
BETTER ENVIRONMENT, BETTER HEALTH

A GLA guide for London's Boroughs
London Borough of Sutton



MAYOR OF LONDON

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FOREWORD

The Mayor's vision is for London to be the 'greatest city on earth' – this means making the city a great place for Londoners to live, relax, work and raise a family, whilst being attractive to investors. However there are significant inequalities in the health and quality of Londoners' lives. 2009-11 ONS figures show that average *healthy* life expectancy reduces by almost one year for every stop eastwards on the District Line between the boroughs of Richmond and Tower Hamlets – a difference of 18 years. The reasons for this are complex but the evidence points strongly to the important impact of the wider determinants of health. This inequality means some Londoners are unable to benefit from and contribute to the city's dynamism because of preventable health problems. The Mayor wants to ensure all Londoners have the chance to participate in what London has to offer.

Furthermore, if we are to maintain and improve London's position as the attractive world city it is, we need to create a resilient city, able to deal with extreme weather events, and a city that offers a high quality of life with green spaces, a fantastic public realm and a pleasant, healthy environment.

Local authorities have a unique role to play in achieving these goals, and with their new responsibilities for public health they have a new set of capabilities and levers for catalysing change. *Better Environment, Better Health* offers a bespoke guide to each of London's thirty three boroughs, describing the impact of seven wider environmental determinants of health on their specific populations and highlighting possible actions that could be taken to promote a better environment leading to better health and well-being, overall, for Londoners.

For example we know that by encouraging walking and cycling we are not only helping to improve London's air quality but also cardiovascular health, whilst reducing levels of obesity. The guides demonstrate how such an approach can be taken on a range of issues, without necessarily adding to the financial burden on boroughs' already squeezed budgets, just by doing things differently.

We hope you will find value in the guide and will use it to drive improvements locally to create strong environments which promote health and well-being, and are resilient.

Finally, we would like to thank the project team for writing the guides and their drive in taking this project forward.



Victoria Borwick
Deputy Mayor of London
and Mayoral Health Advisor



Matthew Pencharz
Senior Advisor for Environment
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INTRODUCTION

What is likely to shape the health of our communities over the next twenty or thirty years? What will improve quality of life? What will help people live longer, particularly those most likely to die early? What will improve people's quality of life, reducing years lost to disability and poor mental and physical health? What will improve the health and wellbeing of children and young people? The United States Center for Disease Control and Prevention (CDC) has argued that in the 20th century public health measures added 25 years to the life of an average American.¹ In its list of top ten interventions half are closely connected to the environment. The same list would be likely to apply to the UK and London. In the 21st century public health measures, including measures seeking to improve the environment, are likely to be as important in supporting good health as improvements in healthcare. We need to prepare, assess and plan for extreme weather events and their impacts not just to improve Londoners' health and wellbeing but to increase economic prosperity, for business and service continuity and to strengthen community resilience.

In this guide we focus on seven environmental issues and their relationship to health:

- Green spaces
- Active travel & transport
- Surface water flood risk
- Air quality
- Healthy food
- Fuel poverty
- Overheating

For each of these we ask certain questions:

- What is the issue and how do we measure it?
- What is its impact on health? What is the evidence?
- Who will experience the impact most?
- What is the local borough picture?
- What are the key actions to promote good health?

We also provide links to the Public Health Outcomes Framework and suggested further reading. The aim of the bespoke borough guides is to maximise opportunities for improving health and wellbeing, as well as enhancing community resilience. They are aimed at professionals working in health, environment, regeneration, economic development or any aspect of shaping local places, as well as local people interested in improving the quality of life in their communities. Where issues are locally relevant we hope this document will help to start a conversation which enables them to be identified and addressed in borough Joint Strategic Needs Assessments (JSNA) and health and wellbeing

strategies. These guides do not cover all of the wider environmental determinants of health. For example, they do not look at some aspects of housing (such as overcrowding), workplace health, wider resource use, access to services, water resource management or noise pollution. More broadly, issues of planning and environmental control tie many of these areas together. How we shape ongoing development and use of our town centres, neighbourhoods and business districts presents opportunities to maximise the health of users: residents, employees and visitors. Similarly, environmental consideration provides the scope to address potential risk to resilience, health and well-being as well as promoting good practice amongst, for example, businesses, landlords and facilities managers.

GREEN SPACES

Accessible green space has long been recognised as a wider environmental determinant of good health. Wide ranging research shows strong evidence that outdoor spaces have a beneficial impact on both physical and mental well-being². When considering green space it is helpful to think about both **access** and **use**: availability being a necessary but insufficient indicator and determinant of use. A range of data are available on both access and use including the Natural England MENE survey (frequency, mode of access, reasons³); London.gov.data: 'Access to Public Open Space and Access to Nature by Ward'⁴; and Sport England: Active people Survey (physical activity rate)⁵.

What is the impact on health?

Accessible, safe green space is shown to reduce mental distress, depression and Attention Deficit-Hyperactivity Disorder (ADHD) symptoms in children. Access to a garden or living a short distance to/from green areas, as well as having the potential to lead to improvements in the environment, are associated with a general improvement in mental health and wellbeing.⁶ Both the Marmot Review and NICE have highlighted evidence that the presence of good quality outdoor green spaces encourages physical activity⁷ which is important across a wide range of health issues such as cardiovascular diseases, obesity, type 2 diabetes and mental/physical health. Increasing and improving the proportion of green spaces in urban centres also has a secondary positive impact on health through other wider environment determinants of health such as urban heat-island effect, surface flood risk and air quality.

Who will experience the greatest impact?

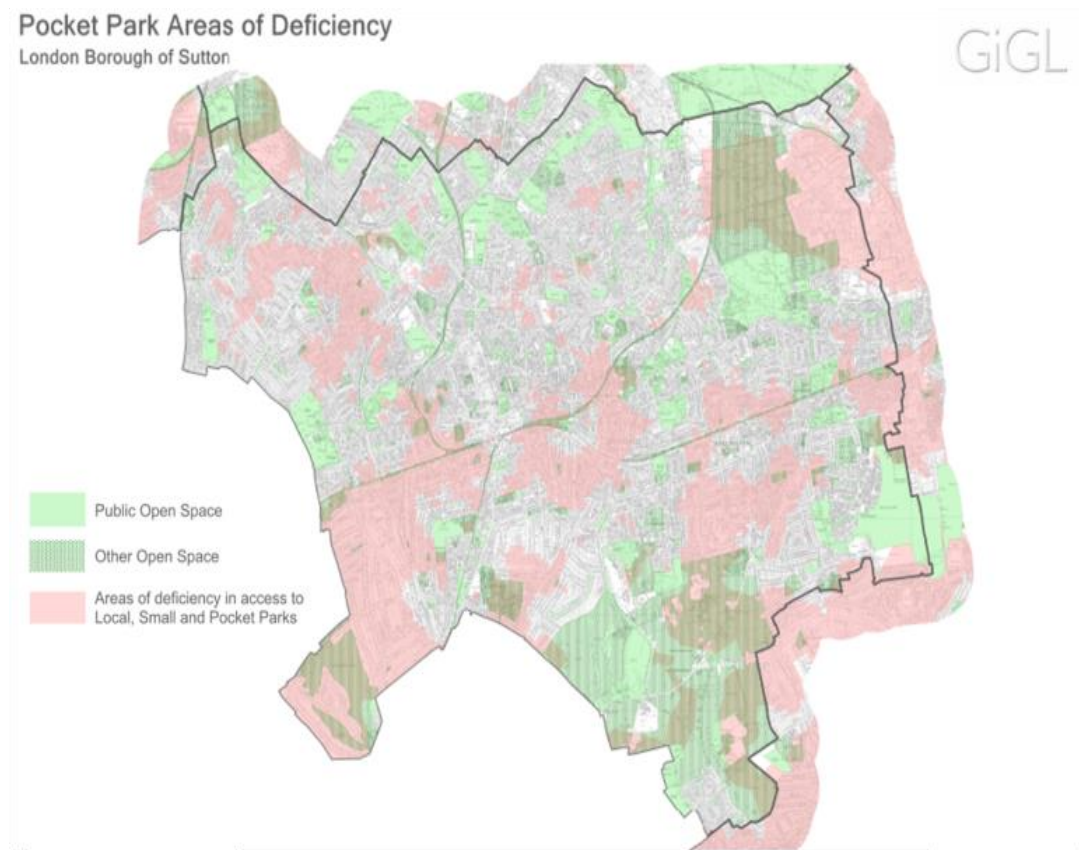
- Urban residents (through impact on quality of life)
- Older people and children
- People suffering from obesity, cardio-vascular diseases, diabetes
- People suffering from mental distress and depression.

The Sutton Picture

- 32 per cent of the borough surface has green space coverage; 1 per cent above the London average.⁸
- Within Sutton, over 50 per cent households in 4 out of 18 wards, have deficient access to nature.⁹
- 20 per cent of Sutton's population participate 5 times per week in physical activity for at least 30 minutes and nearly 64 per cent participate once a week which is above the London average.¹⁰
- Sutton's adult obesity prevalence is 22 per cent, which is higher than the London rate, 21 per cent, but lower than the national rate, 24 per cent.¹¹

Figure 1 Green Spaces in Sutton

Pink coloured areas are defined as area of deficiency in access to local, small and pocket parks. Proximity rate is +/- 400m from households.



<http://www.gigl.org.uk/Ourdatasets/Openspace/tabid/117/Default.aspx>

Potential actions:

Given the significant relationship between health and green spaces in the urban environment some key actions can be identified to improve quality and proximity in order to enhance access and use.

This includes considering:

- All London Green Grid Supplementary Planning Guidance to improve *biodiversity* function and connectivity of green spaces;¹²
- The Green Flag Award system to improve quality and promote access to green spaces.¹³
- Promoting physical activity in outdoor spaces through “outdoor gyms” and “guided walking exercise prescription” as a way to recover from cardiovascular diseases and illness.¹⁴

See also sections on surface water flood risk and healthy food.

Case Study: Regenerating Burgess Park, London Borough of Southwark

The regeneration of Burgess Park, in Southwark, was underpinned by a comprehensive plan that made the focus of the park a place for healthy living, showing how to combine 'natural' regeneration with health promotion¹⁵. This has also included opportunities for investment, growth and jobs. For example improved access to, and routes through, the park, alongside enhancements to the lakes, planting, lighting and on-site facilities, has made the park a much more attractive and welcoming place, encouraging play and informal recreation. The park also has over 10 km of running, cycling and fitness routes and a new BMX track, to cater for more formal sport and physical activity.

