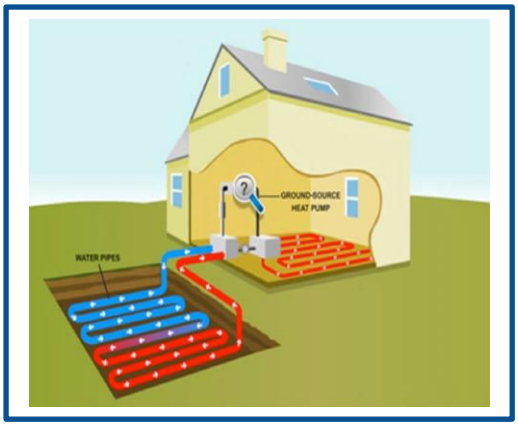


PV systems exploit the direct conversion of daylight into electricity in a semi-conductor device. PV can be either roof mounted or freestanding in modular form, or integrated into the roof or facades of buildings through the use of solar shingles, solar slates, solar glass laminates and other solar building design solutions. Most domestic systems typically being sized between 1.5 and 2 kWp. Tower Hamlets has a reasonable proportion of buildings situated on an approximately east-west axis. As such, there are a large number of buildings with south or near-south facing roofs that could potentially be used for PV.

Biomass (biofuel and bio-power)

Biomass is an alternative solid fuel to conventional fossil fuels. Various types of biomass fuel are in use, the most common being wood biomass. For building applications, the fuel usually takes the form of wood chips, logs and pellets. The primary product of this technology is the generation of heat and electricity. There is considerable scope for the use of biomass and however the use of this technology will need consideration of the air quality requirements.

Geothermal



Ground source heat pump technology makes use of the energy stored in the ground surrounding (or even underneath) buildings. GSHPs are sometimes linked with geothermal energy (using either hot underground aquifers or hot dry rocks). A typical 8kW system costs £6,400-£9,600 plus the price of connection to the distribution system. There is significant potential for the use of both ground, water and air source heat pumps within the Borough

5.4 Decentralised Energy

Decentralised energy broadly refers to energy that is generated off the main grid, including micro-renewables, heating and cooling. It can refer to energy from waste plants, combined heat and power, district heating and cooling, as well as geothermal, biomass or solar.

In 2010 with funding from the LDA the local authority carried out a heat mapping study, it identified six locations with the potential for decentralised energy. Some of the sites identified such as Blackwall Reach redevelopment is planned to go ahead with a decentralised energy system and a detailed feasibility study has been carried out for the Whitechapel masterplan.

Barkantine Heat and Power Company is an award winning exemplar decentralised system. The council used public finance initiative (PFI) funding to create a district heating scheme to provide cheaper heat and hot water to the estate. The scheme was particularly important as it tackled fuel poverty in an area where the majority of residents received state benefits.

The Barkantine combined heat and power (CHP) district heating scheme replaced the original heating network that ran from the turn of the century to the end of the 60s. The new system supplies heating and hot water to over 1000 homes, the scheme was the first of its type in London when it started running in 2001.

6 Reducing Emissions from Council Operations

6.1 London Borough of Tower Hamlets Carbon Management Plan

Working with the Carbon Trust the Council developed the Carbon Management Plan outlining the Council's vision and carbon reduction targets up to 2020. This Carbon Management Plan was approved by Cabinet in 2009. In 2016 the Action Plan was updated by officers to reflect changes in legislations.

6.2 Carbon Reduction Commitment (CRC)

The Carbon Reduction Commitment is a mandatory cap and trade emissions scheme for organisations in both the public and private sectors whose total electricity consumption is greater than 6,000MWh. If an organisation falls within the scheme then all direct electricity and fuel emissions are covered.

The Council qualifies under the current phase 2 of the scheme. This places rigid annual statutory requirements on the Council to submit a return on the organisations direct emissions. The Council is required to pay a fee for every tonne of carbon used which fluctuates according to the energy market.

In the autumn of 2015 the Government held a consultation into the future of CRC and all energy and carbon taxes. The consultation concluded that CRC will be scrapped and be

replaced by a simplified tax system that will still require the Council to pay a tax based on its emissions.

The Carbon Reduction Commitment is a green tax mechanism for large organisations. It is set in phases of three years and phase 1 finished in 2013-14 and the Council is currently participating in phase 2.

	Year	Tonnes CO2	Payment
Phase 1	Qualifying year 2010-11	26,894	£0
	2011-12	24,080	£312,000
	2012-13	29,864	£358,392
	2013-14	27,484	£329,808
Phase 2	2014-15	9,195	£195,000
	2015-16	8,708	£141,546
	2016-17	8,157	£140,300

Table showing CRC carbon footprint and payments

In addition to the allowance payments additional costs for registration, annual payments, evidence packs and audits have contributed to spend on CRC.

The guidance on CRC changes frequently and for phase 2 a decision was made to remove schools from the qualifying footprint of local authorities. However in its place emissions from energy use from street lighting was included. This is why the Council's CRC emissions footprint has significantly reduced in phase 2.

6.3 Greenhouse Gas (GHG) Reporting

The public sector is in a key position to lead on efforts to reduce CO2 emissions by setting an example to the private sector and the communities they serve. Therefore each year as requested by the Department of Business, Energy and Industrial Strategy (BEIS) the Council calculates and publishes its GHG report. This report details the Council's GHG emissions resulting from its gas consumption, electricity use and transport activities including business mileage. This report is made publicly available on the Council's website so that the Council's progress on reducing its emissions is transparent.

6.4 Emissions and Projections

The CO2 emissions within the Carbon Management Plan cover the emissions from the Council's building and transport operations.

The scope for Tower Hamlets CO_2 emissions covers:

1 Emissions from gas and electricity use at Stationary Sources including
   a. Council Offices
   b. Community Centres
   c. Depots
   d. Idea Stores (includes Libraries)
   e. Street lights
   f. Leisure facilities e.g. pavilions and changing rooms
   g. Council Housing communal areas

2 Emissions from Transport including
   a. Council's Fleet
   b. Business mileage
   c. Waste and recycling collection

Emissions from schools are no longer included in the Council's baseline due to the change in reporting requirements for the Carbon Reduction Commitment (CRC) and Greenhouse Gas (GHG) Reporting. Emissions from schools will continue to be monitored and the Council continues to work with schools to help them reduce their emissions.

6.5 Emissions data

The 2016-17 CO2 emissions for direct Tower Hamlets operational activities is 9,359 tonnes, which is a 48% decrease on the 2007 baseline.

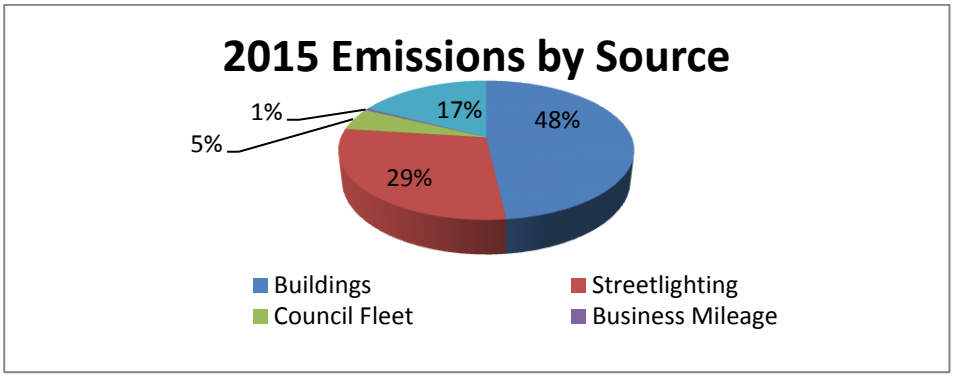


Diagram shows emissions breakdown by source

	2007 Baseline		2015 Emissions		
	Emissions (t)	%	Emissions (t)	%	**% reduction**
Buildings	12,020	67.1%	5,329	48.2%	**56%**
Street Lighting	3,068	17.1%	3,189	28.8%	**-4%**
Council Fleet	498	2.8%	573	5.2%	**-15%**
Business Mileage	1,108	6.2%	55	0.5%	**95%**
Waste Collection	1,221	6.8%	1,910	17.3%	**-56%**
Total Emissions	**17,915**		**11,056**		**38%**

Table compares 2007 and 2015 emissions by source

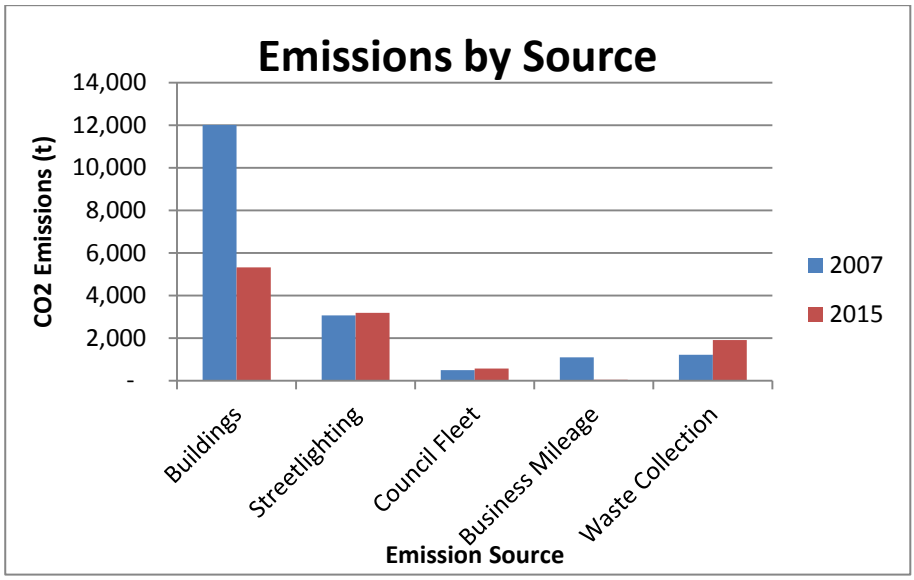


Chart compares 2007 and 2015 emissions by source

The CO_2 baseline for all Council operational activities in 2007 was 17,915 tonnes. The 2015 carbon footprint for the Council is 11,056 tonnes a reduction of 38%. This meant the 25% reduction target for 2012 has been met and only a further 2% reduction on the 2015 carbon footprint is required to meet the 2016 target of a 40% reduction since 2007.

