

# Greener Greenwich Strategy

*The Council's response to a changing climate*



2016



## **FOREWARD**

Climate change and air pollution present a significant challenge to communities globally, nationally and of course right here in the Royal Borough of Greenwich. In cities and urban areas particularly, both air pollution and the effects of climate change represent a growing threat to the wellbeing of the people that live there.

Heating homes and powering transport, buildings and industries all result in emissions, which in turn contribute to air pollution and ultimately climate change. Rising temperatures, extreme weather events, impact on wellbeing and economic consequences are a just some of the issues associated with climate change.

It is vital that the council recognises its role in responding to these difficult and complex challenges. We are committed to reducing emissions in the local area and safeguarding our communities and local environment from the impact of air pollution and climate change. We will also look to help residents, businesses and local organisations make a positive contribution in implementing a more sustainable future.

The Greener Greenwich Strategy outlines the action the council is taking to do just that. It involves looking at alternative low carbon energy supplies, making homes more energy efficient, modifying the way we travel, improving waste systems, enhancing the natural environment, and securing high environmental standards in new developments.

The council also recognises that the actions we take to reduce emissions also brings additional benefits such as improving the wellbeing of local people, tackling fuel poverty, and fostering sustainable and smart growth.

The Greener Greenwich Strategy shows that as a council, we are committed to responding to environmental challenges. We look forward to working together to carry through this commitment over the coming years, ensuring a greener, more sustainable and prosperous future for the whole of the Royal Borough.

A handwritten signature in black ink, appearing to read 'Danny Thorpe', written in a cursive style.

Councillor Danny Thorpe

Cabinet Member for Regeneration, Enterprise and Skills

## Executive summary

The 'Greener Greenwich Strategy: The Royal Borough's response to climate change and air pollution' outlines the council's past achievements and current activity, and explains how it will respond to climate change and reduce emissions in the coming years.

The aim of the strategy is to take, and encourage actions which respond to climate change and air pollution. The focus will be on the reduction of emissions and on managing impacts whilst enhancing the lives of residents and fostering sustainable growth.

The council recognises climate change and air pollution as key global issues, presenting a challenge to all populations and environments, including those in the Royal Borough. The impact of human activity on the world's environment is already being registered globally. Emissions are increasing, temperatures are rising, and the unequivocal warming of earth's climate is the result. The frequency of extreme weather events such as flooding, drought and heat-waves is also on the rise. Climate change and air pollution also impact upon the health and wellbeing of affected communities, and have economic consequences. The cost of inaction on global warming in particular predicted to be great.

However these are challenges that the Royal Borough can respond to. The majority of actions influencing climate change involve the release of greenhouse

gas emissions. This includes through the burning of fossil fuels to power our homes, transport, buildings and industries.

In 2013 every person in the Royal Borough emitted around 4 tonnes CO<sub>2</sub>, whilst greenhouse gas emissions from the Royal Borough's estate and operations totalled around 35,856 tonnes in 2014/15.

The most significant air pollutants are considered to be Nitrogen Oxides (NO<sub>x</sub>) and Particulate Matter (PM). Royal Greenwich and the council have a role to play in encouraging a truly borough-wide response, acting to reduce emissions, as well as to manage and adapting to the impacts of such emissions.

The commitments set out in the council's Greener Greenwich Strategy target areas which contribute significantly to climate change and air pollution, and within which the Royal Borough has most influence. These areas include energy supply, buildings and homes, transport, waste, natural environment, and new development.

The commitments set out in this strategy will see the council seek to manage its own emissions and help others to do the same.

It also highlights how this approach to environmental issues provides an opportunity to build on the council's key priorities of growth, anti-poverty and wellbeing in the future.

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# Introduction

## Vision and aim

Evidence of the impact of human activity on the Earth's environment is increasingly apparent. Unchecked climate change will lead to significant global, and irreversible impacts<sup>1</sup> (see box 1); and air pollution will continue to threaten the health and wellbeing of urban populations (see box 2). The council recognises climate change and air pollution are therefore key global challenges for all populations and environments, including those of the Royal Borough. However, there are responses that can be made to these challenges, and these must wherever possible.

The 'Greener Greenwich Strategy: The Royal Borough's response to climate change and air pollution' sets out such a response, providing a comprehensive report detailing past achievements and current activity, and outlining how the Royal Borough intends to respond to climate change and air pollution over the coming years.

A key message throughout the strategy is that response to the challenges of climate change and air pollution can also provide opportunities to support and further other council priorities such as growth and prosperity, anti-poverty, and wellbeing, amongst others. Royal Greenwich is experiencing significant growth, and this is expected to continue into the coming decades; with population and household numbers predicted to increase by 72,282 (27.4%)<sup>2</sup> and 42,661 (41%)<sup>3</sup> respectively between 2013 and 2041. Successfully combining priorities for growth and prosperity and action on climate change and air pollution is a challenge, but can also present opportunities for sustainable and smart growth.

The aim of the strategy is:

**To take actions and encourage actions which respond to climate change and air pollution; focusing on the reduction of emissions and on managing impacts; whilst enhancing lives and fostering sustainable growth**

## Royal Greenwich's role in a changing environment

### What is climate change?

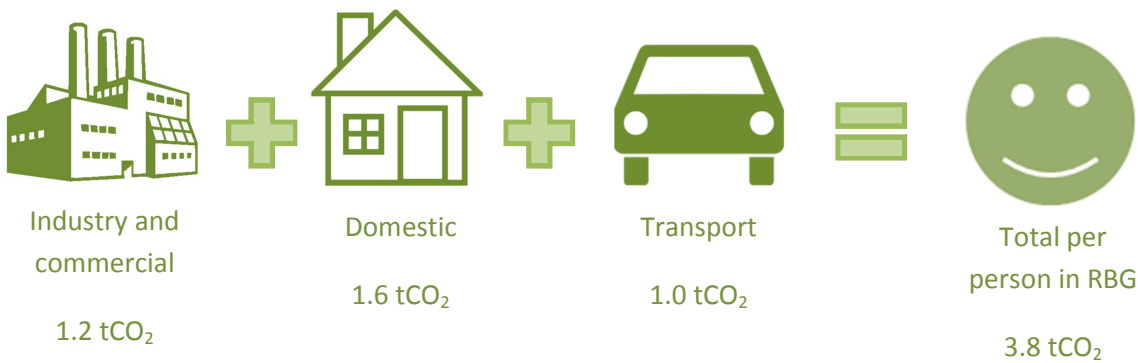
Climate change describes long term changes in the Earth's climate. Whilst this is understood as a natural process, it is influenced by human actions. The majority of actions which influence climate change do so through the emission of greenhouse gases (GHGs) from the burning of fossil fuels to power our homes, transport, buildings and industries<sup>4</sup>. GHGs include carbon dioxide (CO<sub>2</sub>), methane and nitrous oxide<sup>5</sup>, in the upper atmosphere these gasses act to keep the earth warm, trapping heat from the sun in a process called the natural greenhouse gas effect. As populations emit increasing amounts of greenhouse gases, this greenhouse gas effect is enhanced, leading to an overall warming of the planet and other impacts such as those in Box 1.

### Box I. The impacts of climate change

- **Rising temperatures-** warming of the Earth's climate is unequivocal<sup>6</sup>, and records show that over the last century global average surface temperatures have risen by around 0.8°C; whilst Britain is 0.5°C warmer than in the 1970s<sup>7</sup>.
- **Greater risk of extreme weather events-** such as flooding, drought and heatwaves<sup>8</sup>.
- Impacts on the **health and well-being** of communities<sup>9</sup>.
- **Economic consequences-** with the cost of inaction on global warming predicted to be great<sup>10,11</sup>.

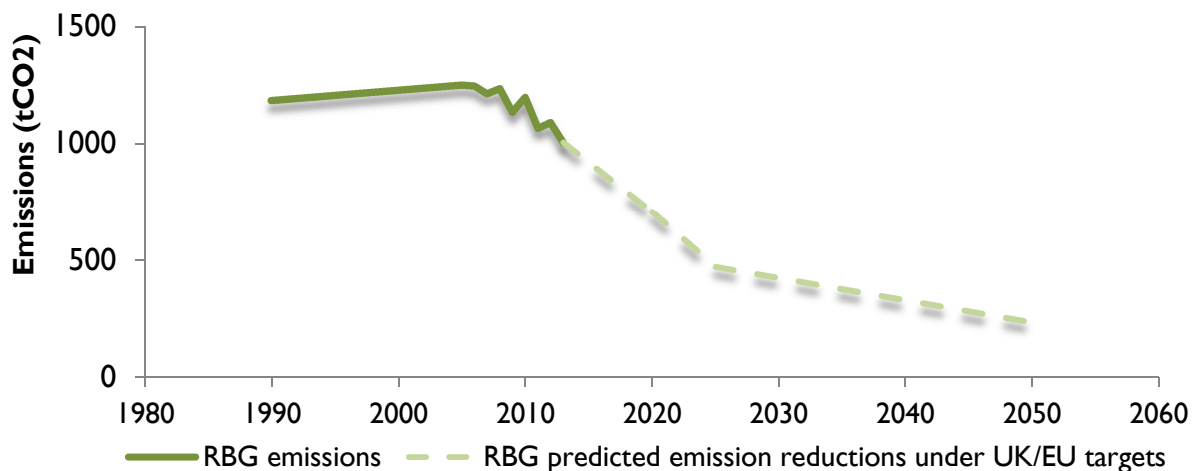
## Royal Greenwich and climate change

Cities are often significant sources of greenhouse gases. Greater London's total CO<sub>2</sub> emissions were around 41 million tonnes in 2013<sup>12</sup>. Royal Greenwich's emissions for the same year totalled around 1 million tonnes CO<sub>2</sub>; equating to around 4 tonnes CO<sub>2</sub> emitted by every person in the borough, with the majority share of emissions emerging from the domestic sector<sup>13</sup> (Figure 1).



**Figure 1.** 2013 Borough wide per capita carbon emissions by sector in tonnes CO<sub>2</sub><sup>14</sup>.

Figure 2 shows how Royal Greenwich's emissions are expected to fall under the Mayor's targets for 2020 and 2025; and expected reductions if the Borough were to assume national and European targets on carbon emissions for 2030 and 2050. At 2050, Royal Greenwich would be expected to reduce emissions by around 24% from 1990 levels.



**Figure 2.** Estimated reduction in emissions needed if Royal Greenwich were to follow and reach the Mayor’s targets of 40% and 60% reduction on a 1990 baseline by 2020 and 2025 respectively; and UK and EU targets on emissions reduction of 40% and 80% on a 1990 baseline by 2030 and 2050 respectively. The 1990 emissions baseline has been extrapolated using Royal Greenwich’s percentage contribution to London wide emissions from 2005 to 2013<sup>15</sup>.

The Royal Borough’s buildings and operations also contribute to Royal Greenwich’s GHG emissions. Council emissions are recorded in a Greenhouse Gas report which is submitted to Defra and published on the Royal Borough’s website in July each year. The 2014/15 Greenhouse Gas Report calculated total GHG emissions for 2014-2015 to be 35,856 tonnes, 17% lower than the base year 2009/10.

### What is air pollution?

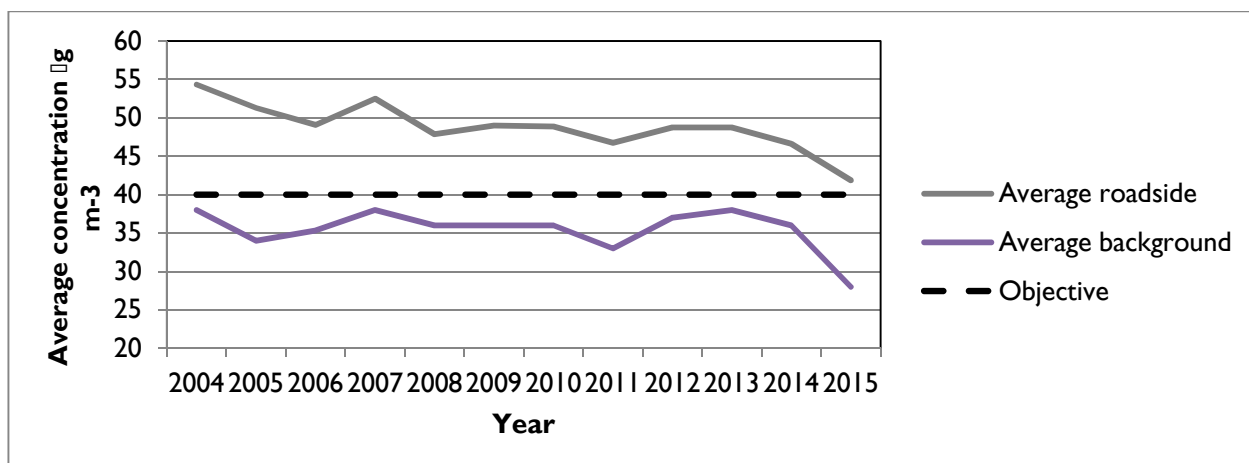
The release of particles and noxious gases from human activities such as the burning of fossil fuels, pollute the air and have an effect on human health<sup>16</sup> (see Box 2). The most significant air pollutants are considered to be Nitrogen Oxides (NOx) and Particulate Matter (PM). Cities and urban areas tend to suffer more from air pollution, especially traffic related air pollution; and central London is considered to be one of the most polluted areas of the UK.