Contact: Ruth Miller, Burgess Park Project Manager

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Links to Public Health Outcomes Framework	Suggested further reading
<p>Primary 1.16 Utilisation of outdoor space for exercise/health reasons</p> <p>Additional (for example) 2.6 Excess weight in 4-5 and 10-11 year olds 2.13 Proportion of physically active and inactive adults 2.23 Self-reported well-being</p>	<ul style="list-style-type: none">• Planning for Health (2009) HUDU• The Marmot review (2010) www.instituteofhealthequity.org• www.nice.org.uk• Benefit of Urban Parks, IFpra (2013):• www.ecehh.org• www.naturalengland.org.uk• www.hphpcentral.com• CMO (2011) Start Active, Stay Active

ACTIVE TRAVEL & TRANSPORT

Travel is essential for connecting people to employment, recreation, education and health and community services. Most people travel in some way every day, making it part of everyday life and therefore a factor that can greatly affect the health of all London's citizens¹⁶. Travel includes walking and cycling, use of private vehicles, public transport and goods vehicles. In London more than 80 per cent of journeys take place on roads either by motor vehicle, bike or on foot; therefore road transport and street environments have a very significant impact on health and wellbeing¹⁷. There are inequalities in the impact of transport upon health, with the most deprived people and those using the most heavily trafficked roads experiencing the most negative health impacts¹⁸. Only a few London boroughs include a dedicated transport focus in their Joint Strategic Needs Assessment (JSNA), suggesting the impact of travel on health may be underestimated.

What is its impact on health?

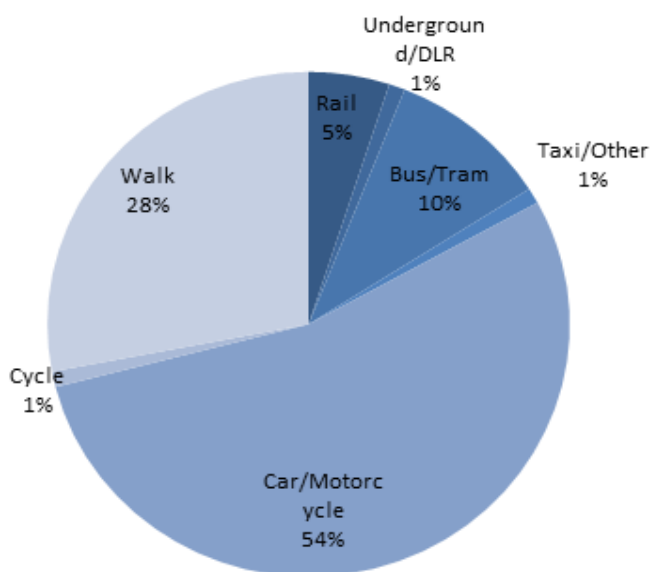
A comprehensive public transport network provides many health benefits including access to services, reducing social isolation and increasing work and social opportunities. A major benefit of travel in London is that it enables people to maintain regular physical activity via walking (particularly as part of public transport trips) and cycling. Only around 20 per cent of Londoners currently meet the minimum recommendation for physical activity of 150 minutes per week¹⁹. Everyday physical activity is essential for good physical and mental health, contributing to the prevention of over 20 diseases including obesity, type 2 diabetes, cardiovascular disease and some cancers²⁰. Cycling and walking can be easily incorporated into daily routines to meet physical activity needs. In London, approximately 4.3 million trips currently made by car or public transport have been identified as easily cyclable²¹.

Creating opportunities which enable Londoners to walk and cycle has other potential health benefits including access to safe, green spaces. This could lead to reductions in congestion which, in turn, may reduce overheating and improve air quality. The negative impacts of transport in London are concentrated in the London's most heavily trafficked streets, where high concentrations of vehicles contribute to air and noise pollution and increased injury risk²². This can create the impression of a hostile environment for walking and cycling and can exacerbate health inequalities. Motor vehicles are responsible for 41-60 per cent of air pollutants in the UK, which have an impact on cardiovascular and respiratory diseases. People who live on or use heavily trafficked streets are the most adversely affected.

The Sutton Picture

- On average 393,000 trips per day are made by people originating in Sutton.²³
- Low numbers of people participate in active travel, with the percentage of people cycling to work below the Greater London average.
- Use of motor vehicles is 17 per cent above the Greater London average, one of the highest in London.²⁴
- There was an average of 393 casualties and 2 fatalities per year on Sutton's roads between 2005 and 2009: one of the lowest in London.
- The most heavily used road (excluding motorways) is the A217 with an average daily flow of 39,000 motor vehicles.²⁵
- The Borough has no cycle super highways proposed in the Mayor's 'Vision for Cycling'.²⁶

Figure 2 Journeys in the Sutton by modal share



Source: London Travel Demand Survey

Potential actions:

- Designing street environments to encourage walking and cycling.
- Designing and engineering roads to reduce motor vehicle speed and implement 20mph zones where appropriate.
- Promoting a network of roads and paths that are safe and convenient for cycling and walking.
- Supporting walking and cycling by ensuring that, where possible, the needs of cyclists and pedestrians are considered before other road users.
- Promoting cycling through information, maps and cycle hire schemes.
- Improving safety of heavily trafficked streets where most traffic related health risk is concentrated.

See also section on air quality.

Case Study: Cycling across Hackney

Hackney has the highest levels of cycling in London. There are more cyclists than motorists in many parts of the borough. This is evidenced by the fact that 6 per cent of journey’s originating from Hackney are on bike, higher than any other borough in London²³. Since 2001 the Council has sought to increase the areas that are cycle friendly by improving the design and increasing the accessibility of the road network for cyclists.²⁷

- Road safety has been improved by reducing motor traffic speeds and volumes. The aim is to enforce 20 mph speed limits across the borough on all residential roads.²⁷
- Systematic improvements have been made to the public realm for pedestrians, cyclists and public transport users and a number of designated cycle routes such as the Hackney Park cycle route have been created.²⁷
- Hackney has invested in a range of cycle parking bays including lockers in estates, hangars (on street bike/storage lockers), on residential streets and large bike ports at transport hubs such as railway stations and town centres.
- A comprehensive free cycling training programme has targeted a range of audiences.²⁷

Contact: Ben Kennedy, Hackney Council, ben.kennedy@hackney.gov.uk

Example of a cycling improvement scheme Wordsworth Road/Palatine Road, Hackney



Links to Public Health Outcomes Framework	Suggested further reading
<p>Primary 2.13 Proportion of physically active and inactive adults</p> <p>Additional (for example) 1.16 Utilisation of outdoor space for exercise/health reasons 2.7 Hospital admissions caused by unintentional and deliberate injuries in under 18s 3.1 Fraction of mortality attributable to particulate air pollution</p>	<ul style="list-style-type: none"> • Healthy Transport Healthy Lives, British Medical Association (BMA) • NICE Walking and Cycling, Local Government Briefing • Mayors Vision for Cycling, 2013 GLA • London Borough of Hackney Sample of Schemes for cycling & public realm (2013) • What are the health benefits of active travel: A systematic review of trials and cohort studies, PloSOne, 8

SURFACE WATER FLOOD RISK

Surface water flooding describes flooding on the land surface from sewers, drains, groundwater and runoff from land after a heavy rainfall event²⁸. Surface water flooding events are difficult to predict but can cause significant disruptions to local populations and to health and other services. London is vulnerable to surface water flooding because some areas have poor drainage systems and large areas of impervious surfaces²⁹. Approximately 480,000 London properties and ten hospitals are at risk of surface water flooding in London³⁰. Surface water flooding is already a considerable risk and one that, without action, will increase in London due to population growth, urban expansion and ageing of drainage systems. In addition, changing climate patterns are likely to increase the number and intensity of large magnitude precipitation events leading to a likelihood of more frequent and larger magnitude surface water flooding events. Local Flood Authorities are responsible for mapping, assessing and managing local flood risks, identifying whom and what is at risk and the vulnerability of services such as hospitals and schools to surface water flooding.

The Mayor's Regional Flood Risk Appraisal identifies surface water flood risk as the most likely cause of flooding in London. The GLA, Thames Water, the Environment Agency and London Councils have been developing and delivering a programme to manage this risk, known as Drain London.

There are multiple ways in which flooding can create health risks:

- Fast flowing water has multiple potential hazards such as moving debris which can cause physical injury and even death. Contaminated flood water containing pollutants such as chemicals and sewage can cause disease.
- Flooding of health facilities results in disruption to access to healthcare facilities, with increased difficulty providing routine medical care and increased patient admissions in neighbouring facilities.
- Exhaust emissions from machinery operating in the clean-up process and recovery from a flood can cause carbon monoxide poisoning³¹.
- Disruptions in flood recovery, fear of repeat events and added effects of stress due to insurance claims and refurbishing properties can cause mental health problems. Up to 25 per cent of people who experienced flooding in their homes in the major UK floods in 2007 experienced mental health issues after the event³².

Who might experience the greatest impact?

Some areas in London are at risk of surface water flooding particularly where there is inadequate sewer/drainage capacity, and some groups are at greater risk⁴. These include people with limited

mobility or/and those who are dependent on medication and/or regular healthcare at home or at a health/social care facility. Those with less flood awareness due to weak social networks and limited or no access to public warning systems and/or information are also at risk.

The Sutton Picture

The Environment Agency will be releasing a national surface water flood risk map for each London borough in December 2013. Whilst this will show the areas at risk it should also be noted that any low lying area could also potentially be affected but may not be visible on the maps because of the difficulty in assessing surface water flood risk. The maps will provide borough-specific assessments.

Potential actions:

- Developing emergency plans to reduce effects of surface water flood risk.
- Including integrated emergency planning for priority groups/services. Developing land management strategies such as green roofs to reduce likelihood of surface water flooding.
- Incorporating Sustainable Urban Drainage Systems (SuDS) as an alternative to traditional approaches to managing runoff.
- Identifying vulnerable and isolated people and implementing early warning systems and evacuation plans.
- Planning for disruption of infrastructure and increase in patient volumes at health and social care facilities.

See also section on green spaces and healthy food

Case studies:

Purley (LB Croydon) community flood plan ⁶

- Purley is vulnerable to flooding and experienced a large flood event in 2007. In response the community developed a Community Flood Plan.
- The flood plan is owned by the community, and aims to reduce the impact of flooding.
- It advises the community on how to prevent flooding and what to do if it happens.
- It is a low cost but effective way of reducing a wide range of impacts of flooding.
- The community has created a number of flood wardens who play a central role in advising local citizens and businesses on the flood risk and actions they can take to reduce the impact and nature of flood events.