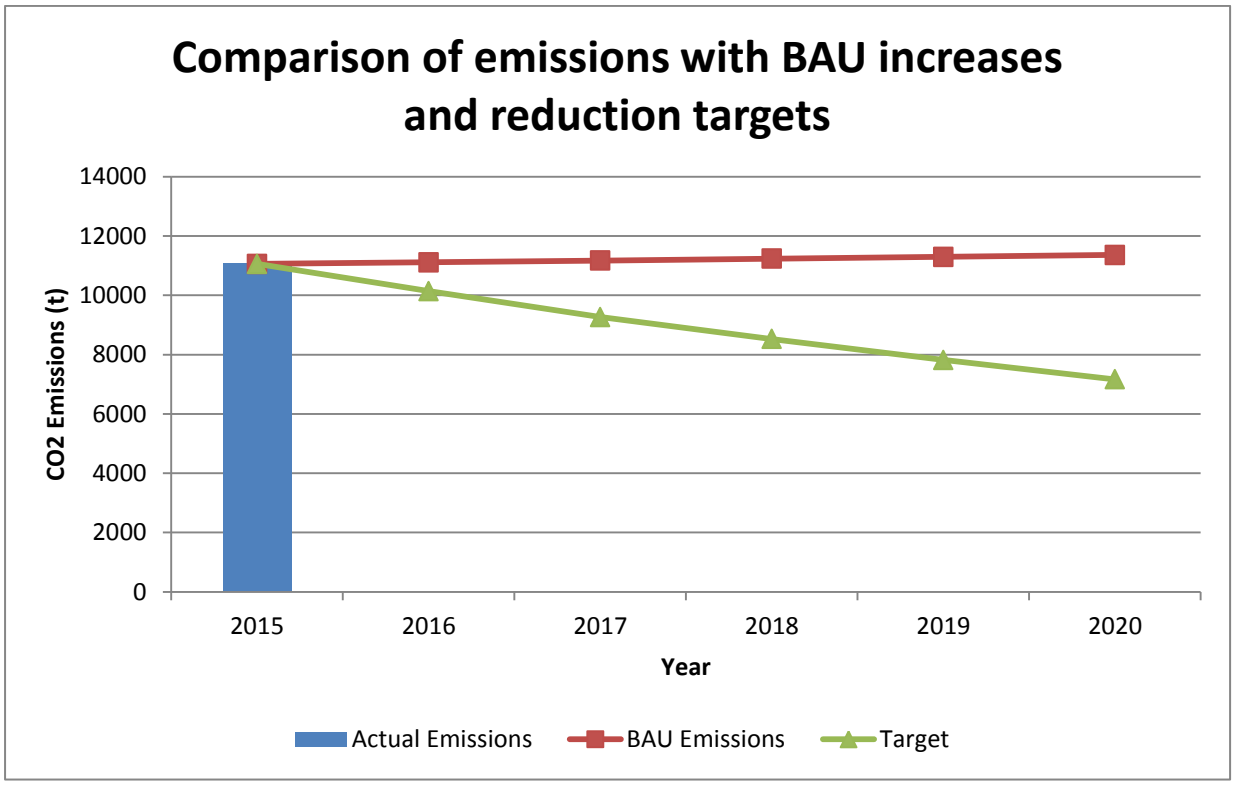
6.6 CO_2 Projections and Value at Stake

To achieve the target of a 60% reduction on the 2007 baseline the following CO_2 targets need to be met;

Year	Business As Usual Emissions (tonnes CO_2)	Target (tonnes CO_2)
2015	11,056	11,056
2016	11,114	10,138
2017	11,174	9,267
2018	11,235	8,525
2019	11,296	7,818
2020	11,358	7,166

As electrical and other equipment gets older it gradually becomes less efficient. The Business As Usual (BAU) scenario therefore allows a 0.7% increase in emissions if the Council did nothing from this point forward. This is based on figures from DTI/BERR EP68.

Below is a graph showing the value at stake of not achieving the reduction target. The calculation for the value at stake is based on the difference between the increasing BAU scenario and the proposed annual reductions if the targets are achieved.



Comparison of CO_2 emissions with BAU increase and reduction targets

6.7 Financial Costs

Measures to increase energy efficiency will reduce energy costs, which is particularly important for the future given rises in energy prices. Energy and fuel costs have doubled since 2004 and although have stabilised recently they are set to increase further in the future, Saving money allows the Council to divert valuable funds elsewhere and to tackle the challenges within the borough. The reduction in the Council's budget in previous and future years is also an important reason for energy costs to be reduced to as low as possible.

Utility bills are a high spend item, carbon management can significantly reduce costs to the Council but will require adequate resources to manage energy information effectively and invest to save through energy efficiency.

6.8 Funding options

The carbon and fuel cost savings identified would need to be implemented on an invest to save basis. A capital investment is required to achieve these savings and, as well as allowing Tower Hamlets to meet its commitment to carbon reduction targets, the investment is also expected to pay for itself in around five years overall.

RE:FIT - One route for implementing the energy efficiency measures identified is through the RE:FIT programme. This programme allows the Council to contract out the installation of all measures to a single party, from a framework of approved contractors, who is then contractually obliged to deliver an agreed percentage saving across all sites. While the capital investment is still required by the Council, this programme takes away some of the risk associated with the payback of the investment, because the fuel cost savings are guaranteed by the contractor. It is now also possible to get financing from the chosen contractor and pay this back through the savings achieved.

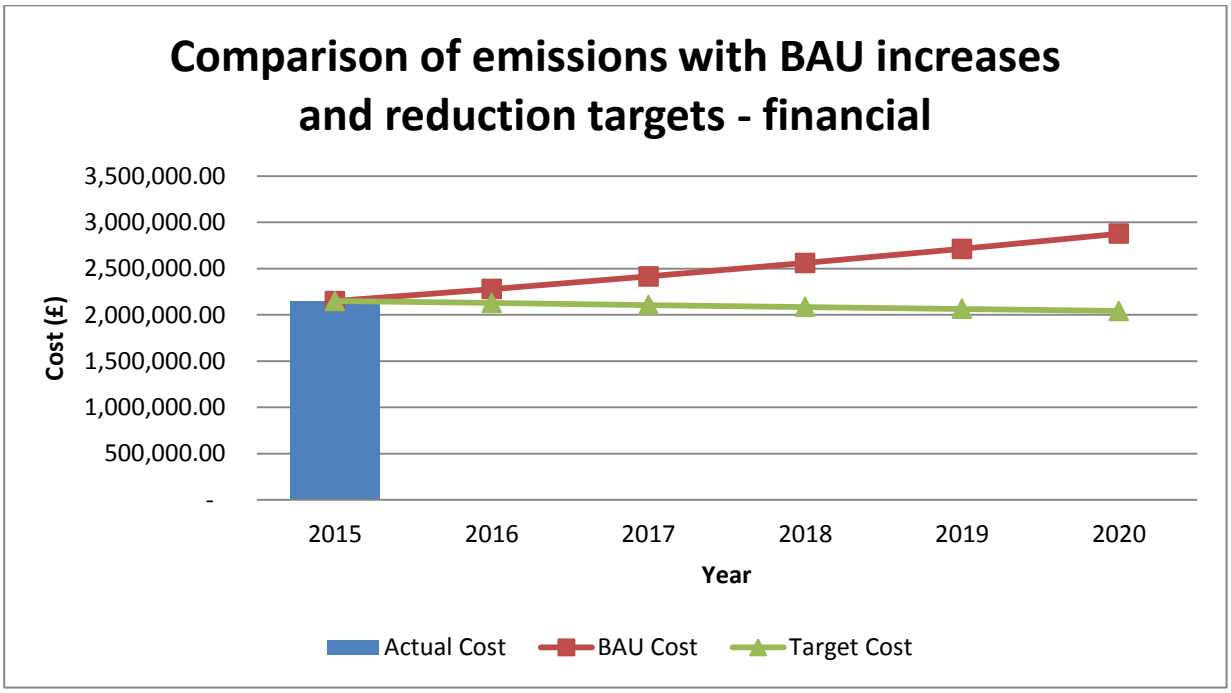
Salix Finance - Another option for financing the proposed projects is to obtain a Salix loan for each project. Salix Finance provides loans exclusively to Local Authorities and other parts of the public sector to reduce energy costs and carbon emissions through investment in energy efficiency projects. This is an interest free loan for energy efficiency measures, which must be paid back within 5 years. The loan is paid back through the energy savings achieved by the project. The application process is always open and new applications are welcomed. A Salix loan can be used in conjunction with the RE:FIT programme but will only apply to measures where the payback is less than 5 years.