#### Box 2. The impacts of air pollution

Continued exposure to high levels of air pollution can have a number of detrimental impacts on health particularly for vulnerable groups such as the very young, elderly or those with pre-existing respiratory and heart conditions. The Committee on the Medical Effects of Air Pollution (COMEAP) estimates that every year 29,000 premature deaths are as a result of air pollution. In 2012, the World Health Organisation classified diesel exhaust emissions as being carcinogenic to humans.

### Royal Greenwich and air pollution

The Royal Borough has more air pollution monitoring stations than any other London Borough (10 in total), which automatically observe levels of key pollutants (for example NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>) in the air, and upload these measurements to the freely accessible London Air Quality Network website ([www.londonair.org.uk](http://www.londonair.org.uk)). Although on average concentrations of pollutants are declining across the Borough (figure 3), in line with all Boroughs bordering central London, there are locations near major roads where pollutant levels exceed legal limits. More information on air quality, data from monitoring stations, and the Royal Borough’s Air Quality Action Plan can be found on the Royal Borough’s website.



**Figure 3.** Trends in Annual Mean Nitrogen Dioxide Concentrations in the Royal Borough of Greenwich from 2004 to 2015.

## **How to respond?**

Evidence of climate change is already being registered around the world<sup>17</sup>, and it is clear that air pollution is a significant challenge in urban areas. As an emitter of greenhouse gases and air pollutants Royal Greenwich as a whole has a role to play in acting to reduce emissions, and managing the impacts of such emissions. When deciding how to take action and reduce emissions, the Royal Borough considers that its response should do the following.

### *Involve both mitigation of emissions and adaptation to climate change*

Although not pointedly separated in the following strategy, the Royal Borough's response must include actions that seek to address the causes of climate change and air pollution, such as human activities which produce emissions (mitigation); as well addressing and adapting to the impacts of climate change and air pollution, so as to limit the negative effects (adaptation).

### *Consider the context of policy*

International, national and local level policy and strategy can influence the direction and strength of the Royal Borough's response. Appendix I provides further detail on relevant policy influences.

### *Target areas and sectors*

Focus on areas which contribute significantly to climate change and air pollution (as in Figure 1), and within which the Royal Borough has most influence. Six such areas include energy supply, buildings and homes, transport, waste, natural environment, and new development.

### *Seek to manage the council's emissions*

Look to address the Royal Borough's own emissions, as an owner and manager of corporate stock, housing and parks and open spaces, and as a landlord.

### *Pursue actions that encourage and enable others to respond*

Fostering a truly borough-wide response including residents, community groups, local businesses and the Royal Borough's partners. Also, lobbying wider stakeholders in the Borough, and influencing higher level policy; for example the Mayor and Transport for London. This recognises that partnerships and engagement with community organisations, the third sector, and businesses can support the delivery of the Strategy; and that tackling climate change cannot be driven by the Council alone, and calls for everyone to act together.

### *Consider and respond to challenges*

Challenges such as obtaining funding amid budget pressures, and changing policy. For example recent changes in national environmental policy which could mean a weakened response to climate change, such as the removal of the Code for Sustainable Homes, movements to abolish Zero Carbon Homes policy, and changes to Solar PV feed in tariffs. In addition to proposed changes such as the Ultra Low Emissions Zone (ULEZ), which is planned to come into force in September 2020 and requires vehicles travelling within the zone to meet more stringent emission criteria than is currently in place. The Mayor is currently putting forward proposals for where the ULEZ will extend to, and the Royal Borough is feeding into these.

### *Make every opportunity count*

Recognising and capitalising on the environmental, economic and social co-benefits<sup>18</sup> that result from working to manage climate change and reduce air quality emissions. Taking opportunities to add value to existing council priorities such as furthering sustainable growth, improving health and wellbeing, and poverty reduction.

## **Strategy structure**

Building on the previous section, the following strategy is structured into **six chapters**, reflecting the six key areas where the Royal Borough can target its further response to climate change and air quality:

1. energy supply,
2. buildings and homes,
3. transport,
4. waste,
5. natural environment,
6. and new development.

Each chapter describes what the Royal Borough is doing now to address climate change and air quality; and outlines our commitments for the future. These commitments are grouped under 12 objectives across the strategy; and are collated into the accompanying **Greener Greenwich Action Plan 2016**. The action plan also sets out whether commitments are short term- over the next 5 years; or long term- over the next 20 years; in recognition that our response to climate change and air quality will require long term commitment. To monitor the effectiveness of this document, annual updates on the progress of commitments will be provided to senior managers and Council members.

# I. Energy supply

The burning of fossil fuels to produce energy leads to significant emissions of greenhouse gases and other air pollutants that are harmful to health. The majority of the energy required in our everyday lives is currently derived from fossil fuel sources which release greenhouse gases when burnt. In fact fossil fuels accounted for 84.5% of the UK's energy supply in 2014.

Reducing emissions from the generation of our energy supply must therefore involve using more efficient, low and zero carbon forms of energy production and energy networks. The council's actions in this area focus on supporting and facilitating decentralised energy development across the Borough, including district heating networks (DHNs), and renewable energy such as solar photovoltaic (PV) power. Both options offer a means of supplying energy with less associated carbon and air pollutant emissions. For example, district heating is more efficient in the use of fuel and therefore produces less pollution than equipment supplying individual premises.

The average annual spend on gas and electricity for a household in 2015 was over £1,299; increasing the supply of energy through more efficient, local and low emission means can help to lower energy costs for residents, tackle fuel poverty, and increase energy security.

## Current activity

For the last two years the Royal Borough has been committed to the development of district heat networks (Box 1.1), facilitating a DHN on Greenwich Peninsula; and further networks exist in Woolwich and Kidbrooke. A feasibility study and business case has also been completed to better understand the potential of a DHN which would make use of waste heat from Transport for London's operations at Greenwich Power Station, to provide low carbon heat to residents of Greenwich and Greenwich Peninsula.

Through the planning process the Royal Borough also encourages new developments in the borough to establish or connect to decentralised energy networks.

### **Box 1.1. Decentralised energy and the Greenwich Peninsula DHN**

Decentralised energy means energy is produced close to where it will be used, rather than at a large power plant away from the point of use - increasing efficiency of transmission and reducing losses, all of which can help reduce GHG emissions, and potentially reduce energy costs for customers. For example, moving from a heating system which is made up of multiple boilers and multiple emissions sources, i.e. a boiler in each dwelling in a block of flats; to one centrally supplied by a district heat network, would increase efficiency of heat supply, therefore reduce the GHG emissions resulting from producing heat. This would also have air quality benefits to residents particularly in the case of using waste heat sources from existing processes, as it means the removal of an emission source in the home (i.e. a boiler).

With the aid of grant funding a district heat network is being installed on Greenwich Peninsula, and will supply over 13,000 homes with low carbon energy.

Regarding renewable energy, the Royal Borough has voluntarily committed to procuring all of its electricity from green sources. In addition the Royal Borough began a solar PV programme in 2015 to install panels on Royal Borough owned sheltered and residential blocks, with 7 blocks

covered so far (Box 1.2). The Royal Borough also recognises the work of community organisations such as South East London Community Energy (SELCE) in the development of locally produced renewable energy; and are happy to have helped facilitate SELCE's installation of Solar PV panels on the roofs of five schools in the Borough.

The Royal Borough also advocates the installation of renewables in new development through the planning process; requiring that larger developments achieve an onsite reduction in CO<sub>2</sub> emissions by utilising renewable energy technologies. This has resulted in over 35,000 m<sup>2</sup> (equivalent to 5 football pitches) of solar panels being installed on developments in the Borough since 2010, and the application of other renewables such as biomass, solar thermal and ground source heat pumps.

## Future Commitments

### **Strategic Objective 1:** To encourage local, low carbon, and renewable energy uptake

The Royal Borough remains committed to procuring its electricity from green sources<sup>19</sup>. The uptake of solar PV installation will also be promoted, with the aim of lowering the Council's use of fossil fuels, increasing energy security, and alleviating fuel poverty. In addition to promoting the installation of renewable energy technologies across the Borough, is the aspiration to couple this with further technologies such as battery storage. This would improve and extend the potential renewable energy has to reduce greenhouse gas emissions, reduce the money spent by both the council and residents on energy, and provide energy security for residents, businesses and services from energy shortages and climatic events.

The Royal Borough will also look to develop energy partnerships at community, street and neighbourhood level. Such complementary energy production, involving supply and networking between nearby properties can create energy savings, reduce energy costs and improve energy security. Such partnerships could include the sharing of energy produced by solar panels or the heat and electricity generated by a Combined Heat and Power unit.

There are around 22,000 street lights across Royal Greenwich, which in 2014/15 produced around 6,600 tonnes of GHGs, and cost the Royal Borough around £1.5 million. From 2016 the Royal Borough plans to replace all street lighting with LED lighting, reducing energy use, maintenance needs and cost. More efficient street lighting operation will also be investigated to further reduce energy use, without turning lights off, for example more light sensitive timing. As part of the council's work on smart cities and the EU funded Horizon 2020 programme, opportunities to integrate smart technologies into the Royal Borough's street lighting network will also be explored. This could include sensors for monitoring aspects such as air quality and traffic flow.

**Box 1.2.** Installations of Solar PV on Royal Borough residential blocks.



*(Image: Solar PV panels on the roofs of Little Heath and Mandela House, installed in February 2016)*

**Strategic Objective 2:** To support the development of district heat networks, and investigate their use on the Royal Borough’s own buildings.

The Royal Borough will be undertaking feasibility work for a possible DHN in Charlton; and will recommend Greenwich homes and suitable buildings as users of future heat networks where possible.

As part of the Borough’s smart city activities (Appendix 2), the Royal Borough will be utilising the successful European Horizon 2020 bid to investigate the installation of a water source heat pump in Greenwich; which, subject to feasibility, will make use of heat from the Thames to supply heat to Borough residents. The Royal Borough will be the first local authority to support the retrofitting of this low carbon technology into social housing. Estates which may benefit from this or other Smart City activities being undertaken as part of the European Horizon 2020 programme include: Ernest Dense, Flamstead, Tom Smith Close and Woodlands Grove.

## 2. Buildings and Homes

The following chapter focusses on domestic buildings and homes, and the council's buildings. Domestic buildings include homes owned by the Council which make up around 25% of all housing in the borough (around 23,000 properties), those provided by Housing Associations, and privately owned stock. With the domestic sector constituting a high proportion of the Borough's emissions (43%<sup>20</sup>), homes are clearly key places for action on climate change. It is also expected that, over the coming decades as the Royal Borough experiences significant growth, household numbers will increase. Additions of around 34,000 dwellings are predicted from 2013 to 2041. To meet this increase in household numbers, an additional 491 GWh of energy would need to be supplied to meet today's consumption<sup>21</sup>. To tackle this challenge, energy saving measures and an increase in the use of local energy production, such as roof top solar PV, will be needed. This would equate to 3.5 MWh of savings or generation required per household by 2041.

Corporate buildings include the Royal Borough's offices and sites. To account for the carbon dioxide emissions from these buildings and the Borough's street lighting, up to 2019, the Royal Borough is required to participate in the CRC Energy Efficiency Scheme. This is a mandatory scheme whereby large organisations are required to report on eligible energy consumption and purchase carbon allowances to cover the associated carbon dioxide emissions. In 2014/15 total CRC emissions reported were 17,884 tonnes of CO<sub>2</sub>, at a cost to the Borough of £278,990.40.

The energy use and wastage from the council's buildings must be reduced. This is in order to reduce carbon emissions, help meet predicted growth in domestic energy demand, bring down cost to the Borough from corporate building CO<sub>2</sub> emissions.

Action that the council will take in this area includes the delivery and support of energy efficiency programmes, and encouraging and enabling people to reduce their own consumption. In 2014 (the most recent data available) 9.9% (10,011) of households in Greenwich were living in fuel poverty<sup>22</sup>; increasing energy efficiency in buildings can help to reduce energy costs, which in domestic buildings, is particularly important for tackling fuel poverty.

### Current activity

#### *Domestic Buildings*

Much has been achieved in this area already; at the end of 2013/14 94% of the Royal Borough's properties had been brought up to the Decent Homes Standard, and the Standard Assessment Procedure average rating of Royal Borough owned housing stock is 69 (band C), which is considered to be very energy efficient.