Surface water flooding event, London, July 2007 ⁷

- In July 2007, 121mm of rainfall fell in London, mostly on July 20th, causing some significant surface water flooding.
- Approximately 400 properties were flooded, 158 schools affected and two hospitals were closed as a result.
- The closure of St George's Hospital caused major disruption.⁸

Links to Public Health Outcomes Framework	Suggested further reading
<p>Primary: 3.7 Comprehensive, agreed inter-agency plans for responding to public health incidents and emergencies</p> <p>Additional (for example) 3.6 Public sector organisations with a board-approved sustainable development management plan</p>	<ul style="list-style-type: none"> • GLA Regional Flood Risk Appraisal, 2013 • Drain London- http://www.london.gov.uk/priorities/environment/looking-after-londons-water/drain-london Programme London Climate Change Adaptation Strategy • Multi-Agency Flood Plan, LB Havering, 2012 • Floods in the European Union, Health effects and their prevention (2013), World Health Organisation (WHO)

AIR QUALITY

Good air quality has long been recognised a basic requirement for good health. The UK Air Quality Standards Regulations 2000, updated in 2010, set standards for a variety of pollutants that are considered harmful to human health and the environment. These are based on EU limit values and are for a range of air pollutants: sulphur dioxide, nitrogen dioxide, oxides of nitrogen, particulate matter (PM₁₀ and PM_{2.5}), lead, benzene, carbon monoxide, benzo(a)pyrene and ozone.

Much of the focus of air quality action is on nitrogen dioxide (NO₂) and particulate matter (PM). Particulate matter (PM10 and PM2.5) refers to a complex mixture of non-gaseous particles of varied physical and chemical composition. It is categorised by the size of the particulate. In London, road traffic is a significant source of PM mainly from exhaust emissions and wear, tyre and brake wear and dust from road surfaces.

In addition, older furnaces and boilers may have an impact on the overall air quality environment within a house. Poor air quality could potentially compromise health and well-being.

It should be noted that exceedences apply across the whole of London, particularly near built up areas and major roads.

What is the impact on health? What is the evidence?

Long-term exposure to poor air quality can contribute to the development of chronic diseases and can increase the risk of respiratory illness. In Greater London it is estimated that the equivalent of 4,267 deaths in London in 2008 were attributable to long-term exposure to PM_{2.5}. It should be noted that this does not relate to real individuals, but is a statistical construct whereby all health impact associated with air pollution are amalgamated. Since everyone breathes the air where they are, a more realistic interpretation is that the risks are distributed across the whole population, with a total mortality impact of the concentrations equivalent to that number of deaths. At high concentrations NO₂ can result in inflammation of a person's airways; long-term exposure can affect lung function and respiratory symptoms and can increase asthma symptoms. PM aggravates respiratory and cardiovascular conditions. The smaller the particle, the deeper it will deposit within the respiratory tract. The impact of PM_{2.5} on health is especially significant.

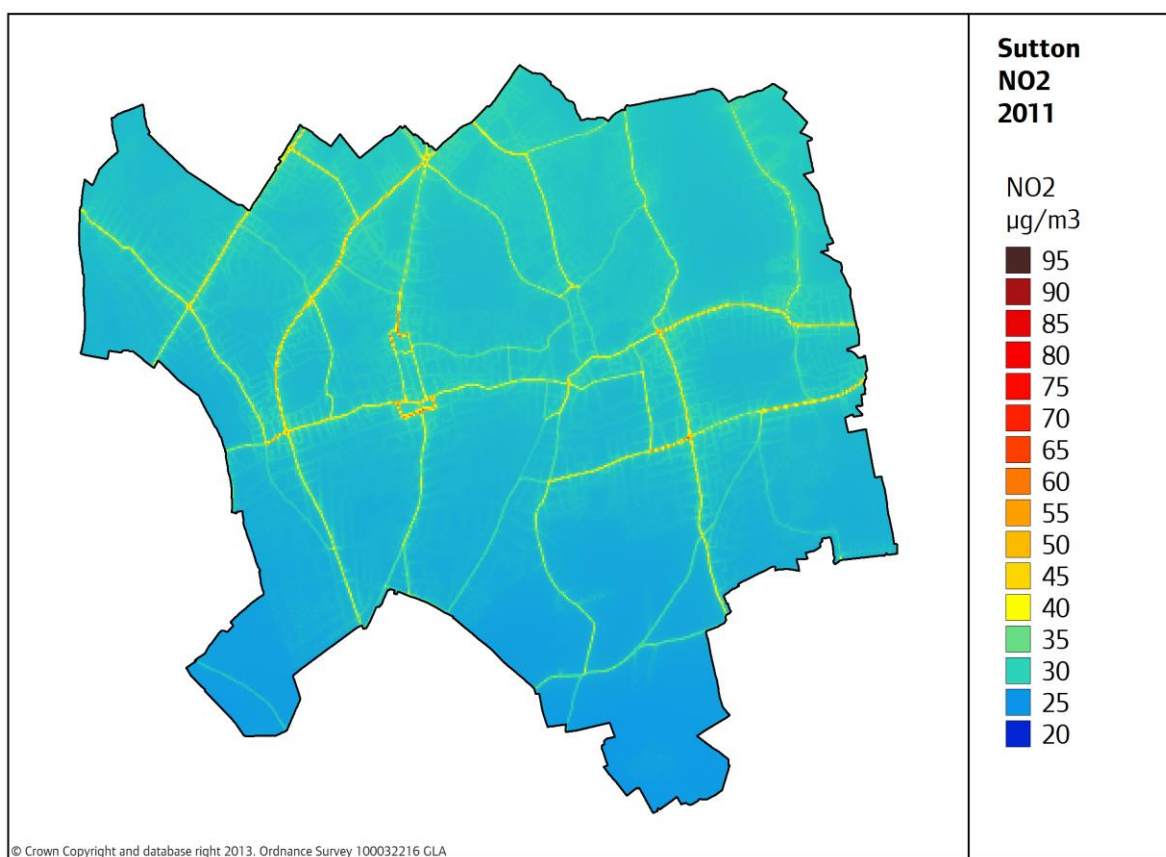
Who may experience the greatest impact?

- People who live or work close to areas with poor air quality
- People with respiratory problems
- People with heart problems

The Sutton Picture

- On some of Sutton's main arterial roads there are high concentrations of NO₂ (see map) which are above the recommended limits.
- Statistical tools are used by public health specialists to try to understand the comparative impact of different factors on mortality. Using these techniques, Sutton is the 3rd least affected area by poor air quality in London.³³
- In 2011 the GLA identified three Air Quality Focus Areas within Sutton.

Figure 3 NO₂ emissions on Sutton Roads



Potential actions:

- Promoting a modal shift to encourage higher proportions of walking, cycling and use of public transport and less use of cars. This could include a wide range of measures from systemic action within the planning and transport system to one-off events such as car free days. Such measures could lead to significant improvements in air quality.
- Promoting energy efficiency in homes, public and commercial offices. For more information see the Energy Company Obligation³⁴.
- Individual steps could be taken to:
 - a) reduce personal contribution to air pollution such as engine idling; and,

- b) reduce risk of exposure where it is potentially hazardous to health (particularly for people with underlying vulnerabilities) through systems such as airText.

See also section on active travel and transport.

Case studies:

Reducing exposure – City Air

‘CityAir’ was launched in May 2011 in the City of London to encourage businesses to help to improve local air quality.

Best practice guidance and case studies were produced to provide advice to City businesses on reducing emissions from buildings, encouraging staff to walk and cycle in the City, using purchase contracts to require low polluting vehicles and building air quality targets into environmental reporting.

Information is available at www.cityoflondon.gov.uk/cityair. To date over 50 businesses have been engaged, representing over 40,000 employees. CityAir employee walking campaigns have been very popular.

Contact: Ruth Calderwood
ruth.calderwood@cityoflondon.gov.uk

Mitigating impact - Croydon Air Text

In 2005 the London Borough of Croydon developed with the European Space Agency and Cambridge Environment Research Consultants an air quality forecasting service called ‘airTEXT’. AirTEXT provides information on pollution levels in the borough using ‘low’, ‘moderate’ and ‘high’ bandings. Whenever moderate or high pollution levels are expected, subscribers to airTEXT receive a text message, call or voicemail. This enables recipients to respond, if necessary, for example by taking a different route/mode of transport to work, keeping their medication with them or not exercising outside on certain days. In 2012 a new airTEXT app was developed which provides information on four health-relevant alerts: UV, pollen, air quality and temperature. Currently around 10,000 people use the airTEXT service through text, Twitter or the website.

Links to Public Health Outcomes Framework	Suggested further reading
<p>Primary 3.1 Fraction of mortality attributable to particulate air pollution</p> <p>Additional (for example) 2.13 Proportion of physically active and inactive adults 1.14 The percentage of the population affected by noise</p>	<ul style="list-style-type: none"> • GLA Local Authority Air Quality Guides • www.londonair.org.uk • www.comeap.org.uk • NICE Guidance PH41 Walking and cycling: local measures to promote walking forms of travel or recreation • Kilbane-Dawe (2012) 14 Cost Effective Actions to Cut Central London Air Pollution

HEALTHY FOOD

Access to healthy food is an important wider environmental determinant of health. Improving the food environment means enhancing the availability of affordable and nutritious food and recognising the relationship between the geography of food retailing and dietary patterns³⁵. It also means considering of sustainable production, processing and delivery. Policy attention has focused on the role of local planning measures and the impact of large supermarkets, provision of food growing places, the physical environment and education on a healthy diet. Many factors influence the availability of healthy food. The predominance of unhealthy food and low income may interact with environmental factors to limit access.

Access to healthy food can be measured through the following indicators: cost, quality, geography, mode of transportation, physical proximity and socio-economic variables.

What is the impact on health? What is the evidence?