London Energy Efficiency Fund (LEEF) - LEEF is a £50m fund that is focused on investing in energy efficiency retrofit in buildings in the public and private sectors. Projects should deliver an energy savings ratio of at least 20% and an annual carbon reduction of less than £5,000 per tonne of CO_2. LEEF supports a wide range of building integral Energy Conservation Measures (ECMs) in buildings including renewable technologies. The fund is looking for projects of between £3-10m with the minimum project value being £1m and a maximum of £20m. Unlike Salix however there is a small amount of interest on the loan but LEEF offers longer paybacks than the maximum five year payback offered by Salix.

Carbon Offset Fund - the Council has recently created a Carbon Offset Fund to secure funds from new building developments in the Borough. The Fund will be used to finance carbon reduction projects identified in this plan. The fund has set a carbon offset price of £1,800/tonne and this level of income will enable projects identified in this plan to be implemented.

The fund will also be made available to schools and other community projects. There is unlikely to enough funding in the carbon offset fund to finance all of the projects in this plan and therefore the alternative funding options described above will be explored to make up this shortfall.

6.9 Finance Projections and Value at Stake



Comparison of CO_2 emissions with BAU increase and reduction targets

The financial value at stake uses a standard 6% increase in energy and transport costs per year. With significant increases in costs in recent years this is potentially a low estimation of increased prices and could be substantially higher. Even in light of recent price decreases the long term trend still suggests these price increases will occur. The 6% increase has also been mapped across the costs for other carbon producing activities and this may require further refinement.

The financial value at stake is calculated as the difference between the do nothing scenario (including a 6% cost increase per year) against the potential energy bills if the carbon reduction target is achieved by 2020.

	Do Nothing Scenario (6% Increase)	Reduced emission scenario	Value at stake per year
2015 Baseline	£2,149,348	£2,149,348	£0
2016	£2,278,309	£2,127,425	£150,884
2017	£2,415,008	£2,105,725	£309,283
2018	£2,559,908	£2,084,247	£475,661
2019	£2,713,503	£2,062,987	£650,515
2020	£2,876,313	£2,041,945	£834,368
Total	**£14,992,390**	**£12,571,679**	**£2,420,711**

7 AIR POLLUTION: ACTION ON A CHANGING CLIMATE

7.1 Air Pollution

Air Quality has an impact on the health and quality of life of all in Tower Hamlets and London. The Council has a statutory duty to comply with the London Local Air Quality Management (LLAQM) Regime under the Environment Act 1995.

Tower Hamlets is declared as a whole borough Air Quality Management Area (AQMA) for two air pollutants, Particulate Matter and Nitrogen Dioxide. We have an AQMA declaration order with the Mayor's seal as the requirement of the Local Air Quality Management process. We have a duty to adopt and implement an Air Quality Action Plan (AQAP).

Please refer to the councils Air Quality Action Plan for details on the actions the council is taking to improve the air quality in the borough.

7.2 Climate Change and Air Pollution

Climate change and air pollutants share common sources. Greenhouse gases are most active high up in the atmosphere, whereas the most important factor for air quality is the concentration of pollutants nearer the earth's surface.

Electricity/heat generation and road transport are two of the most significant sources of both local air pollutants and increased CO_2. Other sources include shipping, river and canal vessels (NOx, PM and CO_2), construction (NOx, PM & CO_2) and biomass burning (PM& NOx & CO_2).

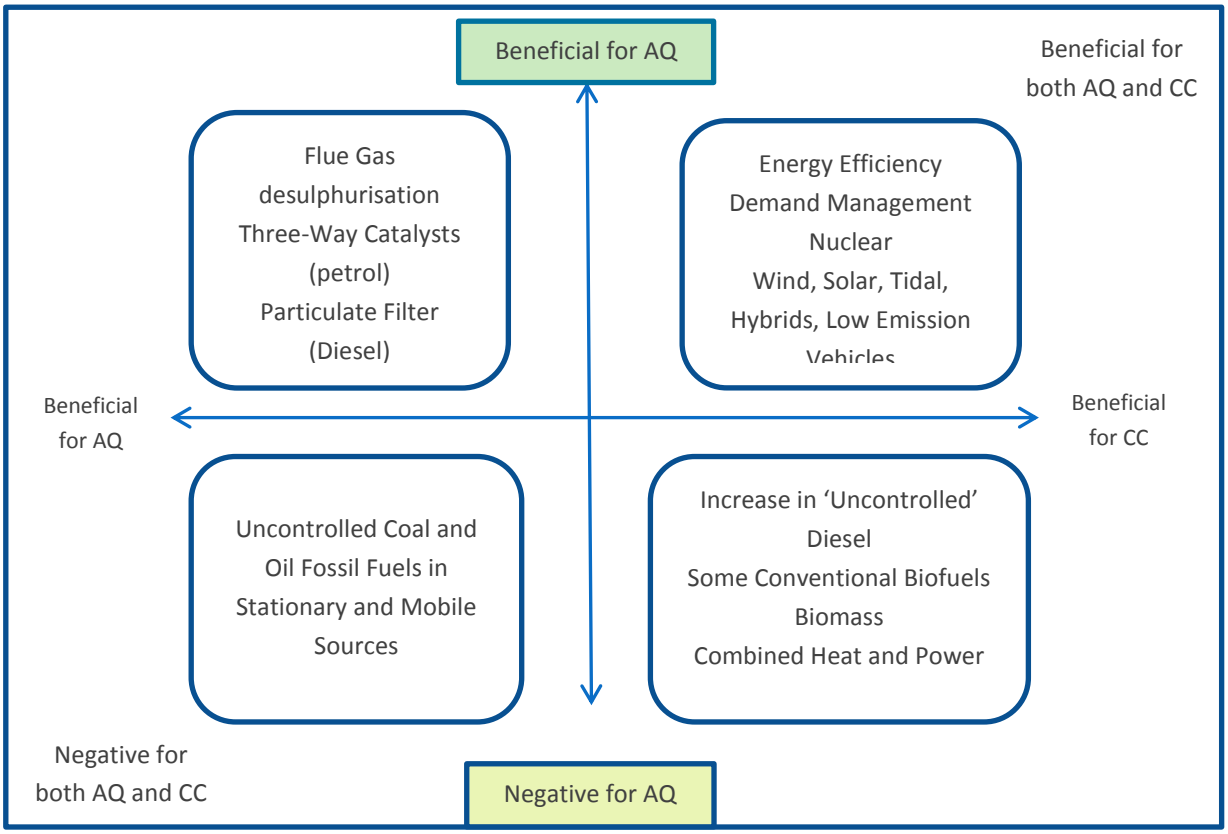
Changes in the climate will impact on air quality; increases in temperature may affect the formation of ozone, increasing the severity of summer smogs.

It will be important to develop strong linkages between air pollution and climate change to deliver our policy goals in a most cost-effective way. Delivery of air quality and climate change goals will require public engagement to encourage more sustainable behaviours in relation to, for example, sustainable transport choices. In recognition of how strongly people engage with the quality of their local environment, the local public health benefits resulting from many climate change mitigating actions should inform future communications activities.

7.3 Realising the Benefits

The challenge in addressing air pollution and climate change will require synergistic policies, while striving to minimise conflict between policies and to manage any residual negative impacts.

Diagram displaying air quality/climate change interactions;



There are clear co-benefits and synergies of tackling climate change and improving air quality, in some cases there will need to be trade-offs and uncontrolled policies will work against one another.

8 TRANSPORT

8.1 Transports in Tower Hamlets

Tower Hamlets is a well-connected borough, supported by a comprehensive public transport network. This includes the Overground, Network Rail, four Underground lines and the DLR. Public transport accessibility will be further improved by the new Cross rail stations at Whitechapel and Canary Wharf. There are approximately 30 bus routes that pass through the borough. Riverboat services are also accessible at St. Katherine's Pier and Canary Wharf Pier.

Although the borough's population has increased, car ownership remains static and there are a growing number of residents walking and cycling to work.

A recent resident's survey found:

- 22 per cent of residents were cyclists
- 9 per cent cycled weekly or daily
- 13 per cent were 'occasional' cyclists who cycled less often.
- Almost three quarters (74 per cent) of those surveyed felt Tower Hamlets was cycle friendly.

The borough has a number of challenges in relation to the capacity of the existing transport network. This includes traffic congestion during peak hours on the borough's major roads (A11, A12 and A13), public transport and on-street car parking.

Despite being relatively well served by public transport, parts of the borough are isolated and disconnected due to physical barriers created by roads, railways, rivers and canals. This creates poor connectivity within the borough, particularly movement north-south and to the east into neighbouring authorities.

Pollution from road traffic congestion is identified as the main source of emissions in the borough, which in turn has significant impacts on air quality, climate change and the health and well-being of our neighbourhoods.

Given the existing challenges the borough faces, the scale of growth projected cannot be accommodated by the boroughs existing transport infrastructure. Therefore, new development needs to demonstrate it can be sustainably accommodated with adequate transport and highway infrastructure and interventions to ensure the borough delivers sustainable communities.