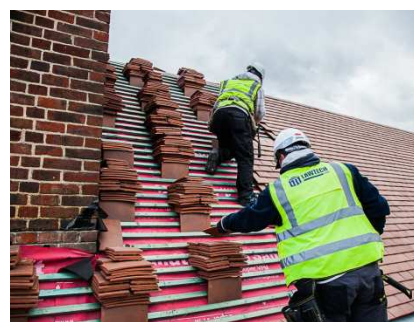
In addition to this, in 2014 the Royal Borough of Greenwich adopted a 'Greenwich Homes Standard'. This is a new way of planning major improvements which encourages a 'whole estate approach' to ensure that Royal Borough owned homes are of a high standard, whilst reducing the need for repeat visits and keeping disruption to a minimum. Improvements made as part of this standard include fitting insulation and replacing or upgrading roofs, lifts, lighting, windows, heating, kitchens and bathrooms. The intention is to make homes warmer, more comfortable, to help prevent damp and to deliver savings on fuels bills. The approach has been successfully piloted at the Barnfield Estate and is also being applied to John Wilson Street (see Box 2.1).

Other energy efficiency works are also planned for The Heights and Well Hall Road Tower Block in 2016/17. The works include external wall insulation, replacement of existing roofs and windows and solar panel installation. Further insulation works have also been completed in the Royal Borough's street properties including cavity wall and loft insulation schemes and a pilot project installing external wall insulation.

Over 2015/16 the council also undertook a number of projects to upgrade building services and heating systems in the Royal Borough's homes. This included a voltage optimisation<sup>23</sup> programme for 480 properties across the borough including sheltered accommodation; and a heating optimisation<sup>24</sup> programme across 550 properties.

**Box 2.1. The Greenwich Homes Standard at Barnfield Estate and John Wilson Street**

The programme of works at Barnfield started in November 2014 and will last two years. The works being undertaken include external wall insulation, window and roof replacement where needed, emergency and communal lighting upgrades, and the installation of solar PV where feasible. Estimated lifetime CO<sub>2</sub> savings from these works are 11,000 tonnes. Works at John Wilson Street will include the replacement of the oil fired heating system with a new efficient gas system, external wall insulation, window replacement and the installation of solar panels onto the roof.



*(Images: Energy efficiency improvement works being made to the Barnfield Estate)*

Outside of the Royal Borough's domestic properties energy efficiency has been fostered through a previous government funded cavity wall and loft insulation scheme offered to all households in the borough. Help is available to carry out energy efficiency improvements through the council's Home Improvement Team. The latter work is aimed at vulnerable owner occupiers in the borough, who may be of low income, elderly and/or disabled. The council also launched the Royal Greenwich Landlord Scheme in 2014, whereby the Royal Borough works with private landlords to improve the quality of private rented housing stock through provision of grants for any repairs and improvements, including energy efficiency works.

*Corporate buildings*

In 2011, the Royal Borough moved its main office and contact centre to the new Woolwich Centre, enabling carbon emission and air pollution reduction through building design features such as solar PV, solar gain and passive cooling, and changes in the way staff work and travel.

In November 2015, the Royal Borough began work to investigate how to improve the environmental performance and reduce carbon emissions across its biggest emitting sites, assessing five Council buildings for energy efficiency improvement in its first phase. This work has been done through the GLA's RE:FIT programme, which guarantees an agreed level of energy reduction. The proposed measures would potentially generate carbon savings of 500 tonnes of CO<sub>2</sub> per year.

In 2015 the Royal Borough also held its first Energy Forum for schools event, discussing barriers to energy efficiency in schools. Ten schools attended and the event was well received. The Royal Borough will hold similar events annually, making initial steps to supporting schools become more energy efficient.

## Commitments

### **Strategic Objective 3:** To improve the energy efficiency of domestic buildings

To help us prioritise our improvement works programme, and better understand what works are necessary to achieve the Greenwich Homes Standard, housing stock condition surveys are planned for 2016.

The council intends to continue with the Greenwich Home Standard and improve its effectiveness, following successful pilots at the Barnfield Estate and John Wilson Street (Box 2.1). These pilots will be used to guide the refurbishment of the Mabel Polley House in Woolwich, and The Heights in Charlton over the 2016/17 period.

The council will be carrying out a further programme of external wall insulation work in 2016/17, following a successful pilot on street properties.

Following the closure of the Green Deal and Eco there is very little support available for residents who are private home owners or tenants that are either in fuel poverty, or wishing to improve the energy efficiency or warmth of their homes. When new developments are unable to meet expected carbon reductions, they are required to pay a carbon offset payment. The Royal Borough will use this fund to support works in the private domestic sector to alleviate fuel poverty.

As part of the European Horizon2020 smart cities programme, the Royal Borough will also be carrying out energy efficiency improvements to up to five council blocks in the East Greenwich area, including retrofitting of 'smart' energy systems, to optimise energy use, saving energy, improving resident comfort and reducing costs. The smart cities project will also be investigating the potential of supplying local council homes with heat from a water source heat pump in the Thames.

#### *Encouraging others to improve the energy efficiency of domestic buildings*

Alongside delivery of the Greenwich Homes Standard, the Royal Borough will work to ensure that residents understand the new technologies and systems introduced to reduce emissions in and around their homes, and are able to take actions to reduce their environmental impact.

As we procure energy efficiency measures at scale for our own stock there may be opportunity to offer support to private residents in the form of vetting and endorsing suppliers and/or offering reduced costs through council contracts. We will investigate how we can take a more proactive role to support residents in this way.

The Royal Borough will also investigate how registered providers may be lobbied to encourage the widespread uptake of the Greenwich Home Standard in both private and council-run properties.

**Strategic Objective 4: To improve the energy performance of corporate buildings and reduce associated carbon emissions**

The Royal Borough is committed to achieving a 25% reduction in greenhouse gas emissions from core corporate operations<sup>25</sup>, which includes its corporate buildings. To deliver this commitment, a Carbon Management Plan has been developed that will reduce carbon emissions, achieve substantial guaranteed energy savings, and cut costs through energy efficiency and generation measures.

The Carbon Management Plan is undertaken in partnership with the Energy Services Company, ENGIE and consists of 4 key areas:

Benchmarking

To date, detailed benchmarking of energy use, expenditure and carbon emissions for 7 corporate sites has been undertaken, as shown in the table below.

Site	Annual Energy (01/04/2014 - 31/03/2015)		
	kWh	£	tCO2
Woolwich Centre	5,813,037	£487,361.57	2,142
Woolwich Town Hall	1,180,108	£61,407.01	318
Calderwood Street Car Park	424,688	£48,439.06	196
Calderwood Street Offices	279,720	£25,568.05	110
IO Centre Data Centre	492,138	£56,132.28	227
Eltham Crematorium + Cemetery	2,164,169	£72,888.51	461
Eltham Centre	6,133,678	£291,725.33	1,570
<b>Total</b>	<b>16,487,538</b>	<b>£1,043,521.81</b>	<b>5,024</b>

The Royal Borough is committed to expanding the detailed benchmarking to include all of its corporate buildings by 2018. By understanding our energy use, it can target specific sites and prioritise actions that will deliver maximum benefit.

1. Energy Analysis

Analysis of energy usage has shown that many council buildings are performing better than national benchmarks. However there are still areas for improvement. By monitoring half hourly data, the Royal Borough has been able to optimise energy usage and identify unusual patterns of consumption, improving response time to any issues.

Through the use of Degree Day Regression Analysis, the Royal Borough has developed a better understanding of its gas consumption and has implemented controls to ensure that heating systems are working efficiently.

## 2. Site Surveys

The Royal Borough is committed to conducting energy surveys in all of our corporate properties over the next 2 years. The surveys will identify areas for improving the energy performance of our buildings and provide a pipeline of projects for reducing carbon emissions.

To date, the seven corporate sites identified have undergone site surveys, with a range of measures identified to reduce energy consumption. These are summarised in the table in Appendix 3. In total, 27 potential projects have been identified from the site surveys, this which would generate annual savings of over 1.6m kWh, £190,000 and 750 tonnes of CO<sub>2</sub>.

## 3. Project Implementation

The Royal Borough will work with ENGIE, who will act as the principal contractor, to implement recommended opportunities from those identified. Whenever possible, local suppliers and labour will be used. Initially, projects will be funded using a combination of internal resources and external funding such as Salix. It is anticipated that future projects will be financed through the realised cost savings associated with the reduced energy consumption.

The savings from each implemented measure will be monitored and documented by a Certified Measurement & Verification Professional (CMVPs) so that performance can be regularly reviewed.

### *Encouraging others to improve the energy efficiency of corporate buildings*

Schools are a significant source of emissions, and there is more that the council can do to help schools reduce their energy use and work to improve air quality in their area. Updates on energy efficiency are sent to schools throughout the year via the schools email bulletin. The Royal Borough will also look into providing further support to schools through promotion of funding streams, with the potential coordination of a RE:FIT schools project alongside the corporate programme. An air quality awareness raising programme is also planned in schools that will include educational material on the cause and effect of poor air quality.

The Royal Borough recognises the need, to not just to improve buildings, but to ensure that people are using them effectively. This requires renewed and on-going engagement with our staff.

As owners and users of corporate stock, local businesses should also be engaged and encouraged to consider and improve energy efficiency; and the Royal Borough is committed to exploring how this could be taken forward.

### 3. Transport

Transport is a significant source of emissions in the Royal Borough, accounting for 26% (258,017 tonnes)<sup>26</sup> of total CO<sub>2</sub> emissions in 2013, and 831 tonnes of nitrogen oxide (NO<sub>x</sub>) emissions<sup>27</sup>. Much of these emissions are understood to emerge from private car use, which in addition to motorcycles accounted for 44% of all trips in the Borough from 2011 to 2014, compared to 28% of trips via walking and 2% via cycling<sup>28</sup>.

The council's strategy to lower emissions from transportation across the Borough aim to reduce car use and encourage more sustainable low carbon forms of transport. This includes electric vehicles, low emission public transport, walking and cycling. Encouraging this shift also brings health and well-being benefits to residents; for example through improved air quality, and increased physical activity.

#### Current activity

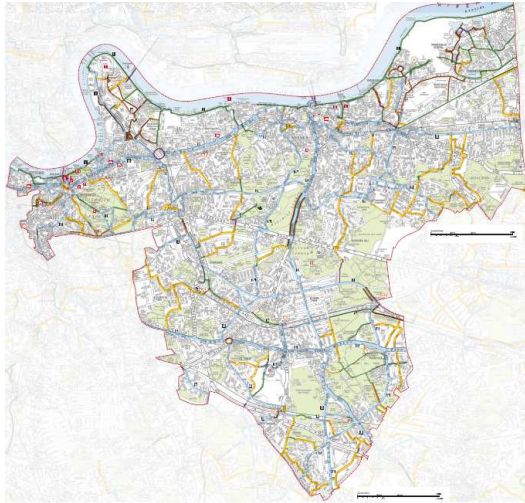
The Royal Borough supports the reduction of emissions in the transport sector, and is investing in sustainable transport modes such as walking, cycling, public transport and low carbon and low polluting vehicles. This investment has included improvement of infrastructure to support sustainable multi-modal transport, and promotion and support to residents, recognising that the barriers are not just infrastructural.

Substantial investments in public transport are likely to bring about the most potential for changing the way people travel in Royal Greenwich. Major public transport infrastructure improvements in recent years, such as the DLR extension to Woolwich, and the arrival of Crossrail services in 2019, are expected to significantly enhance rail options in the north of Royal Greenwich. In addition the Royal Borough is working closely with TfL in delivering significant bus network enhancements, including new bus lanes in the Thamesmead and Plumstead/Woolwich areas.

As part of the council's Cycling Strategy Action Plan, cycle networks have also been improved and developed (Box 3.1), and by the end of 2015 250 secure cycle parking spaces across the Royal Borough's housing estates had been installed. 2015 also saw the installation of 4 new rapid electric vehicle charging points across Royal Greenwich, using funding from the Office for Low Emission Vehicles, to add to the existing 12 charging points. The council has also introduced measures to smooth traffic flow and address bus pinch-points, and are rolling out 20mph zones to all residential roads in Royal Greenwich to improve road safety for cyclists and pedestrians.

Examples of council run activities to encourage and support behavior change to sustainable low emission transport have included: the roll out of car clubs across the Borough, car free days, Personalised Travel Planning, guided cycle rides and bicycle maintenance classes and cycling skills courses (Box 3.2.). Funding is also allocated each year to improve conditions for pedestrians (Box 3.2.). Internally the Royal Borough also has a Brompton pool bike scheme for staff travel, reducing short trips made by car.