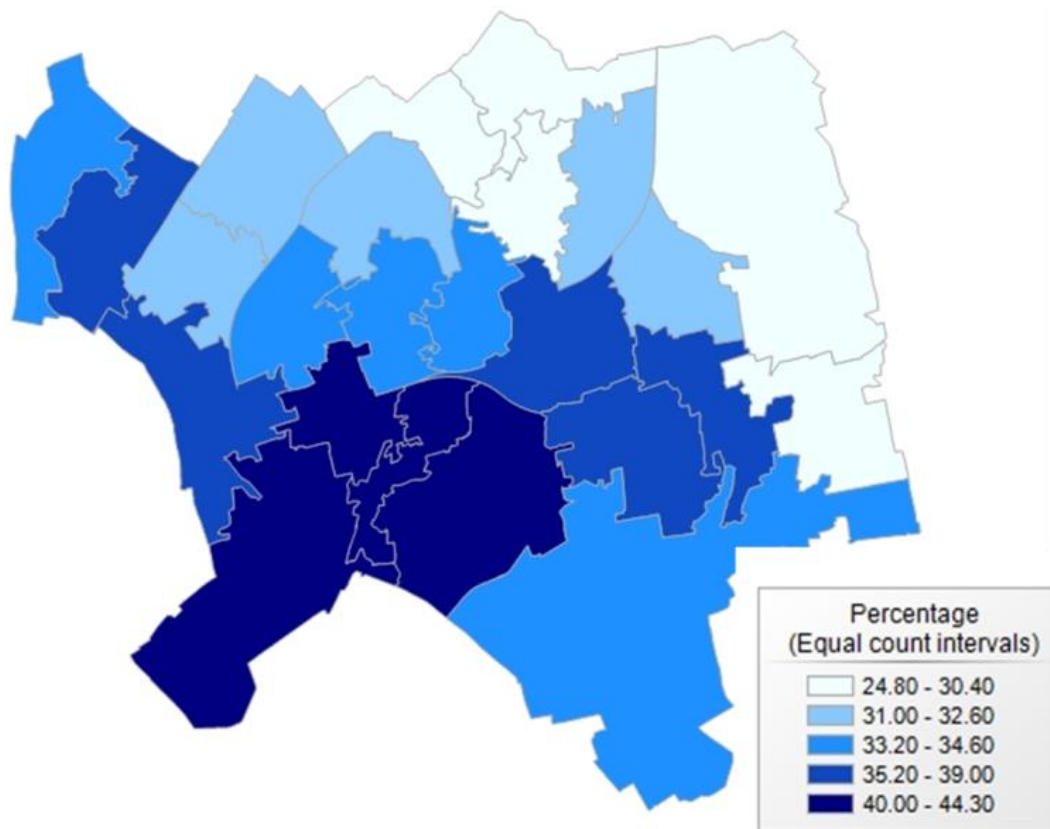
Reduced access to healthy food and the ready and cheap availability of unhealthy foods (such as fast-food and takeaway outlets) increases the risk of a diet based on high consumption of sugar, saturated fat and salt and low in vegetables and fruit³⁶. This could lead to obesity, cardiovascular disease, type 2 diabetes and some cancers associated with obesity. The National Obesity Observatory estimated the cost to the UK economy of overweight and obesity to be £15.8 billion per year (2007). This has an impact on children as well as adults. Studies have also found that an increased density of fast food restaurants is directly related to increased Body Mass Index (mass index showing body fat based on height and weight) and that having a fast food outlet within 160m of a school is associated with a 5 per cent increase in obesity³⁷.

The Sutton Picture

- Sutton's adult obesity rate is 22 per cent. This is higher than the London average (21 per cent), but lower than the national average (24 per cent).³⁸
- Sutton's obesity rate among primary school children (year 6) is 19 per cent. This is equal to the national rate and lower than the London rate (19 and 23 per cent respectively).³⁹
- In 9 out of 24 Middle Super Output Areas (two darkest blue areas on map), 35-44 per cent of the population consume five portions of fruits and vegetables a day.⁴⁰
- 20 per cent of Sutton's population participate five times per week in physical activity for at least 30 minutes and 64 per cent participate once a week.⁴¹

Figure 4 Healthy food consumption in Sutton

Model based consumption of fruit and vegetables in Sutton by ward, 2006-8
LA population consuming five portions of fruits and vegetables a day.



Potential actions

- Developing schemes to promote local and easily accessible healthy food from retailers (for example www.cieh.org/healthier-catering-commitment.html).
- Using planning controls to manage proliferation of fast-food outlets on high streets and near schools.
- Promoting the GLA Healthy Schools London Awards Initiative (www.healthyschoolslondon.org.uk). Healthy food choice in schools is recognised as a way to tackle obesity and chronic diseases caused by poor nutrition. This includes diet, education, and healthy meals provided at schools and accessible from nearby areas.
- Capital Growth (www.capitalgrowth.org) initiatives have the potential to promote community food growing. These activities reconnect people to the food system, engages them in issues such as where their food comes from, seasonality, healthy eating, and food security.
- Procuring from local food suppliers and retailers, signed up to the Healthier Catering Commitment Plan.

See also section on green spaces and surface flood risk.

Case Study: Fast-food Fix – LB Waltham Forest - Tackling the Takeaways: Making an Impact

- Community engagement on ‘takeaways’ in the borough identified dissatisfaction with the number and location of 241 local hot food takeaways (HFT). This included schools, concerned that the proximity of HFTs to schools had a negative impact on healthy eating programmes.
- A HFT corporate steering group was established to:
 - Ensure existing HFT businesses operated as responsibly as possible;
 - Develop strategies to tackle the wider social, environmental and economic issues associated with the proliferation of HFTs in the borough.

Achievements:

- Supplementary planning documents were developed restricting the opening of new HFT shops. So far, 20 applications have been refused planning permission and only 4 HFTs have been given planning permission.
- HFTs in the borough have been reduced from 241 to 194

Contact: Gordon Glenday, Head of Planning Policy and Regeneration

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Links to Public Health Outcomes Framework	Suggested further reading
<p>Primary: 2.11 Diet</p> <p>Additional (for example): 2.6 Excess weight in 4-5 and 10-11 year olds 2.12 Excess weight in adults 2.17 Recorded diabetes</p>	<ul style="list-style-type: none"> • NICE guidance: www.nice.org.uk • Takeaways Toolkit (2012): see www.london.gov.uk • District Action on Public Health: http://districtcouncils.info/; • CIEH Food Policy, (2013): www.cieh.org • Healthy People, Healthy Lives, (2011); • Good planning for Good Food: see www.sustainweb.org/publications/?id=192

FUEL POVERTY

There are three factors that can result in fuel poverty, often in combination: low income, poor energy efficiency in homes and increasing energy prices. A household is now defined as 'fuel-poor' if its total income is below the poverty line (taking into account housing energy costs) and its energy costs are higher than typical for its household type.⁴² Data on fuel poverty is collected from the English Housing Survey Domestic Fuel Inquiry and published annually by the Department of Energy and Climate Change (DECC). More than 560,000 households in London are estimated to be spending more than ten per cent of their basic income on energy (the previous official definition of fuel poverty).⁴³ Fuel poverty has the potential to have an adverse impact on children already in poverty as well as to increase the numbers of children living in poverty. Fuel poverty is also known to have an impact on well-being as indicated in self-reported well-being surveys.⁴⁴

What is the impact on health? What is the evidence?

Fuel poverty can have a negative impact on health, especially on people with pre-existing medical conditions. Fuel poverty results in cold homes, exacerbating cardiovascular and respiratory conditions, rheumatoid arthritis and influenza, and negatively affects mental health.⁴² The effects of fuel poverty may be compounded by social isolation, poor emotional well-being, reduced mobility and poor diet. Cold homes are also known to affect cognitive performance. However, actual deaths are only one part of the problem. Age UK estimates the cost to the NHS of cold homes as £1.36 billion per year (not including additional costs to social services for subsequent care).⁴⁵ The recent DECC fuel poverty framework attempts to monetise the health impacts of fuel poverty. It refers to a model estimating changes in people's health from the installation of energy efficiency measures (resulting from changes in the indoor temperature and pollutant exposure).⁴⁶

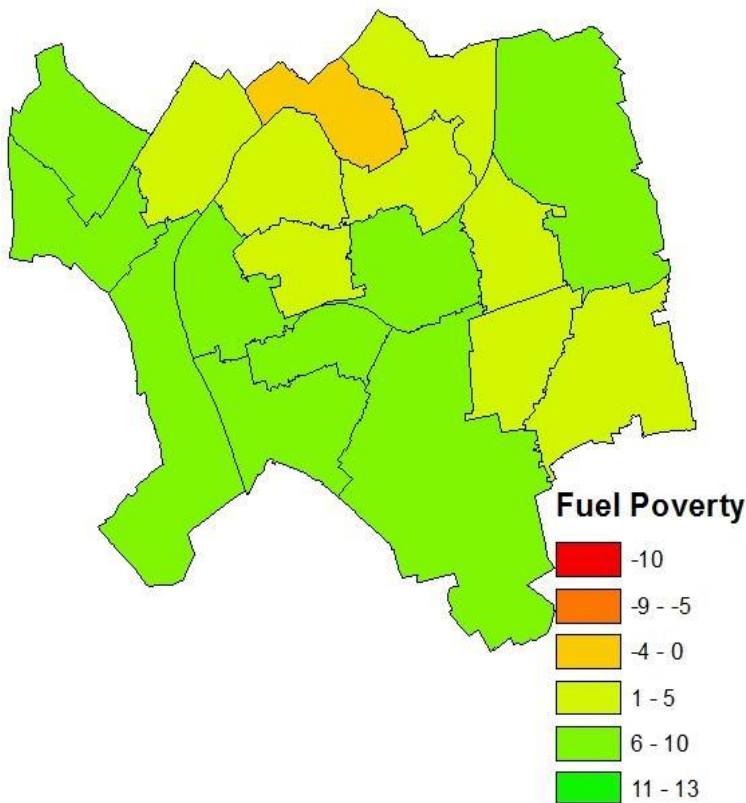
Who might experience the greatest impact?

Fuel poverty affects vulnerable groups such as older people, the group most likely to suffer excess winter deaths. Children, people with disabilities and/or those living in deprivation are also at greater risk of suffering from the effects of fuel poverty as they often need to spend longer time indoors and require heating for longer periods of time. Additionally, private sector tenants are at significantly greater risk of encountering the worst housing quality and are also least likely to access support or feel empowered to do anything about the issue.