The borough's major transport routes suffer from congestion and over capacity, particularly during peak hours, on main roads and public transport. There is also more demand than capacity for on-street car parking. This is likely to remain a challenge for Tower Hamlets, given the projected growth which cannot be accommodated on the existing transport network.

8.2 Low Carbon Transport

Transport is a significant producer of carbon emissions and contributes to 18% of the borough's CO2 emissions and so by moving towards greener, more climate-friendly means of travel, we can all play our part in reducing our collective carbon footprint.

Tower Hamlets Council is already responding to this challenge and is taking strides to promote greener, more climate-friendly travel. Walking, cycling and public transport initiatives already form part of the council's on-going commitment to create a healthier and more accessible environment to reduce the noticeable effects of poor air quality, road traffic congestion and social exclusion. However, more needs to be done to cut pollution levels and carbon emissions in Tower Hamlets and across London.

Sustainable transport is not just about introducing more vehicles with lower CO_2 emissions; it is ultimately about enabling us to change the way in which we choose to

travel and reducing the need to travel where possible. It will require a modal shift from car travel to more sustainable transport, preferably walking and cycling or buses and trains. Reducing car use is particularly important in order to reduce congestion and CO_2 emissions in the city and it is also important to recognise the impact that alternative transport can have on other important issues, such as the positive health benefits associated with walking and cycling.

The Council can contribute by making sure public transport vehicles are as sustainable as possible and by providing access to safe walking and cycling routes.

Roads form barriers between places and neighbourhoods and prevent people from getting around in a sustainable, easy and efficient way. To tackle this, Tower Hamlets has a Green Grid Strategy to form a network of safe and attractive routes throughout the borough.

8.3 Transport Policies

Through its transport policy Tower Hamlets is attempting to create a cleaner, greener and more attractive borough, where it is safe and easy to travel and where the environment is protected for future generations.

Tackling increasing traffic by controlling street parking and promoting other forms of transport such as public transport, cycling and walking is just one of the many ways in which the council is trying to achieve its goal. The council has also identified a number of key themes it needs to achieve in order to provide residents and visitors to the borough with a climate friendly transport system.

Making connections is the green transport strategy arm of the council's shared sustainable vision for the borough. It informs our community about how the council is working with others to help make our transport policy greener and more climate-friendly.

As part of this work, the council has developed a package of innovative green transport measures, including:

- promoting healthier, greener travel options with our local citizens
- working to reduce carbon dioxide levels from motor vehicles
- encouraging less car dependent lifestyles
- working to promote community car clubs, cycle hire and car free living schemes
- promoting walking, cycling and public transport

Cycling Connections sets out the cycling plan for Tower Hamlets until 2020, aiming to boost the number of people choosing to cycle in order to improve fitness, reduce road congestion and help the environment.

As part of this plan, the council has outlined key cycling objectives for the borough, to:

- Maximise the role of cycling as a priority form of travel to reduce traffic congestion and improve air quality
- Provide safe, convenient, efficient and attractive cycling conditions across Tower Hamlets
- Improve awareness and understanding of the benefits of cycling amongst all road users, employers, service providers and local citizens
- Improve health by increasing levels of physical activity through cycling projects in the borough

8.4 Electric Vehicle Charging Points

Improving local air quality by reducing emissions from road traffic is a crucial priority for Tower Hamlets. Providing an accessible network of electric vehicle charging points will play a vital role in facilitating the uptake of electric vehicles, which is a necessity to deliver air quality improvements and achieve the Mayor of London's target for a zero emission transport network by 2050.

Electric vehicle ownership in Tower Hamlets is forecast to rise rapidly in the next eight years with an estimated 3500 plus electric vehicles registered to Tower Hamlets residents and businesses by 2025. This represents a huge rise in ownership levels in the borough from just 136 electric vehicles registered at the end of 2016.

With 85% of Tower Hamlets residents without access to off street parking there is a pressing requirement to introduce an accessible range of charging points across the borough to facilitate the growth in electric vehicle ownership. When Transport for London's zero emission capable licensing requirements are introduced for taxis and private hire vehicles (PHVs) from January 2020, the borough will need to provide an accessible charging infrastructure for the large number of taxi and PHV drivers who live here.

A range of electric vehicle charging infrastructures will be required to meet the varied needs of residents and commercial EV users. These will be located in appropriate locations in residential streets, car parks and popular destinations such as High Streets, shopping and leisure centres.

This delivery plan estimates a minimum of 150 accessible charging points will be required to serve the number of electric vehicles located in Tower Hamlets streets by 2025. This would ensure every household is within 500 metres of their nearest charging point. However, the ambition will be to install up to 300 charging points across the borough by 2025.

E-Car Club

Tower Hamlets council and housing association Poplar HARCA in partnership with electric car club E-Car launched the E-Car Club to provide businesses and people in the community with the new and affordable low carbon Renault Zoe to drive.

E-Car's pay-per-use club membership will make electric vehicles available to the local community with 24 hour access to the cars, and no need to pay for tax, insurance, congestion charge, maintenance or fuel.

The cars are able to go for up to 70 miles and once the journey is complete, the car can be returned to a designated parking space where it can be charged for use again.

Car clubs provide an alternative ways for people to get around without further contributing to the already high levels of pollution on the A13. E-Car Club solves the congestion, cost and carbon problems.

9 Natural Environments, Water Supply and Flooding

9.1 Natural Environment

The natural environment plays a key role in making our urban spaces liveable, both for people and wildlife. In response to climate change, communities of wild animals and plants will have to relocate from places that are becoming unsuitable for their survival to places where conditions are becoming more favourable. The way that open spaces and parklands are managed can have a significant impact on wildlife corridors and habitats consequently on wildlife's ability to survive.

Tree planting, for example, can help mitigate both the 'heat island effect where urban areas are significantly warmer than its surrounding rural areas due to human activities and the emissions that impact on both climate change and air quality.

9.2 Biodiversity

Biodiversity is the variety of species of plants and animals and the range of habitats. Tower Hamlets, an inner London borough, has much wildlife. Our parks, squares and burial grounds, waterways, brownfield sites, gardens, and even the buildings themselves all provide homes for a variety of wildlife. This includes nationally rare and protected species such as bats and the black redstart.

Many people enjoy contact with wildlife and natural places. A mass of evidence in recent years has shown that nature is good for human health – physical, psychological and spiritual. Natural spaces, even in cities, provide many important social and economic benefits, and these are likely to become more important as our climate changes. Trees provide cool shade in summer. Green spaces absorb rainfall, helping to prevent flooding.

London Borough of Tower Hamlets Biodiversity Action Plan 2014-2019 aims to protect and enhance the biodiversity of the borough and the action plan is split in to four key themes;

- Built Environment
- Gardens and Grounds
- Rivers and Standing Water
- Parks, Squares and Burial Grounds

9.3 Green Walls

Access to good quality green space and living in greener neighbourhoods can have a big impact on people's health and quality of life, and how attractive the borough is to live, visit and do business.

Green infrastructure will be promoted through the planning system and the local biodiversity action plan. Buildings themselves will become greener, with green roofs and walls, and drainage systems that allow rainwater to flow back to the rivers and streams more naturally.

Use the planning system to protect the borough's biodiversity, offsetting any reductions caused by new developments with increases elsewhere. Green infrastructure such as green walls has the ability to improve air quality and reduce carbon dioxide emissions. Carbon dioxide emissions from Green infrastructure projects can be quantified and these can be funded by the Carbon Fund.

9.4 Water

Water is a precious natural resource and its sustainable management is essential to protect the water environment and to meet current and future demand. Our constant demand for water both at home and at work, combined with our changing climate with increasingly frequent dry spells has highlighted the need for improved water conservation and management.

The demand for water is placing increasing pressure on rivers and waterways, affecting water table heights and raising new land use issues. Change to land use in London over the last 50 years has resulted in groundwater levels rising under central London. This threatens to damage foundations and cause flooding, but also offers opportunities for water abstraction at economically viable prices, providing suitable sites can be found.

Tower Hamlets is served by Beckton sewage treatment works (STW) and it is within Thames Water's 'London resource zone'; which is seriously water stressed. The River Thames is the primary source of public water supply in London.

There are 9 active abstraction licences in Tower Hamlets which are predominantly from groundwater sources. The majority of these licences are for the industrial, commercial and public services sector. The other abstractions are for the production of energy. The Catchment Abstraction Management Strategy (CAMS) assessment of the river in the area (River Lea) shows that there is currently adequate water available only 12% of the time to meet environmental needs.

Population, household size, growth and affluence all affect how much water we use. Climate change will also likely to put supplies under greater pressure in the future, making it important that we adopt more efficient water use patterns.

- Average consumption in Tower Hamlets is 161 litres per person per day.
- 24% of households have a water meter

Smart Meters
Tower Hamlets is served by Thames Water who are in the process of rolling out compulsory water meters which will provide more accurate consumption information and charges based on the actual consumption. Water metering will help households to consume water more efficiently and reduce consumption. However, large households will see an increase in water bills leading to affordability issues in the same way as fuel poverty. Tower Hamlets roll out of water meters is due to be completed by 2020.

Business Water Use
The business water market was deregulated in April 2017, which allows every business to tender for its water services. Thames Water will no longer provide services to the business sector all their accounts will transfer to Castle Water by April 2017).