### Box 3.1. Development of cycle routes



This has included the development of Primary Cycle Networks on larger roads, aiming to separate cyclists from motorised traffic wherever practicable, and a network of complimentary parallel 'Quietways' routes, which will assist leisure cyclists and those less confident in using the main corridors. Recent improvements include the new 1.6mile traffic-free route between Plumstead and Thamesmead on the Ridgeway.

*(Image: Cycle map of the Royal Borough of Greenwich, 2016)*

### Box 3.2. Supporting cycling and walking across the borough in action



*(Images: Social cycle ride at Thamesmead Bike Day March 2016, guided walks and the Great Get Together of June 2015.)*

The Royal Borough has also been active in working with other stakeholders to lower emissions from transport across the Borough. For example, working with Transport for London to introduce improved north-south bus connections and hybrid double decker busses; and with local schools to develop travel plans that identify how car use will be reduced, and travel by sustainable modes encouraged. The Royal Borough also held its first Cycling Forum town hall in September 2015, inviting residents to feedback on current initiatives and provide suggestions for future schemes. Pilot Community Street Audits were also held in Thamesmead and at the Barnfield Estate, giving local people a say on travel planning and bringing about changes that will encourage walking.

## Commitments

**Strategic Objective 5:** To bring forward and implement the transport strategy as it relates to tackling climate change and improving air quality.

The Royal Borough will be developing a Long Term Transport Strategy (LTTS), which will act as an overarching vision for sustainable transportation in Royal Greenwich, sitting above the annual programmes of investment delivered through the Local Implementation Plan for Transport (LIP). The LTTS will identify the major infrastructure projects needed to be delivered in the medium and longer term in order to help meet our sustainable transport objectives, and we will lobby TfL and other partners to help us complete those schemes.

**Strategic Objective 6:** To further a modal shift towards low emission and sustainable forms of transport through infrastructural improvements and behavioural change.

A shift towards more sustainable modes of travel of walking and cycling will continue to be encouraged through both infrastructural and supportive activities led by the Royal Borough. There will be a target to increase the share of all trips by residents of the Borough via cycling to above 5% by 2025/26, as per the 2014 Cycling Strategy<sup>29</sup>. Public transport and walking mode share targets are also set through the LIP.

### *Infrastructural improvements*

Further installations of cycle parking facilities on estates, at stations and on streets will take place up to 2023<sup>30</sup>. In addition, more electric vehicle charging points are to be installed, and the car club service is to be expanded as part of the Borough's existing Transport LIP (to 2031), and will include piloting an electric vehicle car club.

Through Digital Greenwich and the European Horizon2020 Sharing Cities programme (appendix 2), the Royal Borough will also work to integrate smart transport solutions in the demonstrator area such as:

- smart parking sensors to optimise parking spaces and minimise wasted journeys
- smart lamp posts, including sensors to provide environmental data and more efficient lighting controls
- electric e-bikes and docking stations to link with main public transport interchanges to reduce car journeys.

The Royal Borough will also investigate the provision of e-charging points for electric vehicles to complement this work.

In July 2016 the Royal Borough was successful in its bid to the Mayor of London for funding to implement a Low Emission Neighbourhood (LEN) scheme in the Greenwich Town Centre and Trafalgar road area. The LEN will bring £2m of investment to the area over the next three years, with the aim of improving local air quality along this busy corridor by reducing private vehicle ownership and use, and increasing access to more sustainable transport modes.

Measures planned include a mix of smart technologies as well as tried and tested techniques, for example:

- Creating more 'human friendly' neighborhoods with community focused play streets and pocket parks

- Public realm improvements
- Implementing electric car clubs and an e-bike sharing scheme
- Enabling and incentivizing walking and cycling
- Bus priority along Trafalgar Road
- Traffic light sequencing on Trafalgar Road
- Better freight management

The social and environmental impacts of these schemes will be monitored throughout the programme.

The Sharing Cities and LEN programmes are complementary in terms of transport measures and schemes, and geographical area. Together they form a concerted effort to trial new methods of bringing about improvements, with the hope that learning's from the programmes can be applied elsewhere in the Borough.

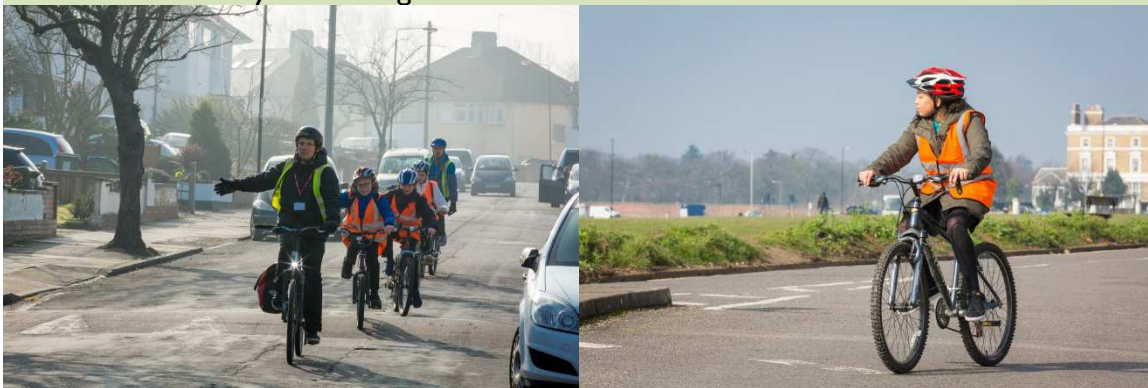
*Behavioural change actions*

The council's aim is to make cycling for transport, leisure and utility aspirational, accessible and enjoyable for all ages and abilities. To improve the reach and impact of the current cycle training service the following opportunities have been identified to target specific groups. All associated targets are detailed in the action plan.

*Early Years:* The Council will develop a 'Bike Crèche' scheme in partnership with GLL as a low cost way of ensuring children are able can learn to ride a bike in a safe environment from as young as 2 years old. This also provides a unique opportunity to maximise parent engagement.

*Children:* The Royal Borough will work with every single school in the borough to deliver a 'Learn to Ride' programme targeted at Key Stage One age children. This will give every single child in the Borough the chance to learn to ride a bike at an early age. This further contributes to a child's sense of physical literacy and gives them the ability to choose cycling as a form of transport later in life.

**Box 3.3. Schools cycle training in action.**



*(Image: Bikeability training with pupils from Thomas Tallis school in March 2016.)*

*Young adults:* Create 'transition packs' to make sure that when young people transition from primary to secondary school they have all the skills, confidence and support to make cycling their choice of transport to school or college

*Adults:* In addition to the adult cycle training programme the Royal Borough wish to engage more with businesses to increase commuter cycling and engage current cyclists to become

'Cycling Ambassadors' demonstrating best practice cycling on the roads and promoting cycling in a positive way within their workplace or community.

*Older People:* Cycling can be perceived as a younger person's activity. The Royal Borough wishes to break this misconception down to offer older people the social and physical benefits of cycling.

*Inclusive Cycling:* Inclusive cycling means everyone can cycle regardless of age, health condition or impairment. Cycling can be easier than walking, a way to keep independent, fit and healthy, a mobility aid, and a useful form of everyday transport. Working with local cycling club Limited Edition the Royal Borough will increase opportunities for disabled people to cycle.

*Community Cycling Hub Network:* There are currently just two bike shops in Royal Greenwich, both of which are situated in the north of the Borough. In order to successfully grow the feasibility and attractiveness of cycling there must be more facilities that promote and activate a shift toward cycling. As such, the council is committed to developing a network of 'Community Cycling Hubs' with the implementation of the first of these beginning in September 2016.

The Community Cycling Hubs will provide a schedule of activities targeted at six target demographics outlined above. To do so the facilities will incorporate an open plan workshop, bike shop, secure cycle parking, public tools and bike security marking and café. This will host a schedule of programmes to get people involved in cycling, bike maintenance and cycling culture. One example, will be working in partnership with age UK's Men in Sheds programme to initiate a social 're-cycle' to provide a sustainable supply of affordable, recycled bicycles in Royal Greenwich whilst tackling social isolation amongst older people.

Continued action by the Council to support active travel in the community will also include investigating further car free days and the permanent closure of roads.

The Royal Borough will also work towards reduction of the Royal Borough's business travel emissions through the staff travel plan, including extension of the Brompton pool bike scheme, and developing initiatives such as staff car pool schemes.

*Lobbying and encouraging others for a shift in transport modes*

The Royal Borough is not able to solve the problem of emissions from transport on its own – air pollution is a national issue and requires both the Government and Transport for London who manage and control the major roads in the capital to also take decisive action.

The Royal Borough has a strong track record of lobbying for new transport improvements in the borough, such as Crossrail and the Jubilee Line - and we will continue to lobby on behalf of the people of the borough for improved transport infrastructure that can offer alternatives to vehicles that contribute to pollution levels.

For example, the Royal Borough supports TfL's plans to reduce the emissions arising from public transport and taxis, and will continue to work with and lobby TfL in terms of the expansion of lower polluting and hybrid busses to all routes across Royal Greenwich.

The Royal Borough believes that a package of multi-use river crossings is much-needed, and a primary part of these links should be the public transport 'offer' they carry. We will continue to

ensure that the Development Consent Order process for Silvertown Tunnel has the prioritisation of public transport at its core, and that any other crossings which are proposed by TfL also fully address the public transport needs of the area.

The GLA has committed London to implementing an Ultra-Low Emission Zone from 2020, the council will continue to lobby for the Ultra-Low Emissions Zone to encompass the whole of the Borough.

The Royal Borough will also continue to work with the local health authority and other stakeholders to encourage healthy travel choices, as well as with developers, employers and schools to develop and implement travel plans.

## 4. Waste

Dealing with the Borough's waste generates significant emissions. The council is responsible for the collection and disposal of around 115,000 tonnes of municipal waste per year, and is proactive in its efforts to minimise the impact of this waste. In 2015/16, around 35% of the waste collected in the Royal Borough was reused, recycled or composted, and only 5.5% was sent to landfill, one of the lowest figures in the UK.

Emissions from waste primarily arise from sending waste to landfill; so the Royal Borough's actions in this area aim to reduce emissions generated from waste by first aiming to reduce the amount of waste generated in the borough, then maximising the amount of waste that can be reused and, lastly, ensuring that waste is correctly separated so the maximum proportions of waste can be recycled.

### Current activity

To increase the level of recycling, RGB has expanded the number of waste types that can be collected from residents at the kerbside to include small Waste Electrical and Electronic Equipment (WEEE). This includes items such as kettles, telephones and hairdryers. These items are taken to a specialist facility where they are broken down into their constituent parts and then recycled. The Royal Borough is also continuing with its recycle and reuse partnerships with HM Prison Belmarsh and Emmaus UK (box 4.1).

#### **Box 4.1.** Increasing waste recycling through beneficial partnerships

RBG partners with HM Prison Belmarsh to recycle mattresses, where inmates separate mattresses into textiles and metal for recycling. The Royal Borough also works with Emmaus UK, the homelessness charity, to pass on good quality pieces of collected furniture that can be repaired or reused. Both of these activities reduce the amount of waste sent to landfill, increase the amount of waste recycled and gives skills to people who are currently incarcerated or have previously been homeless.

To reduce the air quality impact of the Borough's waste collection process, the refuse collection fleet uses a bio-diesel fuel mix which has lower pollutant levels than standard fuel. The council has also invested in new 'Euro VI' Refuse Collection Vehicles (RCV's), with over 70% of RCV's now at 'Euro VI' standard. In 2014 two fleet diesel powered vehicles were also replaced with electric powered vans.

The Royal Borough is raising awareness of the environmental and cost implications of incorrectly separating waste by improving its communications with residents, developers, businesses, and staff. New approaches to encouraging behaviour change, including a requirement within Royal Greenwich's new tenancy agreement for council tenants to correctly separate their waste into the containers provided, are also being piloted. The Royal Borough continues to ensure that waste, and reducing emissions from waste, is considered in new development and regeneration within the Borough, as is noted in Chapter 6.

The Royal Borough has worked to increase the levels of recycling from businesses, with around 1000 businesses now signed up to the council's business waste and recycling service. In collaboration with the Good Food in Greenwich initiative, the Royal Borough is working with

businesses to help reduce food waste and provide assistance in getting surplus food redistributed to individuals in need through local charities.

Working to WRAP (Waste and Resource Action Programme) best practice guidelines around communications, the Royal Borough's engagement team is currently updating its promotional materials and will be making greater use of electronic methods of communication e.g. social media. The Royal Borough also participates in the 'Love Food Hate Waste' Campaign, promoting it on the website and focussing on sharing information amongst Council staff in an effort to reduce the generation of food waste.

## **Commitments**

**Strategic Objective 7:** To reduce the emissions from waste during its generation, collection, processing and disposal.

The Royal Borough has published its Municipal Waste Strategy in 2016. This Strategy guides the council's activity for the next 10 years, with a focus on reducing waste generation, increasing re-use and increasing recycling rates in the borough.