The Sutton Picture

- The older population of Sutton is projected to rise from 28,600 (2012) to 34,500 (2025) and 44,100 (2040).⁴⁷
- A Fuel Poverty Risk score has been developed. There are some disparities between wards with Belmont achieving the 66th lowest risk score of all London wards but St Helier being 463rd out of 625 wards and at greater risk.
- Eight Sutton wards are at low risk of fuel poverty and none at particularly high risk according to the fuel poverty risk indicator. However, four wards show a negative trend towards a significant decline between 2006-2010.⁴⁸

Figure 5 Fuel Poverty risk in Sutton
Sutton



The Fuel Poverty Risk Index was developed by the London Assembly Health and Public Services Committee in their investigation into fuel poverty in London. It is calculated on the basis of twelve indicators across four sections:

Housing
Dwellings without central heating
Uninsulated cavity walls
Lofts with less than 150mm insulation

Health
Health Deprivation & Disability domain (ID2010)
Standardised Mortality Ratio
Incapacity Benefit claimant rate

Older people
People aged 60 and over
Older people claiming pension credit

Worklessness
Unemployment

Poverty
Income support claimant rate
Child poverty rates
Households classified 'fuel poor'

Source: GLA (2013) Fuel Poverty Risk Indicators Tool, available on London Datastore

Potential actions:

The first key step to any intervention is to identify vulnerable areas/individuals and map the extent of the problem. Vulnerable individuals and households can be identified and supported through:

- Close collaboration with third-sector organisations which are working with vulnerable groups/isolated populations/people to refer or inform them of available support.
- Home energy improvements as a vital sustainable solution to fuel poverty. There are opportunities through initiatives such as the Green Deal and Energy Company Obligation⁴⁹. The Mayor’s RE:NEW Programme support team⁵⁰ can offer advice on funding, procurement and best practice to partner with energy efficiency providers. In addition, the issue of overheating should be taken into account when implementing any energy efficiency works especially wall and loft insulation. Whilst take up of the Green Deal to date has not been significant, it remains an important delivery mechanism to reduce fuel poverty in London. (See section on overheating).
- Promoting collaboration between local authorities and private landlords in line with upcoming energy efficiency legislation (2018 energy efficiency requirements⁵¹).
- Raising awareness of benefits entitlement and support through public health campaigns, working with third sector organisations and the local community.

See also section on overheating and air quality.

Case Study: Barts Health in Tower Hamlets – Reducing Fuel Poverty

Barts Health has recently established a partnership project with British Gas and Global Action Plan that aims to reduce fuel poverty in Tower Hamlets. Hospital staff, GPs and community groups refer patients from vulnerable groups or those people living in hard-to-treat homes to the Energy Companies Obligation, supporting the installation of energy efficiency measures in low-income households. The project will train and support 40 health professionals (GPs, outpatient care staff and community nurses) plus community groups. The partnership initially aims to target 200 homes. The initiative is not just a referral mechanism but will raise awareness among vulnerable groups, medical practitioners and the wider community on what steps could be taken to address fuel poverty. Such an initiative could be linked with other seasonal health initiatives such as winter flu jab promotion.

Contact: Fiona Daly, Barts Health NHS Trust, fiona.daly@bartshealth.nhs.uk

Links to Public Health Outcomes Framework	Suggested further reading
<p>Primary 1.17 Fuel poverty</p> <p>Additional (for example) 1.1 Children in poverty 2.23 Self-reported well-being 4.15 Excess winter deaths</p>	<ul style="list-style-type: none"> • Marmot Review Team, 2011 – The Health Impacts of Cold Homes and Fuel Poverty • Age UK, 2012 - The Cost of Cold • Hills, 2012, Getting the measure of fuel poverty • DECC, 2013, Helping-households-to-cut-their-energy-bills • DECC, 2013, Fuel Poverty, A Framework for future action. • London Assembly, 2012, In from the cold? Tackling fuel poverty in London, GLA

OVERHEATING

What do we mean by overheating? How do we measure it?

Extreme weather events are more likely to be a factor affecting people's health in future years⁵². Heatwaves, such as the one in the summer of 2003 which caused the death of 2000 people, could become more frequent (London had an excess mortality of 42%, compared to England of 17%). The Urban Heat Island (UHI) effect means that urban areas tend to be hotter than rural areas. This is due to increased absorption of the sun on concrete compared with green or brown spaces, reduced cooling from breezes due to buildings and increased heat production from houses, industry, businesses and vehicles. This is especially relevant for London with its densely built-up central boroughs and high concentration of traffic and people. The UHI effect is not universally experienced across the city as it relates to availability of green space/water bodies, building density, amount of traffic and energy consumption. However there are particularly vulnerable spots in each borough, as well as vulnerable people across areas. (See maps below). When considering London as a whole, the costs associated with overheating mortality are expected to be around £7-78 million in the 2030s (473-712 heat-attributable deaths); by the 2050s, this could rise to £13-149 million (1200-1838 heat-attributable deaths).⁵³

What is the impact on health?

Overheating⁵⁴ can cause heat strokes, exacerbates existing cardiovascular and respiratory conditions and affects people with respiratory conditions due to a combination of overheating and poor air quality. A heatwave can also affect mental health with peak suicide and homicide rates reported during previous heatwaves in the UK. Research has shown a direct link between a temperature rise to more than 24°C and risk of death.⁵⁵ Additionally, people may suffer from heat-related illnesses, such as heat cramps, heat rash and heat syncope (fainting as a result of overheating). Overheating may lead to dehydration, especially in older people, and there is a strong link between high temperatures, dehydration and blood stream infections, also particularly in older people.⁵⁶

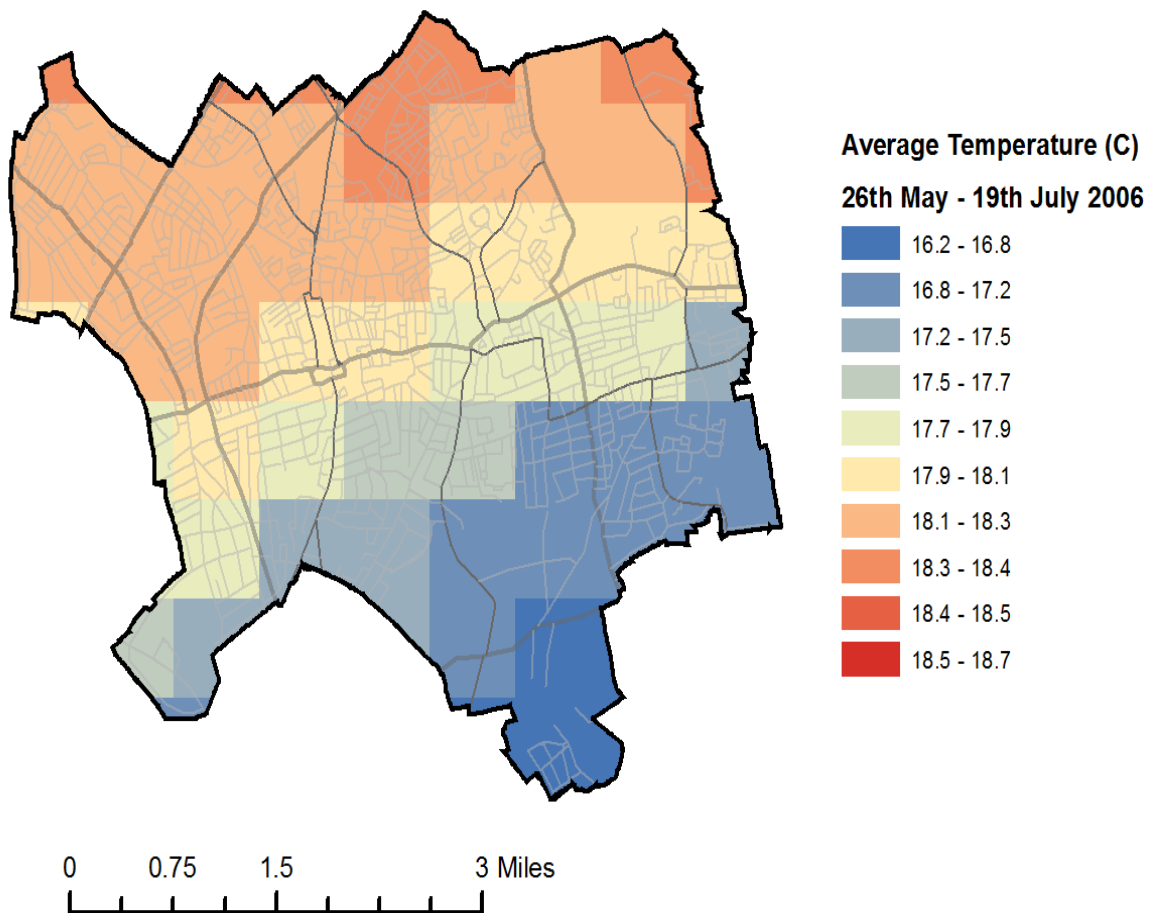
Who will experience the greatest impact?

Certain housing conditions (older and small top floor, purpose built flats because of the low solar protection offered by the top floor of poorly insulated flats; and newly constructed houses not suitably designed for extreme heat events and the quality of the built environment could potentially contribute to the overheating of an environment. Certain groups such as children have less efficient body cooling mechanisms and are therefore at greater risk. Similarly, the body's thermoregulatory mechanisms could be impaired in older people and those with chronic health conditions. Those considered vulnerable to overheating may not always perceive themselves to be at risk. Simple measures to reduce the negative impacts of overheating are not always implemented which could place these groups at even greater risk.

The Sutton Picture

The map below shows temperature differences across the borough and also shows the effects of existing infrastructure and green space on overheating risk. Combined with data on vulnerable populations, this will provide a more precise picture of the biggest risk areas.