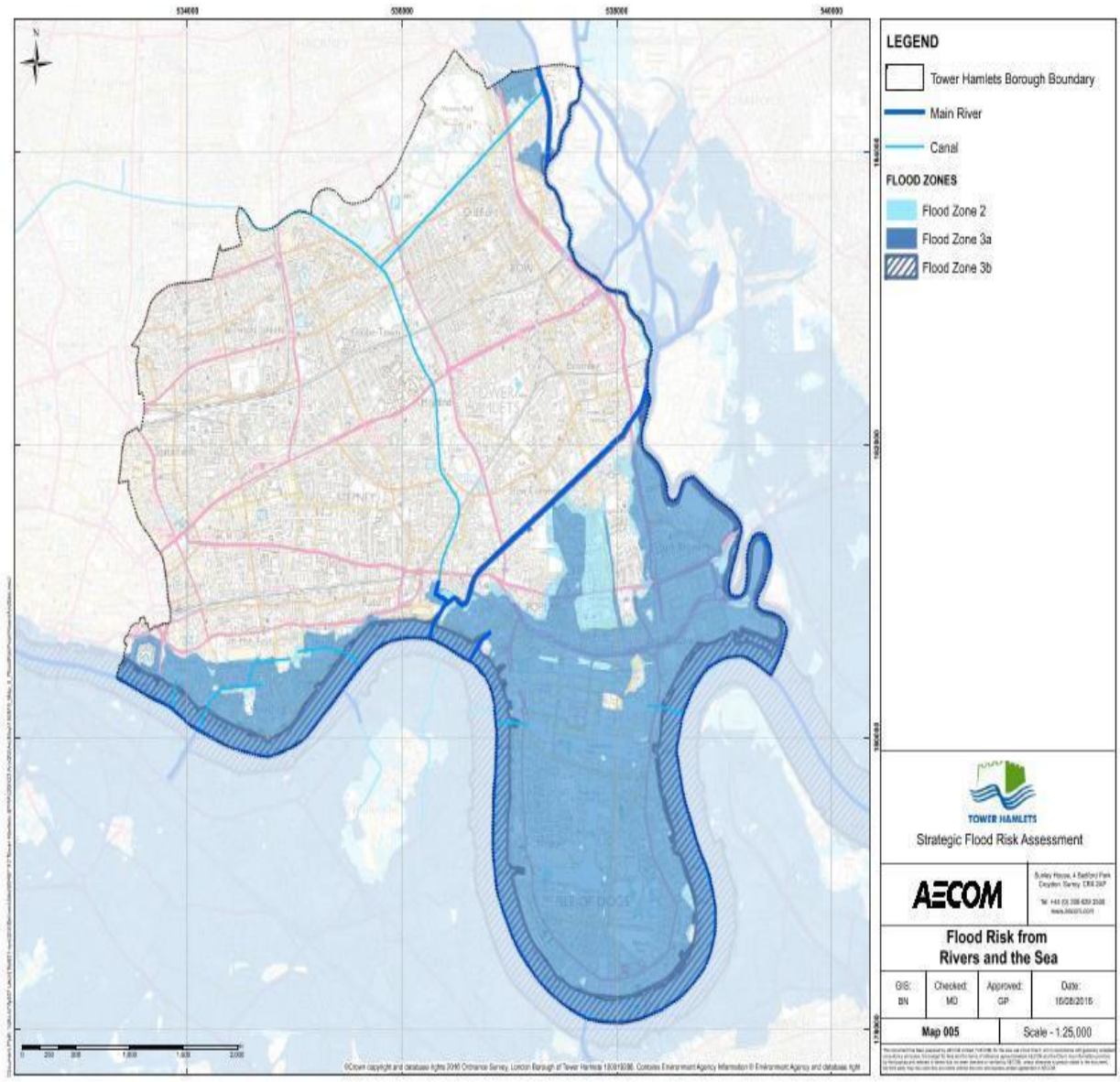
9.5 Flooding

Information provided by the Environment Agency shows that approximately 31% of the properties in Tower Hamlets are in areas at risk of flooding, mainly from tidal flooding.

However, 98% of these are in areas where the likelihood of flooding is low due to the presence of the Thames tidal defences, including the Thames Barrier.

However, flood defences can only protect London from fluvial and tidal flood risk. The city is still vulnerable to surface water and sewer flooding from storm and heavy rainfall events. This is due to the large areas of impermeable surfacing (such as roads, roofs and pavements) and the legacy of Victorian drainage systems that aren't equipped to cope. Events of this type are likely to increase in future, with the climate projections predicting more frequent intense rainfall.

Tower Hamlets have a flood prevention plan and reports on local flood risk across the borough through the Strategic Flood Risk Assessment (SFRA).



Flood Zones in Tower Hamlets (LBTH, 2016)

10 Purchasing Supply and Consumption

10.1 Sustainable Purchasing

The purchasing, supply and consumption (PSC) of goods plays an integral part in everyday life for all of us. The purchasing, supply and consumption of goods effects climate change in a variety of ways, both directly through the emissions of greenhouse gases from the manufacture and transport of goods, and more indirectly by affecting the resilience of the borough to a changing climate by boosting local supply of products and services and the 'green economy'.

If we are to meet the challenging targets set out in this strategy, the borough will need to adopt more sustainable PSC practices and behaviour. This means basing our choice and use of goods and services on maximising benefits to the environment, the economy and society, for both ourselves and the wider community.

When we can begin to understand the impact our purchases have on the local and global environment, we will be more inclined to make choices that offer wider benefits, and accordingly, the market will respond by offering products that match these preferences. Our consumption of products and food and our business activities all produce waste, which impacts on climate change in numerous ways.

London Borough of Tower Hamlets is fully aware of the responsibility we bear towards our customers, employees and communities in which we work. We are committed to ensuring that the working conditions in the Council's supply chain are safe, that workers are treated with respect and dignity, and that manufacturing processes are environmentally responsible.

The council spends over £340 million a year with about 3,500 suppliers.
Much of this expenditure is on key services to our residents that make a difference to people's lives in many ways, ranging from social care and education to housing and the environment. So it is important to ensure that all our spending decisions secure value for money in the services we deliver to our local community in an open and fair way.

Alongside cost control, the Council wants to deliver social value. This is to ensure that what is commissioned has a direct benefit to the local community. This includes such things as the use of local and small businesses, the voluntary sector and the creation of local apprenticeships.

10.2 Waste Management

The management of waste is a pressing strategic issue embedded within the London Plan. The London Plan is working towards waste self-sufficiency in London and zero-biodegradable or recyclable waste to landfill by 2026. In order to achieve this, London boroughs, the Mayoral Development Corporation (including the LLDC) and the GLA need to work collaboratively to allocate suitable and appropriate waste sites. The GLA considers that London is moving towards a future where goods are designed to be reused and recycled (a 'circular economy'). As a result, the current approaches to managing waste systems in London should be shifted from waste to reuse so that very little waste will require disposal in the future. The GLA has been working with some of the key stakeholders such as the London Waste and Recycling Board (LWARB) to develop a route map for London's transition to a circular economy.

Waste/Recycling

- 8.8 million Collections per annum
- 21% recycling rate in Tower Hamlets

"Low recycling rates are damaging both the planet and the council's finances, so we want to encourage more people to recycle in Tower Hamlets."

The Council is also keen to reduce the amount of waste generated in the borough through implementing the Waste Management Hierarchy of:

- Prevent
- Reduce
- Reuse and recycle / compost
- Recover
- Dispose.

The Hierarchy and its objectives will be applied across development of all types. This could be achieved through supporting development which:

- enables local residents and businesses to reduce and manage their waste effectively;

- reduces and manages their waste effectively during the complete lifecycle of development;
- uses recycled and reclaimed materials; and
- uses appropriate innovative solutions to waste management

10.3 The Community

We need to help general public on how their choices can help to combat climate change and there remains a major communication challenge in increasing people's awareness of how to be sustainable consumers. Whilst there is a variety of labels and marks, and accreditation, performance and certification schemes already available, few of these give a direct measure of a product's impact on climate change. Given the wide range of factors that consumers consider when making purchases, it is questionable whether a system of accreditation specifically for climate change would be effective. However in the future, technology and process innovations will enable consumers to invest with confidence in products offering greater efficiency savings, and greater use of renewable resources, providing more clarity on product performance and resource use.

Community networks could be used to spread messages about purchasing and consumption standards, as well as the benefits of sharing equipment, and supporting local businesses to establish resource efficient services.

To promote Fairtrade in Tower Hamlets the council produced window stickers with the Fairtrade Mark given to food outlets that sold Fairtrade products.

The London Borough of Tower Hamlets has achieved the Fairtrade borough status and has an active Fairtrade steering group, the first local authority in the country to sign up to Electronics watch.

10.4 Businesses

The larger public and private organisations that fall within the Carbon Reduction Commitment scheme tend to make 'tangible investments' in carbon reduction. As the corporate sector is driven by cost savings the bigger an organisation's energy and resource consumption and corresponding carbon footprint, the bigger the potential savings, therefore it is the large corporate organisations that tend to invest in longer term savings. They also tend to be driven by more formalised corporate social responsibility

policies, market pressures, and cost benefit planning, so that energy and resource saving and carbon reduction is already a priority for many of them.