The Royal Borough is committed to increasing the waste infrastructure available to residents (e.g. 'bring sites'); allowing residents to more easily recycle a wider range of goods. RBG will also continue to explore how it can support greater reuse of waste in Greenwich, including proposals for the currently underused reuse and training facility at the Reuse and Recycling Centre in Nathan Way, as well as continuing to explore the possibility of a second Reuse and Recycling Centre to support the increasing number of residents living in the Borough.

### *Encouraging others to reduce waste*

The council's Waste Service is developing a communications plan to inform how it interacts with residents and businesses. It is also reviewing the Internal Waste Policy so that the Royal Borough can be the model of best practice in the community.

**Strategic Objective 8:** To make waste collection smarter and cleaner

The Royal Borough will continue to invest in its refuse collection fleet to ensure its efficiency and reduce its climate change and air quality impact; aiming to ensure all vehicles have Euro VI engines by 2019/20, and further utilising cleaner fuel types through the provision of electric vehicle infrastructure at the Birchmere Centre.

The Royal Borough will also be investigating and investing in making waste services smarter, so as to increase efficiency and reduce impact. Working with Digital Greenwich the Royal Borough is trialling innovative 'smart' waste projects, including the use of data to inform on resident waste behaviour.

## 5. Natural environment

With around 159<sup>31</sup> (6 km<sup>2</sup>) parks and open spaces within its boundaries, the Borough of Greenwich is well served in terms of its green space and infrastructure. This spaces include Greenwich Park in the north west to Avery Hill Park in the south east, the South East London Green Chain network, 170 hectares of woodland in Oxleas and Bostall woods,<sup>32</sup> around 14,000 street trees, and the longest river frontage of any borough in London.

The Royal Borough manages a large proportion of the parks and open spaces in the borough. However, the natural environment includes not only council-owned parks and woods, but a patchwork of open spaces such as Woolwich Common owned by the Ministry of Defence, parks in Thamesmead owned by Peabody, private gardens, allotments and green roofs; and hives of activity by communities and residents working to maintain and enhance their natural environment. Private domestic gardens for example, cover nearly a quarter of Greater London<sup>33</sup>.

The natural environment has a key role to play in both the mitigation of, and adaptation to climate change and air pollution. Green spaces act as sinks for emissions, taking in and storing carbon dioxide and improving air quality; providing respite from areas of significant air pollution. Whilst future impacts of climate change may include increased frequency of extreme weather events, and threats to biodiversity; natural environments aid in urban cooling, sustainable water management and reduction of flood risk, and provide habitats to a multitude of species. At the same time, the natural environment bears the brunt of a changing climate as rising temperatures, changing rainfall patterns and other impacts alter the abundance, distribution and composition of species and habitats.

The Royal Borough's actions to tackle climate change in this area are focussed on maintaining and enhancing the natural environment, so that it is able to provide a multitude of functions and benefits to people and wildlife across the Borough.

### Current activity

#### *Maintaining and enhancing green space*

The council's core strategy includes a commitment to protecting our green space, and much of the activities it undertakes within the Royal Borough's natural environment seek to maintain and enhance the quality of green space.

Tree stock provides a significant sink for carbon emissions, sequestering carbon during growth and improving air quality. Significant tree planting programmes have been carried out. For example, in 2012, 2012 trees were planted across the borough to mark the Olympic Games. More recently, the Royal Borough has been planting around 200 young tree seedlings a year on the Royal Borough's parks and open spaces; and around 300 trees a year on its highways using native species where practicable. Existing plant-life is also maintained and managed to a high standard in order to ensure it remains healthy. Efforts are also being made to choose more drought resistant species in planting schemes in recognition of changing climatic conditions.

The council's Parks, Estates and Open Spaces service is certified to ISO 14001,<sup>34</sup> an international quality standard of environmental management which aims to minimise its environmental impact.

This includes minimising pesticide use, managing its fleet to minimise pollution, using battery rather than oil powered tools where possible, and minimising waste. Around 98% of green waste generated in Royal Borough parks and open spaces is also currently reused as wood chips or mulch.

The Royal Borough also works closely with the Friends of Parks groups, and supports community gardening and food growing projects and the work of Good Food in Greenwich (Box 5.1).

**Box 5.1. Parks and Open Spaces and community food growing**

There are currently 18 allotments across the Borough of Greenwich, and two community-led growing areas on council sites. The latter are located at Abbey Wood and Maryon Park. The Royal Borough hopes that these growing areas will encourage community interaction with green space, and community cohesion; and that they may offer local school groups exposure to both green space and food growing.

*Biodiversity*

Biodiversity has been fostered across the Borough through our BAP (2010)<sup>35</sup> and at the Borough's 55<sup>36</sup> Sites of Importance for Nature Conservation (SINC). RBG currently has 36 hectares of conservation grass cut only once a year; providing a better opportunity for wildflower and rare grass growth and providing rich habitat for biodiversity. Some fringes of amenity sites have also been sowed with wild flower seeds that provide food sources for bees and insects and help support local ecosystems.

*Water*

Although water resource management is not wholly within the council's control, the impact of climate change on water resources affects the Borough and its people, and so the Royal Borough supports efforts to manage water sustainably. A water management scheme to address leakage and wastage has been put in place for corporate buildings, and a water audit has been conducted on the Woolwich Centre to ascertain potential water and energy saving measures to employ. The Royal Borough greatly supports the use of water sensitive urban design and implementation of sustainable urban drainage, and a successful exemplar project was recently completed at Crown Woods Way (Box 5.2) to tackle urban drainage and flood risk.

**Box 5.2. Crown Woods Way exemplar project**



This successful exemplar project recently won a Big Biodiversity Challenge award<sup>37</sup>. The charity Trees for Cities<sup>38</sup> worked in collaboration with the Royal Borough to improve surface water management on Crown Woods Way, a residential street in Greenwich, and the A2 road, in an innovative and sustainable way. The project was aimed at tackling flood risk through use of sustainable urban drainage (SuDs) techniques such as rain gardens and tree pits; whilst also improving biodiversity in the local area by planting native species and wild flowers, whilst improving air quality, and the local environment for residents.

(Image: photograph of the Crown Woods Way project showing rain gardens and oak trees<sup>39</sup>)

## Commitments

**Strategic Objective 9:** To maintain and enhance the Borough's green space for the multitude of functions and benefits it offers, including the mitigation and management of climate change and air pollution.

A new Parks and Open Spaces strategy will be published in the first half of 2017; this will reiterate the commitments made in the council's core strategy to ensure the retention of the natural environment. The Royal Borough will also be updating Parks and Open Spaces site management plans, and conducting reviews of the Borough's green infrastructure and Sites of Importance for Nature Conservation (SINC). The Green Infrastructure Study will provide a review of the current state and quality of RBG's green space, and highlight possible improvements that could be made.

RBG also wish to improve how the management of sites is conscious to key habitats and species, such as those in the Biodiversity Action Plan.

In addition the council will look to further enhance its network of green spaces by extending the Green Chain Walk from Eltham to Greenwich Park. This extension will provide important walking and open space opportunities for local residents as well as providing wildlife corridors for the borough's wildlife.

There are opportunities to enhance the Borough's natural environment through urban green space; and will explore how to further the potential contribution of urban green space to the Borough's green infrastructure. For example through re-considering estate management schemes, and increasing the ecological value of land on estates or parcels and verges through schemes such as wildflower planting and active management; and exploring how features such as bird and bat boxes may be included on the Council's own estates.

*Encouraging and helping others to maintain and enhance the Borough's green space*

The Royal Borough aims to work with residents and organisations to maintain, conserve and improve green spaces and champion the natural environment.

There are already many good examples of volunteer activity across the Borough using, developing and enhancing urban natural environments. For example enhancing green space in parks and estates, via tree planting initiatives, pond restoration schemes, creating green roofs, community gardening and the work of Good Food in Greenwich, as in Box 5.1. The Royal Borough also actively engages with groups such as Friends of Parks organisations and the Greenwich Wildlife Advisory Group. The Royal Borough will continue to engage with such groups; and consider how it may further encourage and enable community groups to safeguard, develop, and enhance the Borough's natural environment. The Parks, Estates and Open Spaces Service is already committed to working with Friends of Parks groups to help improve local

parks and open spaces and will involve these Groups to identify priorities for improvements when management plans at key parks are due for renewal.

In addition the Royal Borough will explore how to help residents improve the biodiversity value of their backyards and gardens. For example through local supply of materials that can be used to create habitat for wildlife, such as wood for loggeries or bird and bat boxes.

**Strategic Objective 10: To foster sustainable water management.**

The Royal Borough will continue to aid and champion the movement towards more sustainable water management. The latest Local Flood Risk Strategy has been through consultation and will soon be published. This will set out how the Royal Borough will address local flood risk. This includes, and will further, the consideration of climate change in future actions, and the role of green infrastructure and the natural environment in flood risk management. For example, the Royal Borough is developing potential projects providing sustainable drainage through the provision of green infrastructure, utilising rain gardens and wet woodland flood storage (e.g. Cloth Workers Wood), and dual usage of playing fields and other amenity spaces. The Royal Borough will also be developing a bid to achieve funding for further work on highways and sustainable urban drainage.

*Encouraging and helping others to use water efficiently*

There is a particular need to bring about more efficient use of water in homes, so as to manage potential water stress and bring about energy savings. As such, the Royal Borough will be investigating the potential of introducing water saving measures in its housing stock, and how to encourage behaviour change to more efficient use of water in buildings. This includes the production of a guidance document for residents on water efficiency.

In addition, as part of Thames Water's Water Resources Management Plan 500,000 water meters will be installed across London over the next 5 years, this will include installations here in the Royal Borough. The aim of the programme is to reduce overall water usage and improve leakage detection; with data showing that metered customers tend to use 12% less water on average. Over time, households will also be transferred onto a new billing system where they will be billed based on consumption rather than their property size, but Thames Water will not move customers on to a metered account until two years after their meter has been fitted. Thames Water have also engaged the environmental charity Groundwork to offer residents free home visits and free water saving devices to help them to understand how to save water in the home.

## 6. New development

The Royal Borough is experiencing a period of significant growth and regeneration, with an expected population increase which exceeds the London and national average, and a minimum of 38,925 new homes required by 2028. Major schemes will see regeneration take place at Greenwich Peninsula, Charlton Riverside, Woolwich and Kidbrooke, and the provision of new infrastructure in the arrival of Crossrail.

Whilst growth in the Borough is expected to result in significant positive social and economic benefits, through its planning policies the Royal Borough must ensure that this growth is sustainable and smart; and that new development is built to high environmental standards whilst protecting and mitigating for any adverse impacts on climate change and the natural environment.

### Current activity

To assist developers the Royal Borough, in addition to its core strategy, has produced a Borough specific guidance document on how new development can achieve high environmental standards. The Greener Greenwich Supplementary Planning Document provides guidance on energy (reducing emissions and energy efficiency), adapting to climate change, water supply and use, protecting and enhancing biodiversity, the environmental impacts and sourcing of materials, waste, pollution, air quality and flood risk.

In addition to offering guidance, by using our planning powers the Royal Borough has been able to require the achievement of high environmental standards, ensuring that new development takes into account climate change and are air quality neutral. In line with the Mayor's London Plan, ~~new development must~~ deliver carbon savings of 35% compared to development built to the Building Regulations 2013.

The Royal Borough previously required all developments to achieve the Code for Sustainable Homes Level 4; however this Code has now been abolished at national level. The council also supported the national Zero Carbon homes policy, which was to require all new development to be built as zero carbon post 2016. However the government has indicated that this may be removed in 2016. Such policy change at national level may weaken the regulatory backing used to seek commitments from new developments to build to high environmental standards.

As noted in Chapter 1 (Energy Supply), the Royal Borough encourages new developments to utilise decentralised energy networks, and requires that all new development connect to decentralised energy networks, or ensure that connection to future networks is possible, the success of which can be seen in the DHN being implemented on the Greenwich Peninsula (Box 1.1).