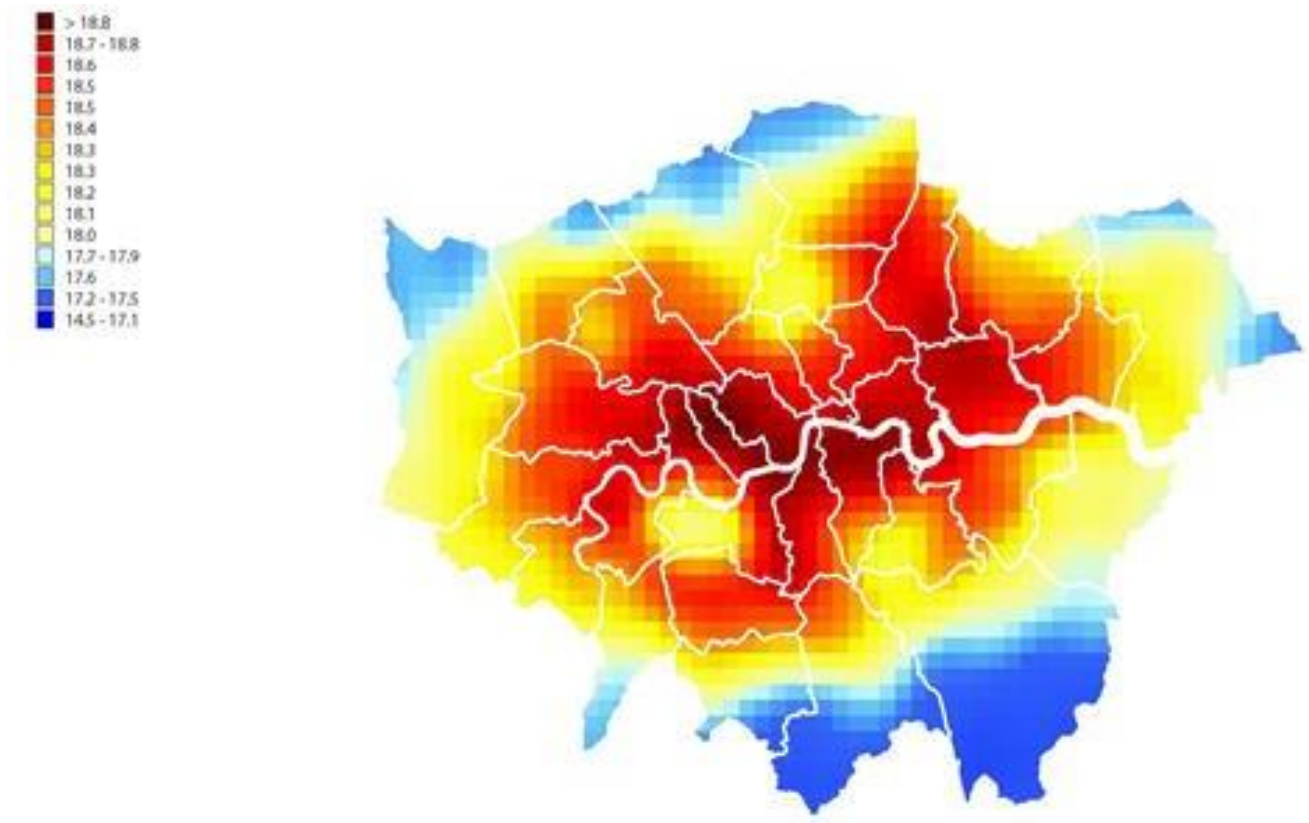
Figure 6: Average temperatures in Sutton



Model simulations of London's temperatures were provided by Dr. Sylvia I. Bohnenstengel (University of Reading) using the Met Office Unified Model and MORUSES (MetOffice Reading Urban Surface Exchange Scheme) (Bohnenstengel et al., 2010).

Figure 7 Temperature across the capital

London Average Screen Temperatures in degrees Celsius for the period 26 May-19 July 2006
Equal count mapping method: each interval; contains 7% of the total number of grid points



Potential actions:

The NHS Heatwave Plan for England 2013 suggests actions to mitigate and/ or ameliorate some of the effects of future heatwaves and hot weather.⁵⁷ Short term actions include:

- Modifying surface properties and integrating green infrastructure, for example, 'cool roofs', 'green roofs' and 'cool pavements' (paving materials that tend to reflect, provide cooler surfaces and increase water evaporation ratio).
- Planting trees and vegetation and creating green spaces to enhance evaporation and shading, (temperatures in and around green spaces can be several degrees lower than their surroundings). The development of 'green spaces' can not only help to alleviate the impact of the UIH effect but has been shown to have other positive health benefits such as improving mental health and well-being. Increasing green infrastructure also improves air quality.
- Insulating homes. This protects against hot weather as well as reducing heating needs in the winter.
- Introducing an active transport plan or car-sharing schemes. These will reduce numbers of vehicles used leading to improvements in air quality, whilst promoting healthy living.
- Using reflective paint on south-facing walls and roofs.
- Taking fuel poverty into account when implementing any energy efficiency works.

- Considering using the planning process to influence planning decisions on housing and commercial properties' heat thresholds.
- Retrofitting public buildings with energy-saving technology – including low-energy lighting and high-efficiency boilers. This presents one of a number of opportunities to improve on infrastructure, growth and support local job creation.

The Plan makes the case for a medium term (10–30 years) and long term approach (30+ years). See also section on fuel poverty and air quality.

Case Study: London Borough of Islington and the CRISP Project

CRISP is a joint project between Islington Council and North London Cares that took place in the beginning of 2013. Research among residents aged 65+ concluded that the majority of elderly people did not take hot weather issues as seriously as cold weather issues. Although levels of information were generally found to be good, there were some everyday actions being taken that might exacerbate the risk of overheating. The project identified the need for a widespread information campaign on proper use of windows, curtains and fans. The research identified challenges of communicating information about overheating. The findings and recommendations will inform Islington's Council Seasonal Resilience Plan and the work of the Seasonal Health Interventions Network (SHINE).

Contact: John Kolm-Murray, Islington Council

john.kolm-murray@islington.gov.uk

Links to Public Health Outcomes Framework	Suggested further reading
<p>Primary: 3.7 Comprehensive, agreed inter-agency plans for responding to public health incidents and emergencies</p> <p>Additional (for example) 3.6 Public sector organisations with a board-approved sustainable development management plan</p>	<ul style="list-style-type: none"> • NHS Heatwave Plan for England • RE:FIT is the Mayor of London's innovative scheme to reduce carbon emissions in Greater London, www.refit.org.uk • GLA (2011) London Climate Change Adaptation Strategy • London Climate Change Partnership (2012) Heat Thresholds Project: Final Report • Built Infrastructure for Older People in Conditions of Climate Change (BIOPICCC) • Design and Delivery of Robust Hospital Environments in a Changing Climate (De2RHECC)

REFERENCES

- ¹Centre for Disease Control and Prevention (CDC), 2013,from CDC (USA); www.cdc.gov/about/history/tengpha.htm
- ² Evidence demonstrating links between access to green spaces and health: Coombes, E., Jones, A P, & Hillsdon, M. (2010). The relationship of physical activity and overweight to objectively measured green space accessibility and use. *Social science & medicine*, 70(6), 816-822; Maas, J., Verheij, R. A., et al (2006). Green space, urbanity, and health: how strong is the relation? *Journal of epidemiology and community health*, 60(7), 587-592; Nielsen, T. S., & Hansen, K. B. (2007). Do green areas affect health? Results from a Danish survey on the use of green areas and health indicators. *Health & place*, 13(4), 839-850; Schipperijn, J., Bentsen, P et al (2013). Associations between physical activity and characteristics of urban green space. *Urban Forestry & Urban Greening*, 12(1), 109-116. Mitchell, R., & Popham, F. (2008). Effect of exposure to natural environment on health inequalities: an observational population study. *The Lancet*, 372(9650), 1655-1660.
- ³MENE Survey evidencing frequency, mode and motivation in access to Green Space, (2012-2013), from Natural England www.naturalengland.org.uk/ourwork/research/mene.aspx
- ⁴Local access to public open spaces, taken from Access to Public Open Space, (2012), London Data Store <http://data.london.gov.uk/datastore/package/access-public-open-space-and-nature-ward> ;
- ⁵Survey showing number of people participating in sport in local communities, taken from Active People Survey (2013), Sport England www.sportengland.org/research/active_people_survey.aspx
- ⁶ Use of small public urban green spaces and health benefits, Peschardt, K. K., Schipperijn, J., & Stigsdotter, U. K. (2012) Use of small public urban green spaces (SPUGS). *Urban Forestry & Urban Greening*, 11 (3), 235-244
- ⁷ Physical Activity and the Environment, taken from “Marmot Review (2010) Fair Society, Healthy Lives”; NICE (2008). Physical activity and the environment., PH Guidance 8
- ⁸ Toolkit showing levels of adult obesity, taken from Adult Obesity (2005) National Obesity Observatory , NHS UK, Public Health England; <http://www.sepho.nhs.uk/NOO/e-Atlas/adult/atlas.html>
- ⁹ Access to Public Open Space, (2012), taken from London Data Store, <http://data.london.gov.uk/datastore/package/access-public-open-space-and-nature-ward>
- ¹⁰ Toolkit showing levels of adult obesity , taken from Adult Obesity (2011 -2012) National Obesity Observatory , NHS UK, Public Health England; <http://www.sepho.nhs.uk/NOO/e-Atlas/adult/atlas.html>
- ¹¹ Toolkit showing levels of adult obesity , taken from Health Need Assessment Toolkit, Data Period, 2006-2008) <http://hna.londonhp.nhs.uk/JSNA.aspx>
- ¹²GLA All London Green Grid Supplementary Planning Guidance ,(2012) taken from, www.london.gov.uk/priorities/planning/publications/all-london-green-grid-spg; Datasets to support this guidance, taken from www.gigl.org.uk/Ourdatasets/Openspace/tabid/117/Default.aspx;
- ¹³ Green flag award system for green spaces, taken from Keep Britain Tidy, <http://greenflag.keepbritaintidy.org/>
- ¹⁴ Southwark Council outdoor gym, taken from www.southwark.gov.uk/info/200435/free_outdoor_activities/2611/outdoor_gyms/1
- ¹⁵ Burgess Park regeneration project July 2012, taken from www.southwark.gov.uk/news/article/792/burgess_park_to_reopen_after_8_million_transformation)
- ¹⁶ London Travel Demand Survey (LTDS),2011,taken from Transport for London, Travel in London, Supplementary Report: ,www.tfl.gov.uk
- ¹⁷ Evidence demonstrating link between transport and health, March 2013, Keeping well in hard times: Protecting and improving health & well-being in an income shortfall: taken from, London Health Inequalities Network.
- ¹⁸ Link between heavily trafficked streets and health impacts, 2005, taken from Health Development Agency Making the case: Improving health through transport.
- ¹⁹ Data showing physical activity rates in London, 2010, taken from Public Health England: Physical Activity in London: Key Facts. www.lho.org.uk/LHO_Topics/Health_Topics/Lifestyle_and_Behaviour/PhysicalActivity.aspx
- ²⁰ Link between active travel and health, 2012, taken from British Medical Association, Healthy Transport= Healthy Lives, BMA,www.bma.org.uk