The vast majority of small and medium sized enterprises (SMEs), struggling in very difficult economic times, short term financial imperatives prevail and many lack the skills, expertise and resource to be able to take advantage of low carbon opportunities such as retrofitting of buildings and renewable energy installation. This attitude may limit short term capital measures but there is still much that can be done in terms of changing behaviour, with simple energy and resource saving measures involving all staff, which can bring swift, tangible benefits.

Getting employees involved with a well-planned, joined up and clearly communicated action plan is key to progress in the wider SME sector. Businesses need to guide staff to use resources wisely, offer advice on best practice and consider incentives for responsible resource purchasing and use. Once these practices are embedded into the culture of the business, larger steps are more likely to follow. Businesses also need to be encouraged to consider new business models that generate revenue in more resource efficient ways, as well as offering customers wider benefits than simply lowest price, and advising them how to use products wisely and manage 'end of life' impacts, i.e. use less energy and recycle more waste.

Working with the Carbon Trust the council is delivering the Green Business Trust Fund Project. The Carbon Trust Green Business Fund is the energy efficiency support service for small and medium-sized companies in England, Wales and Scotland. It provides direct funded support through energy assessments, training workshops, equipment procurement support and up to £5,000 capital contribution per company towards energy saving equipment purchase.

10.5 Local Supply Chain

The low carbon economy has been identified as a sector of national importance, where local supply chains have a significant role. Local supply chains encourage more efficient

use of resources, minimise transport emissions and help develop the local area's economy.

While many businesses are gradually accepting the need to reduce their direct energy and resource consumption and consequently their carbon footprint ('operational carbon'), the additional challenge of limiting the total carbon footprint created throughout the product's life cycle ('embodied carbon') is less well understood or considered. This concept known as the 'circular economy' encourages more efficient use of, and greater reuse and recycling of, materials through the production cycle, as opposed to the conventional approach of 'take/make/waste'. With this new approach, 'end of life' products become a source of materials for new products. The approach promotes optimum resource use and minimum waste, while creating greater economic competitiveness and increases the local focus of economic activity. The producer aims to 'design out' waste, so that all resources are reused, and man-made materials that are not biodegradable are designed from the outset to be reusable in the development of new products.

Where products are bought, there are incentives in place to encourage 'end of life' return and reuse. From a business perspective this approach offers the opportunity to create new customer value and appeal, ultimately resulting in local wealth creation and employment as well as conserving resources and reducing carbon emissions.

East London Makerspace (ELM)

East London Makerspace (ELM) based in Tower Hamlets. ELM's aim is to develop unused garages/ space into a makerspace to serve as a hub for the community to develop and produce eco products, offer training, skills and jobs to the local community. ELM will provide a space for the design and production of eco products offer a furniture collection, restoration and resale for the community. It will provide a platform for eco designers and disadvantaged young people from the community. Offer advice and help to launch careers, it will provide visibility and mobility for young people in the community to foster creativity and entrepreneurial activity, whilst encouraging new circular economy business models and market development.

The public sector generally have a crucial role to play in leading on the low carbon agenda, both in terms of cutting emissions from the public sector's own estate and operations, as well as creating incentives to encourage more of the private sector to participate. The potential for increasing demand for sustainable products and services through public procurement is huge. All public authorities are required to factor in 'social value' as part of the commissioning process, considering how the services they commission and procure might improve the economic, social and environmental well-being of the area.

Sustainable Action for a Greener Environment.
The council's decision making process requires consideration of impacts on the environment.

By introducing requirements for environmental sustainability into tender specifications, the demand from public authorities could significantly increase the market for green products and drive technological innovation, as well as increasing local supply.

Public authorities (and increasingly large private sector organisations) are increasingly grouping together to make purchases.

The Big London Energy Switch is a collective switching scheme run by a number of councils in London. Residents register their interest in finding a supplier offering cheaper energy tariff. A reverse auction is held and the supplier offering the cheapest tariff wins the auction. This collective bargaining is helping to shape the competition in the domestic energy market.

11 Education communication and influencing behaviours

11.1 Understanding Climate Change

Enabling people to understand more about climate change, its impacts and the opportunities that will arise from the transition to a low carbon economy and devising a local climate "curriculum" (in and out of school) to use to communicate what is happening locally to help explain climate change and help people access the jobs, skills and enterprise opportunities is all part of the solution.

MADE in Europe launched its eco-award scheme for mosques, the first initiative of its kind, with an event featuring some of the country's most influential Muslims. The campaign was aimed specifically at educating and galvanising Muslims to become more eco-friendly in their choices of food, transport, and clothing. The scheme provides a framework for mosques in the UK to work towards becoming more environmentally sustainable.

Minimising the effects of climate change will depend on significant long term changes in everyone's behaviour across the borough, from individuals and communities to businesses and the public sector. How we behave is determined by many factors, such as our habits, beliefs about how we should behave in a given context (social norms), and cultural expectations, as well as by incentives. Although changing our behaviour and habits can sometimes feel challenging and complex, changing our social norms can have great benefits.

Research shows that understanding and awareness alone do not always motivate us to change our behaviour. Concerns about the environment do not necessarily translate into action. Equally, what people say is not always what they do in practice. Common behaviour can sometimes prove difficult to change, and unsustainable behaviours can be regarded as 'normal'.

However, despite these complexities, sustainable living can become the social norm. A coherent range of interventions will be needed over both the long and short term to encourage behaviour change – no single policy or intervention is likely to achieve change on its own. The increase in waste recycling shows how, with the right information and at the right scale, social norms can be altered.

11.2 Education

Knowledge and understanding are fundamental to behaviour change, although not always sufficient in themselves for long term change. Structured education and training have a role to play in both improving understanding and raising skills levels in sustainable services and industry. Certain key life stages, such as childhood and young adulthood, can present ideal opportunities for influencing attitudes and behaviour.

Despite the wealth of current provision, this strategy recognises the opportunity to develop this further and to promote its take-up by local residents. One particular focus is the knowledge and understanding gained by children and young people. Alongside this, workplaces should seek to educate their workforce on climate change related practices.

Project Earth Rock
It is recognised that instilling environmental values and educating young children on the importance of looking after the environment, will inspire them to protect the environment as future custodians of the planet. The council worked with singer and songwriter Jess Gold who produced an educational pack for schools linked to the school's curriculum key stage 2 that teaches about environmental protection through music and songs.

Recycling: Education Support
Learning about recycling and waste reduction in schools is a great way for children to become involved in improving our environment. The Council offers a wide range of fun educational activities for schools that enhance the national curriculum and help schools to become more sustainable.

Recycling Champions:
Being a Recycling Champion is all about encouraging your neighbours, friends, family and colleagues to reduce reuse and recycle.
Anyone passionate about recycling and environmental issues can become a recycling champion for the borough.

11.3 Communication

Good communications can be crucial to influencing people's thinking and supporting behaviour change. Techniques such as positive framing, i.e. emphasising the benefits of a low carbon future and changes in lifestyles, have been known to encourage positive responses. As well as the content of the message, we are also affected by who communicates information to us, whether it be our workplace, university, school, family or friends, and how they communicate it, whether we hear it through the internet, newspaper, radio, television or word of mouth.

Key communication aims with respect to climate change are to:

- Encourage individuals, businesses and organisations to consider climate change as part of their everyday activities and to operate and behave in ways that support the objectives on Climate Change.
- Ensure that people who live in, work in and visit the borough are aware of any new initiatives and projects they can join in with or benefit from and contribute to
- Present Tower Hamlets as serious about climate change and promote opportunities for external investors and companies looking to move to the borough.

11.4 Green Skills

As communities become more aware of the effects of climate change, there will be increased demand for electric vehicles, renewable energy, and insulated homes. The 'green economy' stimulates the creation of jobs that will help us to reduce the effects of and adapt to climate change, as well as help us manage our waste. This market has grown significantly and is set to grow further. The development and implementation of these initiatives and new technologies will require training for the current and future workforce. Whether this is in the maintenance of electric vehicles, design of 'zero carbon' buildings or the ability to install ground source heat pumps, there needs to be access to high quality training at affordable prices.

Training opportunities, whether delivered by specialist bodies, manufacturers, local training providers or government sponsored programmes, will need to be effectively signposted.

12 THE COMMUNITY

12.1 Communities

Communities can play a central role in developing a more sustainable way of life that reduces the impact that our lifestyles have on the global climate. This can be achieved through individuals being more self-sufficient, coming together as a community to share resources, and through a strong local business community.

Action to reduce its impact on climate change will be the sum of all the changes made by each individual, business or other organisations; this can be significantly enhanced through collective community action at a local level. Working with the existing community sector will benefit local action taken on climate change.

To reduce our ecological impact, prepare for inevitable climate change and build high quality low carbon lifestyles, we will need to reconsider our interpretation of 'success' to include factors relating to our overall quality of life. Our quality of life is dependent on much more than increasing our material wealth, as currently dominates our GDP, defining how successful we are as a nation.

The significance given to economic growth should be balanced with other factors which affect our well-being, such as protecting, enhancing and recognising the contribution of our local environment and our social interactions. To this effect, we should be working towards building sustainable communities.

Collective actions at the community level can help to reduce the effects of climate change and can help people to adapt to a changing climate, whilst improving communities' quality of life by helping everyone to lead their lives in a more sustainable way.