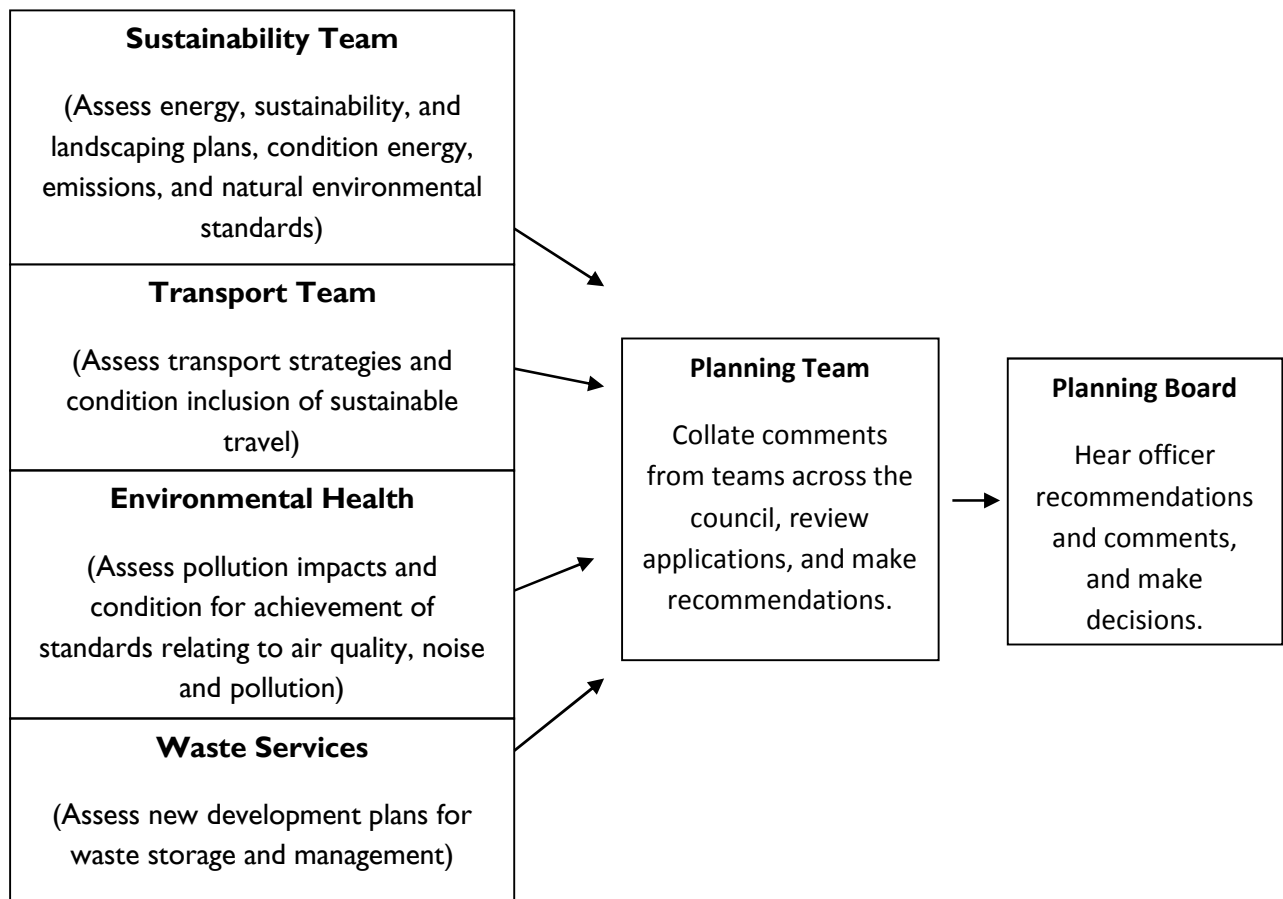
The Royal Borough also requires that all new major developments provide travel plans to encourage multiple transport options, helping to reduce single vehicle occupancy and car journeys in general, and offering people better travel information and opportunities.

As introduced in Chapter 4 (Waste), the Royal Borough continues to further the consideration of emissions from waste in new development and regeneration. By influencing the waste and

recycling facilities on all new developments at the planning stage, the Royal Borough is able to ensure that developers create adequate space in bin stores for increased future separation of waste (e.g. containers for batteries, textiles and small electrical items). In the regeneration of the Barnfield Estate, the Royal Borough has created mini-recycling centres that are able to accept a wider range of materials, and has made chutes obsolete; this will act as a blueprint for future regeneration of waste facilities on council estates in the Borough.

As noted in Chapter 5, the Royal Borough greatly supports the use of water sensitive urban design and has a role in encouraging the implementation of sustainable urban drainage on all major developments across the Borough. In addition the Royal Borough furthers net gain in biodiversity in new developments through requesting the inclusion of bird and bat boxes, as well as plants of wildlife value and of native species where practical.

Figure 4 demonstrates how officers from departments across the Council comment on planning applications to ensure that the themes of Greener Greenwich, and environmental standards such as those above, are integrated into the planning decision making process.



**Figure 4.** How Greener Greenwich themes are incorporated into the planning decision making process.

In addition to requiring high environmental standards of new developments, the Royal Borough also utilises developer contributions to support environmental and Greener Greenwich improvements. New developments are often required to set aside funds to make improvements in various areas as part of the legal agreements of planning permissions, for example through

Section 106 contributions. Examples of where the Royal Borough has already employed funds from developer contributions to make environmental improvements are given in box 6.1.

**Box 6.1.** Examples of environmental improvements facilitated through new developments, or developer contributions.



In Thamesmead the Ridgeway cycle path was funded using £500,000 of developer contribution. It was a grassy muddy path inaccessible to most users, and is now a 2.5m wide, fully accessible path providing approximately 3km of traffic-free route from Plumstead station to Harrow Manor Way.

The Energy Centre on the Peninsula is the centre of a district energy network secured through the Royal Borough working with a key developer to implement grant funding. The network is currently being installed and will supply 13,000 homes with low carbon energy.

*(Images: Ridgeway cycle path<sup>40</sup>, and the Peninsula energy Network<sup>41</sup>)*



## Commitments

**Strategic Objective 11:** Ensure that high environmental standards for new development are upheld; and that these include: the protection and enhancement of the natural environment, incorporation of energy efficiency and low carbon energy measures, and low carbon sustainable waste and transport infrastructure.

The recent abolition of the Code for Sustainable Homes, and the scaling back of national government ambitions for ‘Zero Carbon homes’, may restrict the Royal Borough’s options to drive more sustainable new development in the Borough. However the Royal Borough will continue to monitor national policy, and is committed to implementing ambitious environmental planning requirements wherever possible.

The Royal Borough will still seek to ensure high standards of water consumption and energy use are met through planning.

The Royal Borough will also continue to encourage sustainable waste facilities in new developments; ensuring that adequate recycling provision is in place, and investigating the use of smarter waste systems, as noted in Chapter 4 (Waste).

The Royal Borough will be updating its Strategic Flood Risk Assessment, and will develop a guidance document for developers on flood risk; this will result in an increased knowledge and evidence base which can inform developers on water sensitive urban design specific to the Borough.

The Royal Borough will also seek to update the Greener Greenwich Supplementary Planning Document over the coming year, reflecting changes in national policy, and ensuring that it continues to demand high standards of new development.

RBG will seek to influence policy where it can to support the achievement of high environmental standards by new development.

**Strategic Objective 12:** To utilise funds from new development to make improvements which will help tackle climate change and air pollution

New developments are often required to set aside funds to make improvements in various areas as part of the legal agreements of planning permissions, these are termed Section 106 contributions. The Royal Borough will use the relevant funds secured through these agreements to make improvements which will tackle climate change and air quality.

The Royal Borough will use relevant funds from developer contributions to make improvements which will tackle climate change and air quality.

In addition, when new developments are unable to meet expected carbon reductions, they are required to pay a carbon offset payment. Following the closure of the Green Deal and Eco there is very little support available for residents who are private home owners or tenants that are in fuel poverty, or wish to improve the energy efficiency or warmth of their homes. The Royal Borough will use this carbon offset fund to support works in the private domestic sector to alleviate fuel poverty.

## Greener Greenwich Action Plan

*The actions the Royal Borough is committed to take over the coming years in response to climate change and air pollution.*

Actions are either short term- over the next 5 years; or long term- over the next 20 years; in recognition that our response to climate change and air quality will require long term commitment.

Action	Timeframe <sup>42</sup>	Co-benefits				Delivery party
		Sustainable growth	Anti-poverty	Air quality	Wellbeing	
<b>Cross strategy actions</b>						
Communicate to, and engage Borough residents on, Greener Greenwich, including through a Greener Greenwich council webpage, and a web based mapping or similar visual guide for residents on activities going on in the Borough under the Greener Greenwich programme	Short-term and Ongoing	x	x	x	x	Sustainability and Renewal, Communications
Update the Royal Borough's website to provide comprehensive information on air quality including the following subject areas: smoke control zones, AirText, London Local Air Quality Management 'Dashboard', anti-idling information, other air quality campaigns	Short-term			x	x	Environmental Health, Communications
Investigate how environmental and sustainability issues may be embedded in procurement and business case processes	Long-term	x	x	x	x	Sustainability and Renewal
Update the Greener Greenwich Supplementary Planning Document	Short-term	x		x	x	Sustainability and Renewal
Bring forward and implement the Borough's Air Quality Action Plan as it relates to the Greener Greenwich Strategy	Ongoing			x	x	Environmental Health, Sustainability and Renewal, Transport, Public Health, Waste
Pursue smart city measures which offer opportunity for tackling climate change and emissions, particularly through the Smart Cities and Communities Horizon2020 programme	Long-term	x	x	x	x	Digital Greenwich, Sustainability and Renewal, Transport
Investigate how to foster better working and partnerships, and how to engage with, community organisations, businesses, and the third sector, in	Ongoing	x	x	x	x	Environmental Health, Sustainability and Renewal,

order to support the delivery of the Strategy.						Transport, Public Health, Waste, Communications
<b>Energy supply</b>						
Continue to procure all of the Royal Borough's electricity supply from renewable energy sources where available from the supplier	Ongoing	x				Sustainability and Renewal
Expand Solar PV installed capacity on Council owned properties	Ongoing	x	x		x	Sustainability and Renewal
Explore how and where technologies such as battery storage can be implemented to reduce emissions and energy costs, and improve energy security	Long-term	x	x		x	Sustainability and Renewal
Explore how and where energy partnerships between private and public neighbouring and nearby properties can create energy savings, reduction in energy costs and improved energy security.	Long-term	x	x		x	Sustainability and Renewal
Replace all street lighting in the Borough with LED lighting, and explore opportunities to integrate smart technologies into street lighting as part of the Horizon2020 smart cities programme	Long-term	x				Sustainability and Renewal, Transport
Facilitate the completion of a district heat network to take advantage of waste heat from the Greenwich Power Station	Long-term	x	x	x	x	Sustainability and Renewal, TfL, GLA
Investigate the installation of a water source heat pump and associated infrastructure as part of the European Horizon2020 smart cities programme, as an addition to the district heat network at Greenwich Power Station	Short-term	x	x	x	x	Digital Greenwich, Sustainability and Renewal, TfL, Horizon2020 partners
Identify other feasible district heat networks across the Borough and the Royal Borough's role in these, including Charlton Riverside	Long-term	x	x	x	x	Sustainability and Renewal; in consultation with the GLA and other stakeholders
Put forward the Royal Borough's corporate and housing stock as anchor loads for current and future district energy networks	Long term		x		x	Sustainability and Renewal
<b>Buildings and Homes</b>						
Conduct housing stock condition surveys to prioritise our improvement works programme, and better understand what works are necessary to achieve the Greenwich Homes Standard	Short-term	x			x	Housing strategy, Sustainability and Renewal, Asset Management
Complete the second pilot of the Greenwich Homes Standard, which includes energy efficiency improvements, at John Wilson Street	Ongoing		x		x	Asset management
Complete energy efficiency improvements such as insulation, window and	Short-term		x		x	Housing Capital Programme

roof replacement, and solar panel installation at The Heights and Well Hall Road						
Install external wall insulation on further Council owned street properties	Long-term		x		x	Housing Capital Programme
Retrofit energy efficiency measures and 'smart' energy systems to up to five Council blocks in the East Greenwich area as part of the European Horizon2020 smart cities programme	Short-term		x		x	Digital Greenwich, Sustainability and Renewal, Horizon2020 Smart Cities partners
Coordinate the Royal Borough's action on fuel poverty, and keep abreast of policy to ensure that these actions comply with best practice	Ongoing		x		x	Sustainability and Renewal,
Work with tenants to inform on the green technology and energy efficiency improvements being made to the Royal Borough's housing stock	Ongoing		x		x	Capital Projects, Sustainability and Renewal
Ensure residents are aware of the support available in tackling fuel poverty	Ongoing		x		x	All relevant frontline services, Sustainability and Renewal
Support residents to access home energy efficiency measures	Ongoing		x		x	Sustainability and Renewal
Investigate the potential for the Greenwich Homes Standard to be adopted and used by all housing providers in the Borough	Long-term		x		x	Sustainability and Renewal, Regeneration, Capital Projects
Pursue a target of 25% reduction in GHG emissions from the Royal Borough's core corporate operations <sup>43</sup> on a 2009 baseline	Short-term	x	x	x	x	Council wide, monitored by Sustainability and Renewal
Improve energy efficiency in corporate buildings through a Carbon Management Plan and the GLA's RE:FIT programme; focussing on seven buildings in phase 1	Ongoing	x				Sustainability and Renewal, GLA.
Conduct staff awareness campaigns around the more efficient use of energy in Council buildings	Ongoing	x				Sustainability and Renewal, all council staff
Support schools to carry forward meaningful carbon reduction actions through the RE:FIT programme	Ongoing	x				Sustainability and Renewal
Consider how local businesses could be engaged and encouraged to improve the energy efficiency of corporate buildings	Ongoing	x		x	x	Sustainability and Renewal
<b>Transport</b>						
Pursue a bid to for funding to create a Low Emission Neighbourhood (LEN) around Greenwich Town Centre, and if funding is granted, roll out the LEN programme in line with measures identified in the feasibility study	Short-term			x	x	Transport
Employ smart parking sensors in the East Greenwich area as part of the European Horizon2020 smart cities programme	Short-term	x				Digital Greenwich, Transport, Sustainability and Renewal