- ²¹ Analysis of cycling potential, 2010, taken from Transport for London, December Analysis of Cycling Potential, Travel in London, www.tfl.org.uk
- ²² Report showing negative impacts of transport in London, 2011, taken from Mackett, R.L. & Brown, R. ; Transport, Physical Activity and Health. Present knowledge and the way around. Centre for Transport Studies, University College London, www.cege.ucl.ac.uk
- ²³ Number of travel trip by each modal share, 2011, taken from London Travel Demand Survey. Transport for London, www.tfl.org.uk
- ²⁴ Reported road casualties in Great Britain, annual report 2011, taken from www.gov.uk
- ²⁵ Most heavily vehicular used roads, 2000-2012, taken from Traffic Statistics, Department of Transport
- ²⁶ The Mayor's proposed cycle superhighways for London, 2013, taken from Mayor's Vision for Cycling, GLA, www.tfl.gov.uk
- ²⁷ Hackney's case study showing cycling promoting measures, 2013, taken from London Borough of Hackney Sample of Schemes for cycling & public realm. www.hackney.gov.uk (
- ²⁸ Surface Water Management Plan (SWMP), 2010, taken from, Technical Guidance. DEFRA www.defra.gov.uk
- ²⁹ London Regional Flood Risk Appraisal, October 2009, taken from GLA, ; , www.london.gov.uk
- ³⁰ Overall strategic plan for London, the London Plan, 2011, taken from GLA, www.london.gov.uk
- ³¹ Secondary impact of floods on health, 2013, World Health Organisation ; Floods in the WHO European Union, Health effects and their prevention. Edited by Bettina Menne and Virginia Murray, taken from Public Health England's website, www.gov.uk/government/organisations/public-health-england
- ³² Effects of floods on mental health, 2011, taken from Murray, V, Caldin et al (2011); The Effects of Floods on Mental Health, Health Protection Agency, www.hpa.org.uk
- ³³ www.phoutcomes.info
- ³⁴ <https://www.gov.uk/green-deal-energy-saving-measures/how-the-green-deal-works>
- ³⁵ Access to healthy food, taken from, White (2007), Food Access and Obesity, *Obesity reviews*, 8 (s1), 99-107. ; Chartered Institute for Environment and Health, 2013, taken from Chartered Institute for Environment and Health Food Policy: <http://cieh.org/>.
- ³⁶ Takeaways Toolkit, 2012, taken from, London Food Board and Chartered Institute of Environmental Health <http://www.london.gov.uk/priorities/environment/promoting-healthy-sustainable-food/london-boroughs/takeaways-toolkit>;
- ³⁷ Effect of fast food restaurants on obesity and weight gain, taken from, Currie, J., Vigna, SD et al (2010), The effect of fast food restaurants on obesity and weight gain. *American Economic Journal: Economic Policy*, 32-63.
- ³⁸ Health Needs Assessment Toolkit, (2006-2008), NHS UK, Public Health England, <http://hna.londonhpa.nhs.uk/JSNA.aspx>
- ³⁹ Health Needs Assessment Toolkit, (2011-2012), NHS UK, Public Health England, <http://hna.londonhpa.nhs.uk/JSNA.aspx>
- ⁴⁰ Health Needs Assessment Toolkit, (2006-2008), NHS UK, Public Health England, <http://hna.londonhpa.nhs.uk/JSNA.aspx>
- ⁴¹ Adult Obesity (2011-2012) National Obesity Observatory , NHS UK, Public Health England; <http://www.sepho.nhs.uk/NOO/e-Atlas/adult/atlas.html>
- ⁴² New Fuel Poverty Definition 2013, taken from Department of Energy and Climate Change (DECC), taken from Fuel Poverty, A Framework for future action. www.decc.gov.uk
- ⁴³ Tackling fuel poverty in London 2012, taken from GLA - London Assembly In from the cold? www.london.gov.uk
- ⁴⁴ Fuel poverty impact on wellbeing, 2011, taken from, Marmot Review Team, The Health Impacts of Cold Homes and Fuel Poverty, www.gov.uk/government/organisations/public-health-england
- ⁴⁵ Cost of fuel poverty to the NHS, 2012, taken from AgeUK, The Cost of Cold www.ageuk.org.uk/latest-news/archive/cold-homes-cost-nhs-1-point-36-billion
- ⁴⁶ Monetising health impacts of fuel poverty, 2013, taken from Department of Energy and Climate Change, Fuel Poverty, a Framework for Future Action- Analytical Annex https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/211137/fuel_poverty_strategic_framework_analytical_annex.pdf
- ⁴⁷ Custom Age Range Creator Tool for GLA Population Projections 2013, taken from GLA London Datastore www.data.london.gov.uk/datastore/applications/custom-age-range-creator-tool-gla-population-projections-borough
- ⁴⁸ Fuel Poverty Risk Indicators Toolkit, 2013, taken from GLA London Datastore www.data.london.gov.uk/datastore/package/london-fuel-poverty-risk-indicators-wards
- ⁴⁹ Green Deal and Energy Company Obligation information, 2012, taken from Department of Energy and Climate Change, www.decc.gov.uk
- ⁵⁰ The Mayor's RE:NEW Programme, 2013, taken from GLA, www.london.gov.uk
- ⁵¹ UK Energy Act 2011, taken from Department of Energy and Climate Change www.legislation.gov.uk/ukpga/2011/16/contents/enacted

⁵² Heatwave Plan 2013, taken from Public Health England, Making the case: the impact of heat on health – now and in the future www.gov.uk/government/organisations/public-health-england

⁵³ Potential costs of overheating including data, 2013, taken from Department for Environment, Food and Rural Affairs, The Economics of Climate Resilience: Health and Well-being Theme CA0401 www.defra.gov.uk

⁵⁴ Overheating and health, 2011, taken from Health Protection Agency, Overheating and health: a review into the physiological response to heat and identification of indoor heat thresholds www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317133912939

⁵⁵ Association of mortality with high temperatures in a temperate climate: England and Wales, Armstrong et al. (2010) Association of mortality with high temperatures in a temperate climate: England and Wales, *Journal of Epidemiology and Health*, vol.65:4, 340-345

⁵⁶ Heatwave Plan 2013, taken from Public Health England, Making the case: the impact of heat on health – now and in the future www.gov.uk/government/organisations/public-health-england

⁵⁷ Heatwave Plan 2013, taken from Public Health England, Making the case: the impact of heat on health – now and in the future www.gov.uk/government/organisations/public-health-england

FURTHER READING

- Local Authorities' strategies (e.g. Planning, Transport) are monitored on an annual basis and PHOF indicators may be relevant additions to these strategies and a way of spreading a public health approach across the Council: www.phoutcomes.info provides useful borough summaries for this approach.
- The Index of Multiple Deprivation (IMD) highlights the impact of wider environmental determinants most adversely on those in more deprived areas: www.gov.uk/government/organisations/department-for-communities-and-local-government/series/english-indices-of-deprivation
- Public Health has an important role in reminding other departments about health inequalities and intra borough inequalities. Basic summaries can be found at: www.apho.org.uk/?QN=P_HEALTH_PROFILES
- The local authority planning process offers the opportunity to mainstream some of these issues through planning guidance. The Town & Country Planning Association offers a useful guide: www.tcpa.org.uk/data/files/TCPA_FINAL_Reuniting-health-planning.pdf
- The NHS London Healthy Urban Development Unit www.healthyurbandevelopment.nhs.uk and their Watch Out for Health Checklist and the Health Impact Assessment Gateway http://www.apho.org.uk/default.aspx?QN=P_HIA offers useful insight across many fields including regeneration, social infrastructure planning, housing, policy development, planning advocacy and negotiations, planning obligations, development management, master planning, environmental and health impact assessment.
- Some themes in this Guide, for example, (food, fuel poverty, active travel) are addressed in Keeping Well in Hard Times www.lho.org.uk/Download/Public/17975/1/Keeping_per_cent20well_per_cent20in_per_cent20hard_per_cent20times.pdf
- There is a useful guide for developers on maximising environmental benefits at: www.environment-agency.gov.uk/research/planning/147852.aspx
- Effect of exposure to natural environment on health inequalities: an observational population study <http://eprints.gla.ac.uk/4767/1/4767.pdf>
- Great Outdoors: How Our Natural Health Service Uses Green Space To Improve Wellbeing www.fph.org.uk/uploads/bs_great_outdoors.pdf

PUBLIC HEALTH OUTCOMES FRAMEWORK

Mapping environmental determinants to the 2013-2016 Public Health Outcomes Framework

Primary	Improvements or worsening will have a direct impact on the indicator	
Secondary	Improvements or worsening may have an impact on this indicator	

AQ – Air Quality	AT - Active Travel and Transport	GS – Access to Green Space
FR – Surface Flooding	OH - Overheating	FP – Fuel Poverty
HF - Healthy Food		

Domain 1 Improving the wider determinants of health	AQ	AT	GS	FR	OH	HF	FP
1.1 Children in poverty							
1.2 School readiness							
1.3 Pupil absence							
1.4 First time entrants to the youth justice system							
1.5 16-18 year olds not in education, employment or training							
1.6 Adults with a learning disability/in contact with secondary mental health services who live in stable and appropriate accommodation							
1.7 People in prison who have a mental illness or a significant mental illness							
1.8 Employment for those with long-term health conditions including adults with a learning disability or who are in contact with secondary mental health services							
1.9 Sickness absence rate							
1.10 Killed and seriously injured casualties on England's roads							
1.11 Domestic abuse							
1.12 Violent crime (including sexual violence)							
1.13 Re-offending levels							
1.14 The percentage of the population affected by noise							
1.15 Statutory homelessness							
1.16 Utilisation of outdoor space for exercise/health reasons							
1.17 Fuel poverty							
1.18 Social isolation							
1.19 Older people's perception of community safety							

Primary	Improvements or worsening will have a direct impact on the indicator	
Secondary	Improvements or worsening may have an impact on this indicator	

AQ – Air Quality	AT - Active Travel and Transport	GS – Access to Green Space
FR – Surface Flooding	OH - Overheating	FP – Fuel Poverty
HF - Healthy Food		