Case Study Seven: Gardening Groups

Gardening groups such as Poplar & Bow Green Network and Canal Club Gardening Group exists for those interested in gardening or growing food locally, they also promote creatively up-cycling furniture, saving money on your energy bills. It's a meeting place for likeminded people interested in getting involved in preserving the environment.

The network links people with existing groups including the 14 community gardens in the area and is a great way to find out what's going on locally, share ideas with others, start a project or apply for some funding.

Engaging neighbourhoods on climate change issues can be done in a variety of ways. For example;

- Renewable energy projects often attract attention voluntary and community groups.
- Tree planting through the opportunity to be part of an 'ethical' and beneficial shared investment or the growing of food can engage people who like being outdoors.
- Involvement with a city farm or community allotment can help build a connection with the natural environment, which may lead to a change in values, and subsequent action that will help reduce the effects of climate change.

12.2 Community Resilience

One way to increase self-sufficiency and remove reliance on energy and food brought in from a distance, at a financial and environmental cost is to increase local renewable energy production and food growing. With international supply chains at the mercy of volatile weather, a local supply can be more reliable and increase a community's resilience to climate change. A good example of low carbon living would be a community and charity sector that operates from energy efficient buildings, generates renewable energy, grows its own food and sells its waste resources, thereby saving money and /or earning an income. This is an ideal way for an organisation to become more self-sufficient and to fund its work.

Creating shared allotments and supporting more people to grow their own food is an important way of becoming more self-sufficient, with the additional benefits of reducing the carbon footprint of a product if it enters the local food supply chain.

The community sector also provides space for food growing and uses it as a mechanism to empower local people. These initiatives will promote greater availability of local food and other resource supplies. More reliable supply chains are needed in order to develop this market and to make locally grown food more accessible and affordable.

The Tower Hamlets Food Growing Network was formed in response to the resurgence of community food growing activities in the borough. The Network is made up of gardeners of all stripes and is facilitated by a partnership of organisations led by Women's Environmental Network (WEN). WEN is the local lead for Capital Growth in Tower Hamlets.

12.3 A Sharing Economy

The consumption of goods contributes significantly to the total amount of carbon released globally. The extraction of raw materials, as well as the manufacture and transportation of goods, can result in carbon emissions and environmental destruction.

Plastic, cardboard and polystyrene are all commonly used for packaging and presenting goods, and to keep them in perfect condition. This has raised consumers' expectations so

that they prefer new and pristine goods, and has significantly increased the amount of waste from packaging.

Sustainable communities have a role to play in the reduction of waste by helping to develop an economy based on sharing. This reduces the need for new goods and therefore reduces the impacts from production. A sharing economy is an economy measured by social interactions and exchanges of goods, with a culture of 'borrow rather than own'.

Changing the negative perceptions that the majority of the population hold about second hand goods will also be a challenge. There are existing re-use and service exchange that we can start to build on. Creating a market for goods developed from waste materials would help to increase the richness of community skills and stimulate creativity, as well as reducing the amount of waste going to landfill.

Freecycle
The Freecycle Network is made up of groups with members around the world, and next door to you. It's a grassroots and entirely non-profit movement of people who are giving (and getting) stuff for free in their own towns and neighbourhoods. It's all about reuse and keeping good stuff out of landfills. Each local group is moderated by local volunteers. Membership is free.

FreelyWheely
FreelyWheely is a place where you can offer your unwanted belongings, for free, to someone who can make use of them.

The ReUseIt Network is an on-line forum that serves as a tool to make connections between community members who want to help each other, themselves, and their environment. In a disposable society where many items are discarded long before they have actually outlived their use, The ReUseIt Network helps get things from people who have them but don't want them to people who want them but don't have them.

The goal is to find new uses for unwanted items that would otherwise be thrown away. The primary benefit is that it reduces the amount of reusable items that end up in the bin with a secondary benefit of reducing the overall amount of items thrown into landfills. Reusing items not only cuts down on goods in landfills, but also helps reduce the strain on

our natural resources by keeping useable items in circulation, reducing the need to manufacture additional goods.

The ReUseIt Network also provides an opportunity for those looking for an item to ask for it. Requests for items may jog the memory of someone who has an unused item stashed in the garage or basement waiting to be used. It is great ways to help get rid of those things which we may have forgotten, giving every member the chance to ReUseIt.

13 VISIONS PRIORITIES AND PROJECTS

<table>
<tr><td colspan="2">Vision 1: Carbon Reduction

The borough will commit to achieving 60% CO2 emissions reductions by 2025 on 1990 levels</td></tr>
<tr><td>PRIORITY 1</td><td>The borough will adopt the following Carbon Budgets

<table><tr><td>Budget</td><td>Carbon budget level</td><td>% reduction below base year</td></tr><tr><td>1990</td><td>2,164.8 ktCO2e</td><td>Base Year</td></tr><tr><td>2005</td><td>2,006.8 ktCO2e</td><td>7% (actual)</td></tr><tr><td>2014</td><td>1,703.5 ktCO2e</td><td>21% (actual)</td></tr><tr><td>2017</td><td>1,618.3 ktCO2e</td><td>25% (predicted)</td></tr><tr><td>2020</td><td>1,298.9 ktCO2e</td><td>40% (target)</td></tr><tr><td>2025</td><td>865.9 ktCO2e</td><td>60% (target)</td></tr></table></td></tr>
<tr><td>PRIORITY 2</td><td>The London Borough of Tower Hamlets will adopt a strategic approach in all aspects of estate management, service delivery and community leadership with sustainable energy recognised as a priority.</td></tr>
<tr><td>PRIORITY 3</td><td>Ensure that a cross-council single system is in place for gathering data relating to sustainable energy (including energy use in the council’s estate, the energy efficiency of public and private sector housing stock, planning applications and energy use in non-domestic buildings).</td></tr>
<tr><td>PRIORITY 4</td><td>The council should link up with the Greater London Authority and neighbouring councils to develop campaigns in partnership and establish a common method to track activity.</td></tr>
<tr><td>PRIORITY 5</td><td>London Borough of Tower Hamlets should promote its leadership role and form a strategic partnership with key players including businesses and community groups in the local area to deliver community carbon reductions.</td></tr>
<tr><td colspan="2">PROJECTS</td></tr>
<tr><td>RESIDENTIAL BOILER REPLACEMENT</td><td>Deliver boiler replacement and insulation projects in the residential sector for vulnerable and low income households in the borough. Link the programme to the private rental sector.</td></tr>
<tr><td>WARMTH</td><td>Deliver home visits by qualified energy assessor providing a package of energy measures to improve energy efficiency in the home for the most vulnerable households on low incomes, with the aim of alleviating fuel poverty and maximising incomes for those particularly impacted by welfare reforms.</td></tr>
</table>

Vision 2: Low Carbon Borough

Achieving exemplar energy standards in all new development by 2025, the Council, social housing developers and private sector partners will have together developed the largest proportion of high quality, lifetime, low and zero carbon new residential and commercial developments in London.

PRIORITY 6	All new residential developments will achieve a minimum of 45% CO2 emissions reductions on site with the remaining emissions off set through a cash contribution to the boroughs carbon fund to achieve zero carbon developments.
PRIORITY 7	All new non-residential developments will achieve a minimum of 45% CO2 emissions reductions on site and from 2019 all new residential developments will be zero carbon developments.
PROJECTS	
CARBON FUND	Continuously monitor the cost effectiveness of the delivery of carbon reduction projects and amend the carbon contribution calculator.
COMMUNITY RENEWABLE ENERGY	Implement an annual community fund to enable local community groups to deliver renewable energy projects in their area.
DISTRICT HEATING	Complete the Barkantine expansion feasibility study to serve heat and hot water for the whole of Isle of Dogs and South Quay area providing low cost energy to the residents and generating localised low carbon energy.

Vision 3: Our Low Carbon Council

The London Borough of Tower Hamlets will reduce CO2 emissions from Council operations by 60% by 2020 (from 2007 levels)

In order to achieve the our low carbon vision the council commits to the following;

- Implementing carbon reduction projects that will help the Council achieve its target.
- Making Carbon Reduction everyone's responsibility ensuring the aims of the programme are aligned with and not working against the rest of organisations activities.
- Targeting budgets to carbon reduction projects and seeking new external
- Funding
- Creating strong leadership and ownership of the Carbon Management within the Council
- Effective partnership working as the targets cannot be achieved efficiently without full
- Involvement and buy in from its partners.