Demonstrate smart street lighting solutions in the East Greenwich area as part of the European Horizon2020 smart cities programme	Short-term	x				Digital Greenwich, Transport, Sustainability and Renewal
Install electric 'e-bike' docking stations and develop e-bike provision in the East Greenwich area as part of the European Horizon2020 smart cities programme	Short-term	x		x	x	Digital Greenwich, Transport, Sustainability and Renewal
Investigate the provision of e-charging points for electric vehicles in the East Greenwich area to complement the European Horizon2020 smart cities programme	Short-term	x		x	x	Digital Greenwich, Transport, Sustainability and Renewal
Roll out 20mph zones across the Borough to 2023 amongst other smoothing traffic flow initiatives	Long-term			x	x	Transport
Continue the expansion of car clubs in the Borough, and increase the proportion of low emission vehicles in their fleet including electric vehicles ( <i>RBG Local Implementation Plan for Transport, 2011</i> )	Long-term			x	x	Transport, Sustainability and Renewal
Investigate the introduction of regular car free days in prominent locations and seek to identify, and develop partnerships with, community groups and other organisations that may wish to continue car free events throughout the year	Short-term			x	x	Transportation, Sustainability and Renewal, Communications
Install further electric vehicle charging points across the Borough ( <i>RBG Local Implementation Plan for Transport, 2011</i> )	Long-term			x	x	Transport, GLA
Increase cycling modal share of trips to above 5% by 2025/26 ( <i>RBG Local Implementation Plan for Transport, 2011; RBG Cycling Strategy, 2014</i> )	Long-term			x	x	Transport, Sustainability and Renewal
Increase walking modal share of trips by 2% to 28.7% by 2025/26 ( <i>RBG Local Implementation Plan for Transport, 2011</i> )	Long-term			x	x	Transport, Sustainability and Renewal
Continue to deliver personalised travel planning programmes, completing projects on going in Thamesmead/Abbeywood by 2017 ( <i>RBG Cycling Strategy 2014</i> )	Ongoing			x	x	Sustainability and Renewal
Complete cycle route enhancements across the Borough ( <i>RBG Cycling Strategy 2014</i> ), to provide infrastructural support for increased cycling	Ongoing			x	x	Transport
Install further cycle parking facilities at estates, stations and on streets across the Borough ( <i>RBG Cycling Strategy 2014</i> )	Ongoing			x	x	Transport, Sustainability and Renewal
Continue to offer residents support to cycle and walk, including cycle maintenance and training classes, guided walks and rides, and personal active travel planning	Ongoing			x	x	Sustainability and Renewal

Continue to develop and offer adult cycle training for anyone living or working in Royal Greenwich ( <i>RBG Cycling Strategy 2014</i> )	Ongoing			x	x	Sustainability and Renewal
Hold annual Cycling Forum Town Halls, offering residents the chance to <b>feedback on current initiatives and provide suggestions for future schemes</b> ( <i>RBG Cycling Strategy 2014</i> )	Ongoing				x	Transport, Sustainability and Renewal
Promote and extend the use of existing Brompton bike pool scheme for short journeys by staff, particularly between the Royal Borough's corporate sites	Ongoing			x	x	Sustainability and Renewal
Pilot a staff pool car scheme as an approach to reducing the environmental impact and cost of Council business travel, with pool cars being low emission or Ultra Low Emission Vehicles (ULEVs) vehicles if possible	Short-term	x		x	x	Sustainability and Renewal, HR
Continue to work with schools to deliver school travel plans, including safe routes, school cycle training and cycle parking ( <i>RBG Cycling Strategy 2014</i> )	Ongoing			x	x	Transport, Sustainability and Renewal
(Early years): Develop a 'Bike Crèche' scheme in partnership with GLL as a low cost way of ensuring children are can learn to ride a bike in a safe environment from as young as 2 years old.	Short-term		x	x	x	Sustainability and Renewal
(Young adults): Create a 'transition pack' to ensure young people transitioning from primary to secondary school have all the skills, confidence and support to make cycling their choice of transport to school or college.	Short-term		x	x	x	Sustainability and Renewal
(Adults): Deliver 100 'Start Commuting' courses annually to increase commuter cycling rates as an alternative to short car journeys.	Short-term	x	x	x	x	Sustainability and Renewal
(Older people): Work in partnership with age UK's Men in Sheds programme to develop a social 're-cycle' project providing a sustainable supply of cheap recycled bicycles in Royal Greenwich.	Short-term	x	x	x	x	Sustainability and Renewal
(Inclusive cycling): Integrate disability groups into the borough's social ride programme in Thamesmead, Etham, Woolwich, Charlton and West Greenwich.	Ongoing	x	x	x	x	Sustainability and Renewal
(Community cycling hub network): Develop a network of 'Community Cycling Hubs' to provide a support centre for cyclists in the borough. The facility will incorporate a workshop, bike shop, café, secure cycle parking, public tools and bike security marking.	Short-term	x	x	x	x	Sustainability and Renewal
Engage with schools further on air quality, developing educational materials on air pollution and avoiding exposure	Short-term			x	x	Transportation, Environmental Health, Public Health

Lobby relevant parties for the extension of the Ultra-Low Emissions Zone to encompass the whole of Royal Greenwich	Ongoing			x	x	Transport, Environmental Health, GLA, TfL
Lobby relevant parties for improvements to local public transport links including a package of multi-modal river crossings, and less polluting bus routes	Ongoing			x	x	Transport, TfL
<b>Waste</b>						
Continue to include recycling requirements within the Royal Greenwich tenancy agreement	Ongoing	x				Waste Services
Continue to invest in improving the environmental and air quality impact of the refuse collection fleet, including ensuring all refuse collection fleet vehicles have Euro six engines by 2019/20, utilising cleaner fuel types such as electric powered vans, and increasing provision of electric vehicle infrastructure at the Birchmere Centre	Ongoing			x	x	Waste Services, Fleet Management, Environmental Health
Increase the waste infrastructure available to residents, including bring sites	Ongoing	x			x	Waste Services
Trail smart and innovative measures to reduce the impact of waste services, including the use of sensors to optimise collection operations, and use of data to inform on resident waste behaviour	Short-term	x		x	x	Waste Services, Digital Greenwich
Increase media presence and improve communication of the environmental issues of waste to residents, developers, businesses and staff	Ongoing	x				Waste Services, Communications
Improve corporate Council waste generation, including increased recycling rates and reduced contamination rates at corporate sites by staff	Ongoing	x				Waste Services, all council staff
<b>Natural Environment</b>						
Produce quarterly features on wildlife and the natural environment	Ongoing					Sustainability and Renewal, Communications
Conduct a review of the Borough's green infrastructure	Short-term			x	x	Planning
Conduct a review of the Borough's Sites of Importance for Nature Conservation, and their management	Short-term				x	Planning, Parks and Open Spaces
Use the recommendations of the Green Infrastructure study to improve and develop SINC site management, and identify SINC sites and other deficient sites which may benefit from improvement and enhancements.	Long-term					Sustainability and Renewal, Planning Policy, Parks and Open Spaces
Ensure the management of sites is conscious of biodiversity, BAP species and other key habitats and species	Ongoing				x	Parks and Open Spaces

Further enhance the network of green spaces by extending the Green Chain Walk from Eltham to Greenwich Park.	Long-term			x	x	Sustainability and Renewal, Green Chain partners
Investigate how and where the Royal Borough's Green Infrastructure may be enhanced and improved, including on Council owned estates and land.	Long-term			x	x	Sustainability and Renewal, Highways, Community Services, Parks and Open Spaces, Community groups
Consider how and where greening can be increased in transport infrastructure, for example greening improvements such as the use of low-level planters to segregate cycle lanes and street trees	Short-term			x	x	Sustainability and Renewal, Transport, Parks and Open Spaces
Review the potential of employing water efficiency measures in the Royal Borough's corporate buildings to provide water and emissions savings	Ongoing	x		x		Capital Projects
Investigate how better water efficiency may be fostered in the Royal Borough's housing stock, including through the introduction of water saving and efficiency measures	Short-term			x	x	Sustainability and Renewal
Consider how the Royal Borough can further encourage, enable and involve community activities which are seeking to enhance the natural environment	Ongoing				x	Sustainability and Renewal, Parks and Open Spaces
Consider how to raise awareness and educate on the benefits of green infrastructure and ecological improvements such as conservation grass	Ongoing			x	x	Sustainability and Renewal, Parks and Open Spaces
Explore how to help residents improve the biodiversity value of their backyards and gardens.	Ongoing				x	Sustainability and Renewal, Parks and Open Spaces
Produce a guidance document for all Royal Greenwich residents on water efficiency in the home	Short-term		x		x	Highways
<b>New development</b>						
Continue to ensure that all new developments in the Borough strive for and achieve high environmental standards, as per the Greener Greenwich Supplementary Planning Document	Ongoing	x				Planning, Sustainability and Renewal, Capital Projects
Ensure all major new developments achieve carbon savings	Ongoing	x				Planning, Sustainability and Renewal
Ensure all major new development connects to, or provides for future connection to, district energy networks	Ongoing	x	x	x	x	Planning, Sustainability and Renewal
Encourage all major new developments to achieve on-site reduction in CO <sub>2</sub> emissions through the use of renewable energy	Ongoing	x				Sustainability and Renewal

Ensure all major new developments provides a travel plan at the planning stage which encourages multi-modal transport	Ongoing	x		x	x	Planning, Transport
Ensure that developers consider waste issues in new development at the planning stage, providing sustainable waste facilities including adequate recycling provision	Ongoing	x				Planning, Waste Services
Consider how the Royal Borough may further encourage and ensure net gain for biodiversity in new developments	Ongoing				x	Sustainability and Renewal, Planning
Update the Royal Borough's Strategic Flood Risk Assessment, using the increased knowledge and evidence base to inform developers and new development on water sensitive urban design specific to the Borough	Short-term	x				Highways, Planning, Sustainability and Renewal
Continue to use the relevant S106 funds available to fund activities which tackle climate change and air quality	On-going	x			x	Sustainability and Renewal, Planning, Environmental Health, Transport
Utilise any carbon offset fund payments from new developments to tackle fuel poverty and reduce emissions	Short-term then ongoing	x		x	x	Sustainability and Renewal, Planning

## Appendices

### Appendix I. Policy context

As well as compelling us to act on climate change, international and national policies can also influence the direction and strength of the Royal Borough's response. The table below provides a summary of relevant policy influences.

Level	Relevant policy
International	<ul style="list-style-type: none"> <li>• The Kyoto Protocol to the United Nations Framework Convention on Climate Change sets binding targets for parties including the UK to reduce anthropogenic emissions.</li> <li>• The latest Conference of the Parties to the Kyoto Protocol in Paris has led to a new international climate change agreement, including a target to keep temperature increase well below 2°C, and make efforts to limit rise to 1.5°C. There is also a long term emissions goal, to reach net zero emissions after 2050. Countries were also required to submit national commitments- Intended Nationally Determined Contributions (INDC). The UK doesn't have an independent INDC, and is part of the EU submission which commits to a binding target of an at least 40% domestic reduction in GHG emissions by 2030 compared to 1990 levels, to be fulfilled jointly<sup>44</sup>. With a long term target and EU low-carbon roadmap of 80%-95% from 1990 levels for 2050, according to the IPCC's suggested necessary reductions by developed countries as a group<sup>45</sup>. Both the immediate and long term INDC reduction targets support a 2°C target (keeping temperature rise below 2°C). National measures to support the implementation of this target would include: <ul style="list-style-type: none"> <li>➢ Annual GHG inventory reports</li> <li>➢ Emission Trading System (ETS) for the power sector and heavy industry</li> <li>➢ Effort Sharing Decision (EDS) for emissions excluded in the ETS (excl. LULUCF)</li> <li>➢ Additional reduction measures in transport sector, waste sector, and F-gases.</li> </ul> </li> <li>• EU Directive 2008/50/EC on ambient air quality and cleaner air for Europe (Air Quality Framework Directive)</li> </ul>
National	<ul style="list-style-type: none"> <li>• The Climate Change Act 2008<sup>46</sup> commits the UK to reducing emissions by at least 80% in 2050 from 1990 levels; and requires local authorities to measure and report annually on their greenhouse gas emissions.</li> <li>• Through the Carbon Reduction Commitment (CRC)<sup>47</sup> Royal Greenwich is required to pay for tonnes of carbon emitted, costing the Borough around £1.6 million since the scheme began in 2010.</li> <li>• The Clean Air Act 1993</li> <li>• Part IV of the Environment Act 1995</li> <li>• The Air Quality Standards Regulations 2010</li> </ul>
London	<ul style="list-style-type: none"> <li>• The London Plan</li> <li>• The Mayor's Air Quality Strategy 'Clearing the Air' 2010</li> <li>• The Mayor's London Local Air Quality Management framework</li> </ul>
Local (RBG)	<ul style="list-style-type: none"> <li>• Core Strategy<sup>48</sup></li> <li>• The Greener Greenwich Supplementary Planning Document<sup>49</sup></li> <li>• Climate Change Strategy 2011<sup>50</sup></li> <li>• Growth strategy</li> </ul>

	<ul style="list-style-type: none"><li>• Anti-poverty Strategy</li><li>• Local Implementation Plan for Transport</li><li>• Waste Strategy</li><li>• Parks and Open spaces strategy</li><li>• Smart City Strategy</li><li>• Air Quality Action Plan</li></ul>
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## **Appendix 2. Smart cities and communities**

The Royal Borough is a partner in a recently successful bid under the European Commission Horizon2020 call for Smart Cities & Communities. The programme commenced in January 2016, and will last five years to December 2020. Royal Greenwich is the only London Borough in the programme, which will see Greenwich become the demonstrator area for London, where smart city activities will be focused. This will establish Greenwich as a leading smart city ‘lighthouse’ demonstrator along with Milan and Lisbon, with smart city solutions focused on:

- Creating low energy districts,
- Sustainable urban mobility,
- Integrated ICT infrastructure.

**Appendix 3. Table showing the surveying of 7 corporate sites to identify measures to employ to produce energy and cost savings.**

Site	ECM Category	Project	Annual	Annual	Annual	Payback
		Cost (£)	Savings (kWh)	Savings (£)	Savings (tCO <sub>2</sub> )	Period (yrs)
The Woolwich Centre	Lighting	£366,039.34	464,450	£52,974.26	215	6.91
	Ventilation	£13,596.00	15,404	£1,756.93	7	7.74
	Small Power	£7,150.00	92,580	£10,559.49	43	0.68
	Air-Conditioning 1	£1,210.00	3,762	£429.08	2	2.82
	Air-Conditioning 2	£910.80	4,158	£474.29	2	1.92
	Data Centre 1	£4,235.00	10,624	£1,211.72	5	3.50
	Data Centre 2	£3,228.46	5,850	£667.23	3	4.84
	<b>ALL</b>	<b>£434,631.96</b>	<b>596,828</b>	<b>£68,073</b>	<b>277</b>	<b>6.38</b>
Calderwood Street Car Park	Lighting	£68,074.59	165,354	£18,859.95	76	3.61
	<b>ALL</b>	<b>£87,566.85</b>	<b>165,354</b>	<b>£18,860</b>	<b>76</b>	<b>4.64</b>
Calderwood Street Offices	Ventilation	£23,958.00	37,338	£4,132.06	17	5.80
	Controls	£440.00	3,539	£86.80	1	5.07
	Hot Water	£660.00	3,154	£359.69	1	1.83
	Lighting	£4,990.06	10,032	£1,144.21	5	4.36
	<b>ALL</b>	<b>£53,712.36</b>	<b>54,063</b>	<b>£5,722.76</b>	<b>24</b>	<b>9.39</b>
IO Centre (Unit 4)	Data Centre 1	£4,830.97	9,636	£1,099.06	4	4.40

	Data Centre 2	£24,700.50	59,936	£6,836.16	28	3.61
	Data Centre 3	£2,396.39	4,205	£479.59	2	5.00
	<b>ALL</b>	<b>£55,592.16</b>	<b>73,777</b>	<b>£8,414.81</b>	<b>£34.00</b>	<b>6.61</b>
Eltham Crematorium & Cemetery	Lighting	£18,820.42	19,659	£2,242.25	9	8.39
	Heating 1	£6,930.00	7,053	£804.42	3	8.61
	Heating 2	£27,624.08	88,000	£2,158.64	16	12.80
	Controls	£880.00	9,715	£238.31	2	3.69
	<b>ALL</b>	<b>£77,489.68</b>	<b>124,427</b>	<b>£5,443.62</b>	<b>30</b>	<b>14.23</b>
Eltham Centre	Controls	£30,893.50	122,674	£5,834.51	31	5.29
	Ventilation	£38,878.79	68,130	£7,770.82	31	5.00
	Chiller	£17,593.88	33,358	£3,804.76	15	4.62
	Heating	£85,359.38	272,239	£6,678.02	50	12.78
	Lighting	£171,661.96	278,636	£31,780.71	129	5.40
	Hot Water 1	£2,310.00	7,358	£839.28	3	2.75
	Hot Water 2	£330.00	10,209	£250.43	2	1.32
	CHP	£13,092.76	-140,286	£28,531.29	83	0.46
	<b>ALL</b>	<b>414,771.26</b>	<b>652,318.00</b>	<b>85,489.82</b>		<b>4.85</b>

## References and notes

- <sup>1</sup> IPCC, 2014. Fifth Assessment Report, Synthesis Report. Available at: [www.ipcc.ch/report/ar5/syr/](http://www.ipcc.ch/report/ar5/syr/)
- <sup>2</sup> Increase in population of 72,282 from 2013 to 2041 is taken from 2015 GLA projections of cumulative population growth rate using the SHLAA DCLG based scenario.
- <sup>3</sup> Increase in household numbers of 42,661 from 2013 to 2041 is taken from 2015 GLA projections of cumulative household growth using the SHLAA DCLG based scenario.
- <sup>4</sup> DECC, 2014. Climate change and energy guidance- Climate change explained. Available at: [www.gov.uk/guidance/climate-change-explained](http://www.gov.uk/guidance/climate-change-explained)
- <sup>5</sup> The Greener Greenwich strategy deals with all greenhouse gas emissions, thus if CO<sub>2</sub> is mentioned, this denotes that the context is concerned solely with CO<sub>2</sub>.
- <sup>6</sup> IPCC, 2014. Fifth Assessment Report. Available at: [www.ipcc.ch/report/ar5/](http://www.ipcc.ch/report/ar5/)
- <sup>7</sup> DECC, 2014. Climate change and energy guidance- Climate change explained. Available at: [www.gov.uk/guidance/climate-change-explained](http://www.gov.uk/guidance/climate-change-explained)
- <sup>8</sup> DECC, 2014. Climate change and energy guidance- Climate change explained. Available at: [www.gov.uk/guidance/climate-change-explained](http://www.gov.uk/guidance/climate-change-explained)
- <sup>9</sup> GLA, 2013. Better Environment, Better Health- London Borough of Greenwich. Available at: <http://data.london.gov.uk/dataset/better-environment-better-health-guides-london-boroughs>
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- <sup>16</sup> London Air Quality Network, 2016. What is Air Pollution? Available at: <https://www.londonair.org.uk/LondonAir/Guide/WhatIsPollution.aspx>
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- <sup>20</sup> DECC, 2015. UK local authority and regional carbon dioxide emissions national statistics: 2005-2013. Available at: [www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2013](http://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2013)
- <sup>21</sup> Estimate based on DECC 2013 total sub-national final energy consumption statistics for Greenwich, for consuming sector 'Domestic', published September 2015; and RBG estimates of 2013 dwelling numbers, and 2041 dwelling number projections.
- <sup>22</sup> DECC, 2016. Sub-regional fuel poverty in England 2014. Based on the Government's 'Low Income, High Costs' indicator (LIHC), which finds a household to be fuel poor if household income is below the poverty line (taking into account energy costs); and energy costs are higher than typical for that type of household.
- <sup>23</sup> Voltage optimisation reduces electricity use by stepping down the mains voltage level whilst still allowing electrical appliances and systems to work as usual.
- <sup>24</sup> Heating optimisation programmes aimed to reduce gas use by limiting the heating output of boilers in milder temperatures.
- <sup>25</sup> Council core corporate operations here refer to 4 key operations of corporate buildings, street lighting, fleet and business travel.

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- <sup>26</sup> DECC, 2015. UK local authority and regional carbon dioxide emissions national statistics: 2005-2013. Available at: [www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2013](http://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-2013)
- <sup>27</sup> LAEI, 2013. Estimated NOx emissions from road transport in 2013 taken from the London Atmospheric Emissions Inventory Greenwich Dashboard, and part of the LLAQM bespoke Borough 2013 air quality modelling and data package. Available at: <http://data.london.gov.uk/dataset/llaqm-bespoke-borough-by-borough-air-quality-modelling-and-data>
- <sup>28</sup> RBG, 2011. LIP 2, 2011. Borough LIP performance indicators, Table I, three-year average data showing the mode share for London residents for trips originating in each borough, from TfL London Travel Demand Survey. Available at: [www.royalgreenwich.gov.uk/downloads/download/289/local\\_implementation\\_plan](http://www.royalgreenwich.gov.uk/downloads/download/289/local_implementation_plan)
- <sup>29</sup> RBG, 2014. Cycling Strategy, 2014. Available at: [www.royalgreenwich.gov.uk/downloads/file/2131/royal\\_borough\\_of\\_greenwich\\_cycling\\_strategy\\_april\\_2014](http://www.royalgreenwich.gov.uk/downloads/file/2131/royal_borough_of_greenwich_cycling_strategy_april_2014)
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- <sup>31</sup> As of November 2015. Includes allotments and cemeteries.
- <sup>32</sup> RBG, 2014. The Royal Greenwich Local Plan: Core Strategy with detailed policies (Core Strategy in short), adopted on 30 July 2014. Available at: [www.royalgreenwich.gov.uk/downloads/download/718/core\\_strategy\\_with\\_detailed\\_policies](http://www.royalgreenwich.gov.uk/downloads/download/718/core_strategy_with_detailed_policies)
- <sup>33</sup> Smith C. (2010), London: Garden City? London Wildlife Trust, GiGL and the GLA. Available at: [www.wildlondon.org.uk/sites/default/files/files/London%20Garden%20City%20-%20full%20report.pdf](http://www.wildlondon.org.uk/sites/default/files/files/London%20Garden%20City%20-%20full%20report.pdf)
- <sup>34</sup> ISO, 2015. ISO 14000- Environmental management. Available at: [www.iso.org/iso/home/standards/management-standards/iso14000.htm](http://www.iso.org/iso/home/standards/management-standards/iso14000.htm)
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- <sup>37</sup> The Big Biodiversity Challenge, 2015. 2015 category winners. Available at: [www.bigchallenge.info/#!2015-winners/clfzj](http://www.bigchallenge.info/#!2015-winners/clfzj)
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- <sup>39</sup> The Big Biodiversity Challenge, 2015. Photograph of the Crown Wood Way project taken from the award submission. Available at: [http://media.wix.com/ugd/18479d\\_97fd949b3c274d95a5e25611e35fb4fa.pdf](http://media.wix.com/ugd/18479d_97fd949b3c274d95a5e25611e35fb4fa.pdf)
- <sup>40</sup> Image of the Ridgeway cycling path taken by the Greenwich Cyclists organisation.
- <sup>41</sup> Image of the Greenwich Peninsula Energy centre operated by Pinnacle Power, image taken from Pinnacle Power's website. Available at: <http://www.pinnaclepower.co.uk/case-studies/greenwich-peninsula-district-energy/>
- <sup>42</sup> Timeframes are given in financial year, so that a timeframe target of 2019/20 denotes that action is targeted to be complete by April 2020.
- <sup>43</sup> Council core corporate operations here refer to 4 key operations of corporate buildings, street lighting, fleet and business travel.
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- <sup>46</sup> Climate Change Act, 2008. Chapter 27. Available at: [www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga\\_20080027\\_en.pdf](http://www.legislation.gov.uk/ukpga/2008/27/pdfs/ukpga_20080027_en.pdf)
- <sup>47</sup> The Carbon Reduction Commitment (CRC) scheme is designed to incentivise energy efficiency and reduce CO<sub>2</sub> emissions in large energy users in the public and private sectors. Organisations that meet the qualification criteria are required to participate, and must buy allowances for every tonne of carbon they emit.
- <sup>48</sup> RBG, 2014. The Royal Greenwich Local Plan: Core Strategy with detailed policies (Core Strategy in short), adopted on 30 July 2014. Available at: [www.royalgreenwich.gov.uk/downloads/download/718/core\\_strategy\\_with\\_detailed\\_policies](http://www.royalgreenwich.gov.uk/downloads/download/718/core_strategy_with_detailed_policies)
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