PRIORITY 8	Comply with the CRC Energy Efficiency scheme ensuring the borough is in full compliance avoiding any financial penalties.
PRIORITY 9	Comply with the mandatory Greenhouse Gas (GHG) reporting providing annual returns to the Department of Business, Energy and Industrial Strategy (BEIS).
PRIORITY 10	Align projects with council building refurbishment programme and fund energy efficiency improvement additionally to the existing programme.
PROJECTS	
COUNCIL BUILDING REFURBISHMENT	Deliver the following carbon reduction projects

Building	Measure	Annual Fuel Cost savings (£)	Annual Carbon Savings (tonnes)	Capital Cost (£)	Payback (years)
Mulberry Place	BMS fine tuning	30,019	181	2,400	0.1
Whitechapel Idea Store	Fine tuning existing equipment	7,574	46	24,000	3.2
Cubitt Town Library	Lighting refit (T5s)	9,798	59	66,000	6.7
John Onslow House	Boiler replacement (Phase 2)	3,034	19	30,000	9.9

Building	Measure	Annual Fuel Cost savings (£)	Annual Carbon Savings (tonnes)	Capital Cost (£)	Payback (years)
John Onslow House	Upgrade boiler controls - connect to central BMS, weather compensation and optimum stop/start control (Phase 2)	1,269	8	8,400	6.6
John Onslow House	Replace T8 lighting (T5 or LEDs with sensors)	15,248	63	36,410	2.4
John Onslow House	Boiler room flange and valve insulation	353	3	1,200	3.4
John Onlsow House	Remote TRVs for zone control to idea store	127	1	2,400	18.9
John Onslow House	Point of use water heaters	1,015	6	6,000	5.9
John Onslow House	Draft Lobby for idea store entrance	254	2	18,000	70.9
Shadwell centre	Boiler replacement	3,735	23	24,000	6.4
Shadwell centre	Upgrade boiler controls -	1,562	10	7,800	5.0
Shadwell centre	Boiler room flange and valve insulation	625	4	1,440	2.3
Shadwell centre	LED lighting	3,856	23	36,000	9.3
Toby Lane Depot	LED lighting	5,284	32	48,000	9.1
Blackwall Depot	LED lighting	4,523	27	48,000	10.6
Toby Club	LED lighting	1,630	10	11,146	6.8
Toby Club	Pipe work insulation (throughout rest of building)	125	1	600	4.8
Toby Club	Treat Single glazing (Thermal film or DG)	187	1	2,400	12.8
Total		**90,218**	**519**	**374,196**	**4.1**

Vision 4: Air Quality

The London borough of Tower Hamlets will seek opportunities to influence air quality policy across the borough to secure lower levels of air pollution in the borough.

PRIORITY 11	When delivering projects that impact on climate change and or air quality. The local authority will abide by the following policy choices principle.

	Option	Likely impact on air pollution	Actions
Policy	Corporate Policy	Positive	Agree a corporate pledge to improve air quality in the borough.
	Air Quality Strategy	Positive	Develop an air quality strategy to be agreed by Cabinet
	Local Plan Policy	Positive	Ensure a policy to consider air pollution impact and improve air quality is included in the Local Plan Policy.
	Engaging Stakeholders	Positive	Identify the areas and stakeholders who emit the most CO2 emissions and air pollutants in the borough. Set up a stakeholders steering group to address emissions and air pollutions.
			General Policy Choices and Commentary
Energy and Fuels	Energy Efficiency	Positive	Improving energy efficiency is the best method to address climate change and air quality, reductions in energy use results in reductions in costs, CO2 and air pollutant particulates. **Energy Efficiency should be considered in all policy choices.**
	Decarbonisation	Positive	Decarbonisation of the grid (mostly through nuclear power) will result in lower emissions; however cost of electricity will increase. There will be an increase in electricity usage to achieve CO2 reductions and a move away from onsite fossil fuel burning. **This will need to be reflected in planning policy as it's likely to put more households in fuel poverty.**
	Renewable Energy	Positive	This technology produces no air pollution emissions and is therefore beneficial for both air quality and emissions. **Encourage installation of more onsite renewable energy technology in the borough.**
	Biomass (heat)	Negative	The use of wood and biofuels for heating is likely to substantially increase in urban areas and replace natural gas and likely to be increasingly negative on

			urban air quality. **Where biomass/biofuels are proposed locations of energy centres will need to be considered to minimise the impact on air quality and install effective abatement equipment for district heating.**
	Decentralised Energy	Positive and Negative	Large scale uptake of Combined Heat and Power will have a negative impact on air quality. In terms of national emission, CHP will make heat and power generation more efficient, with the total emissions reducing. CHP is a critical consideration to reduce CO2 emissions. **Where CHP is considered abatement equipment needs to be considered and a trade of solution with air quality may be required.**
	Ground and air source heat pumps	Positive	Produces no air pollution emissions and therefore beneficial for urban air quality and, subject to the energy source used to operate the pump. **Encourage the installation of more GSHP**
Transport	Electric cars	Positive	Highly beneficial for urban air quality, and benefits for greenhouse gases. **Install more electric car charging points and setting up of electric car clubs.**
	Hydrogen fuel-cell cars	Positive	Highly beneficial for urban air quality, and benefits for greenhouse gases. **Facilitate the uptake of hydrogen fuel cell cars in the borough.**
	Biofuels		Some conventional biofuels could increase NOx and VOC emissions with PM emissions likely to decrease. Bio methane can deliver considerable air quality benefits relative to diesel. **Where biofuels are considered for transport sector good engineering solutions to fuelling and emissions will need to be required**.

PROJECTS	
Air Quality Action Plan	Deliver the Air Quality Action Plan

Vision 5: Sustainable Transport

Tower Hamlets Council will help create better connected towns and neighbourhoods. This will be achieved through the introduction of innovative, sustainable transport and place shaping measures.

PRIORITY 12	Climate change – Towards zero carbon travel • develop clear zones in Tower Hamlets • protect green areas from unnecessary loss of gardens to car parking • explore carbon trading scheme/differential parking charges • test congestion charging initiatives • increase the level of car free development • support community car clubs • Introduce Electric Vehicle Charging Points
PRIORITY 13	Green city living – Promoting walking, cycling and creating better public spaces • promote walking, cycling and training initiatives • encourage travel plans • safer streets for all Promoting public transport • promote the new rail stations • take part in travel awareness campaigns • encourage more use of waterways Reducing the need to travel • implement greener policies
PRIORITY 14	Partnerships and funding – Working together • increase links with partners and the community • investigate additional funding streams for sustainable transport measures • pilot renewable energy technology in public transport systems • capture resources to fund sustainable transport measures
PROJECTS	
ELECTRIC VEHICLE CHARGING POINT STRATEGY	Implement the electric vehicle charging point strategy

Vision 6: Natural Environment, Water Supply and Flooding Vision

To enhance and protect the boroughs biodiversity safeguarding the boroughs water resources and minimising the risk of flooding.

PRIORITY 15	Improve the quality and connectivity of natural habitats
PRIORITY 16	Encourage local community groups and businesses to become more involved in the management of local green spaces.
PRIORITY 17	Manage demand for and supply of water to reduce the expected impact of water shortages on consumers and wildlife
PRIORITY 18	Reduce the carbon footprint of water supply and water heating
PROJECTS	
RESIDENTIAL WATER METERING	Support residents in the delivery of the government's mandatory water metering roll out.
SOLAR HEATING	Invest in solar heating projects for residential and community building
GREEN INFRASTRUCTURE	Develop a carbon calculator for measuring the carbon offset for green infrastructure such as tree planting and green walls and use the Carbon Fund to deliver green infrastructure.
BIODIVERSITY ACTION PLAN	Deliver the council's local biodiversity action plan.

Vision 7: Purchasing, Supply and Consumption

- Help people and organisations understand the need for action on climate change and adjust their purchasing, supply and consumption choices accordingly, both individually and collectively.
- Reduce waste going to landfill, through producing less waste, expanding the market in the recycling and re-use of products, and by generating energy from waste.

PRIORITY 19	Run a campaign to help consumers understand Green Labels
PRIORITY 20	(i) Enable people to make sustainable purchasing choices (ii) Support and encourage local purchasing and the development of local supply chains (iii) Promote and encourage new business models focused around the 'circular economy' (iv) Build the commitment to sustainable procurement in both the public and private sectors (v) Reduce waste by supporting the re-use and repair of products and materials (vi) Increase recycling rates
PROJECTS	
FOOD WASTE TRIAL	Investigate the feasibility of a small scale food waste collection with an anaerobic digester.

Vision 8: Education, Communication and Influencing Behaviours • People and organisations in the borough will understand the reasons for action on climate change; we will be aware of what we can collectively achieve and the contribution we can make. • Equip people of all ages with knowledge and skills that will increase access to employment within the local 'green economy'.	
PRIORITY 21	(i) Integrate sustainable behaviour promotion and practice throughout schools, colleges, universities, and workplaces. (ii) Ensure that communication which is aimed at influencing climate change related behaviour is delivered in a consistent and targeted way. (iii) Engage organisations in the private sector, including residential and commercial landlords, in effective action to reduce their carbon footprint. (iv) Develop the market for climate change related local business and the skills to ensure that local jobs are created in line with the growing low carbon economy
PROJECTS	
GREEN BUSINESS	Deliver efficiency support service for small and medium-sized companies in the borough through energy assessments, training workshops, equipment procurement support.
STAFF ENGAGEMENT	Run a campaign to engage staff on being energy efficient and recycling at work and at home.

Vision 9: The Community

People will have an understanding of how their local environment contributes towards a better quality of life; they will have the commitment and community capacity to support each other to lead more sustainable lives.

PRIORITY 22	(i) Build community activity relating to sustainable communities (ii) Build community resilience to climate change and self-sufficiency (collective and individual) (iii) Reduce consumption by building a 'sharing economy' (iv) Build an 'alternative economy' focused on quality of life and emphasising sustainable communities.
PROJECTS	
EDUCATION	Run a series of workshops to educate the residents about energy efficiency, air quality, recycling and the environment.
SOCIAL ENTERPRISE	Link the community renewable energy projects to benefit and deliver community social enterprise projects.