Domain 2 Health Improvement	AQ	AT	GS	FR	OH	HF	FP
2.1 Low birth weight of term babies							
2.2 Breastfeeding							
2.3 Smoking status at time of delivery							
2.4 Under 18 conceptions							
2.5 Child development at 2-21/2 years							
2.6 Excess weight in 4-5 and 10-11 year olds							
2.7 Hospital admissions caused by unintentional and deliberate injuries in under 18s							
2.8 Emotional well-being of looked after children							
2.9 Smoking prevalence – 15 year olds							
2.10 Self-harm							
2.11 Diet							
2.12 Excess weight in adults							
2.13 Proportion of physically active and inactive adults							
2.14 Smoking prevalence – adults (over 18s)							
2.15 Successful completion of drug treatment							
2.16 People entering prison with substance dependence issues who are previously not known to community treatment							
2.17 Recorded diabetes							
2.18 Alcohol-related admissions to hospital							
2.19 Cancer diagnosed at stage 1 and 2							
2.20 Cancer screening coverage							
2.21 Access to non-cancer screening programmes							
2.22 Take up of the NHS Health Check programme – by those eligible							
2.23 Self-reported well-being							
2.24 Injuries due to falls in people aged 65 and over							

Primary	Improvements or worsening will have a direct impact on the indicator	
Secondary	Improvements or worsening may have an impact on this indicator	

AQ – Air Quality	AT - Active Travel and Transport	GS – Access to Green Space
FR – Surface Flooding	OH - Overheating	FP – Fuel Poverty
HF - Healthy Food		

Domain 3	AQ	AT	GS	FR	OH	HF	FP
Health Protection							
3.1 Fraction of mortality attributable to particulate air pollution							
3.2 Chlamydia diagnoses (15-24 year olds)							
3.3 Population vaccination coverage							
3.4 People presenting with HIV at a late stage of infection							
3.5 Treatment completion for Tuberculosis (TB)							
3.6 Public sector organisations with a board approved sustainable development management plan							
3.7 Comprehensive, agreed inter-agency plans for responding to public health incidents and emergencies							

Domain 4	AQ	Tr	GS	FR	OH	HF	FP
Healthcare public health and preventing premature mortality							
4.1 Infant mortality							
4.2 Tooth decay in children aged 5							
4.3 Mortality rate from causes considered preventable							
4.4 Under 75 mortality rate from all cardiovascular diseases (including heart disease and stroke)							
4.5 Under 75 mortality rate from cancer							
4.6 Under 75 mortality rate from liver disease							
4.7 Under 75 mortality rate from respiratory diseases							
4.8 Mortality rate from infectious and parasitic diseases							
4.9 Excess under 75 mortality rate in adults with serious mental illness							
4.10 Suicide rate							
4.11 Emergency readmissions within 30 days of discharge from hospital							
4.12 Preventable sight loss							
4.13 Health-related quality of life for older people							
4.14 Hip fractures in people aged 65 and over							
4.15 Excess winter deaths							
4.16 Estimated diagnosis rate for people with dementia							

DATA APPENDIX

Table 1 – Green Space Data

	Adult Obesity	Green Space Access Deficiency (% value per Ward)			Participation in Physical Activity % per week - Adult Obesity -		Obesity Prevalence		
	Borough Green Space Surface	Total Ward N.	Ward with Access Deficiency	% Households	1 time a week	5 times per week	LA	London	England
Barking & Dagenham	33.6	17.0	4.0	over 50%	45.1	15.4	28.7	20.7	24.2
Barnet	41.3	21.0	4.0	over 40%	54.9	17.6	17.9		
Bexley	31.7	21.0	4.0	over 40%	60.8	20.0	26.4		
Brent	21.9	21.0	4.0	over 40%	49.4	16.3	21.2		
Bromley	57.8	22.0	2.0	over 50%	62.4	21.1	21.8		
Camden	24.8	18.0	5.0	over 50%	65.1	26.0	15.5		
City of London	4.8	0.0	0.0	1.0	52.8	28.7			
City of Westminster	21.5	20.0	4.0	over 50%	59.3	25.4	15.0		
Croydon	37.1	24.0	7.0	over 50%	58.9	19.8	24.3		
Ealing	30.9	23.0	6.0	over 50%	48.2	14.6	18.1		
Enfield	45.6	21.0	8.0	over 50%	50.7	18.6	23.2		
Greenwich	34.4	17.0	1.0	over 40%	55.4	19.5	22.6		
Hackney	23.2	19.0	5.0	over 40%	58.9	24.0	22.6		
Hammersmith & Fulham	19.1	16.0	5.0	over 50%	66.4	27.6	15.6		
Haringey	25.5	19.0	6.0	over 40%	54.9	17.7	20.1		
Harrow	34.6	21.0	8.0	over 50%	51.7	17.1	19.2		
Havering	59.3	18.0	7.0	over 50%	52.5	16.4	27.3		

	Adult Obesity	Green Space Access Deficiency (% value per Ward)			Participation in Physical Activity % per week - Adult Obesity -		Obesity Prevalence		
	Borough Green Space Surface	Total Ward N.	Ward with Access Deficiency	% Households	1 time a week	5 times per week	LA	London	England
Hillingdon	49.2	22.0	2.0	over 50%	48.9	14.1	23.2		
Hounslow	39.6	20.0	5.0	over 40%	52.4	17.8	20.5		
Islington	12.4	16.0	4.0	over 50%	61.3	22.4	18.0		
Kensington & Chelsea	15.1	18.0	1.0	over 50%	63.5	21.5	13.9		
Kingston upon Thames	36.4	16.0	5.0	over 50%	61.2	23.1	16.7		
Lambeth	17.3	21.0	7.0	over 50%	62.0	30.2	20.7	20.7	24.2
Lewisham	22.5	18.0	3.0	over 40%	56.4	21.3	23.7	20.7	24.2
Merton	34.6	20.0	3.0	over 40%	55.0	17.5	19.1	20.7	24.2
Newham	23.9	20.0	9.0	over 50%	45.7	17.3	25.3	20.7	24.2
Redbridge	40.6	21.0	5.0	over 40%	54.5	19.4	22.3	20.7	24.2
Richmond upon Thames	50.8	18.0	1.0	over 50%	69.3	27.4	14.9	20.7	24.2
Southwark	24.9	20.0	7.0	over 50%	59.5	19.5	22.5	20.7	24.2
Sutton & Merton	32.0	18.0	4.0	over 50%	64.2	19.7	21.6	20.7	24.2
Tower Hamlets	15.2	17.0	5.0	over 50%	55.9	19.7	19.4	20.7	24.2
Waltham Forest	31.4	20.0	8.0	over 40%	56.2	20.3	23.4	20.7	24.2
Wandsworth	26.9	20.0	2.0	over 50%	66.4	26.9	15.0	20.7	24.2
	NOO (2005)	Greenspace Information for Greater London CIC (GiGL)			National Obesity Observatory (2010-2011)		Health Needs Assessment Toolkit		

Table 2 Active Travel and Transport Data

	Number of 'Travels per day' (000's)	Annual Casualties on the Road, 2005-2009 average	% Change 2005-2009 to 2011	Average Fatalities 2005-2009	Number of Vehicles
Barking & Dagenham	280	604	1	5	115,178
Barnet	769	1,344	3	13	97,861
Bexley	357	644	-12	4	107,803
Brent	592	918	-2	8	122,900
Bromley	691	929	-6	10	45,486
Camden	744	902	3	5	93,779
City of London	262	369	11	2	73,434
Croydon	720	1,208	2	6	42,861
Ealing	633	1,155	-15	10	136,071
Enfield	594	1,033	7	12	98,621
Greenwich	428	919	1	9	95,934
Hackney	404	948	-8	5	123,966
Hammersmith & Fulham	494	745	4	6	146,475
Haringey	483	830	10	6	51,152
Harrow	422	534	-21	2	42,162
Havering	477	903	-10	6	85,344
Hillingdon	563	1,028	-8	8	116,844
Hounslow	488	959	4	9	104,013
Islington	486	742	33	4	61,866
Kensington & Chelsea	472	818	-2	5	114,618
Kingston upon Thames	378	430	3	3	145,850
Lambeth	614	1,234	6	8	70,578
Lewisham	476	968	10	5	53,300
Merton	431	522	-2	3	110,779
Newham	590	1,014	-10	4	152,416
Redbridge	524	866	9	7	152,241
Richmond upon Thames	447	486	7	3	68,154
Southwark	582	1,137	0	6	65176
Sutton	393	576	-7	2	39,510
Tower Hamlets	561	977	-3	6	123,339
Waltham Forest	387	865	-6	3	152,241
Wandsworth	621	925	14	5	145,850
Westminster	1168	1,695	-3	13	125.289
Average	531	886		6	95634
Source	London Travel Demand Survey	Reported Road Casualties, Great Britain, gov.uk			

Table 3 Air Quality Data

	Fraction (%) of mortality attributable to long term exposure to PM2.5	Rank	% different from UK average	Number of Air Quality Focus Areas
Barking & Dagenham	7.1	14	27%	3
Barnet	6.8	10	21%	15
Bexley	6.6	7	18%	1
Brent	7.2	17	29%	6
Bromley	6.3	1	13%	1
Camden	7.7	24	38%	5
City of London	9	33	61%	2
Croydon	6.5	5	16%	5
Ealing	7.2	17	29%	5
Enfield	6.6	7	18%	10
Greenwich	7.2	17	29%	7
Hackney	7.8	26	39%	8
Hammersmith and Fulham	7.9	27	41%	5
Haringey	7.1	14	27%	9
Harrow	6.4	3	14%	5
Havering	6.3	1	13%	3
Hillingdon	6.5	5	16%	8
Hounslow	7.1	14	27%	10
Islington	7.9	27	41%	3
Kensington and Chelsea	8.3	31	48%	3
Kingston upon Thames	6.7	9	20%	2
Lambeth	7.7	24	38%	9
Lewisham	7.2	17	29%	9
Merton	6.9	12	23%	4
Newham	7.6	23	36%	6
Redbridge	7	13	25%	4
Richmond upon Thames	6.8	10	21%	4
Southwark	7.9	27	41%	7
Sutton	6.4	3	14%	3
Tower Hamlets	8.1	30	45%	6
Waltham Forest	7.3	21	30%	7
Wandsworth	7.3	21	30%	4
Westminster	8.3	31	48%	8
Source:				

Table 4 Healthy Food Data

	Adult Obesity Prevalence	Participation in Physical Activity % per week		Childhood Obesity Prevalence (6yrs old)	% Consumption of 5 portions of fruits and vegetables a day		
	LA	Once a week	5 times per week	LA	Total MSOA N.	Areas (MSOA) with highest % of consumption	% Intervals
Barking & Dagenham	28.7	45.1	15.4		22	8	(25.40 - 31.20)
Barnet	17.9	54.9	17.6		41	16	(43.90 - 56.10)
Bexley	26.4	60.8	20		28	10	(31.20 - 37.20)
Brent	21.2	49.4	16.3		34	13	(38.20 - 45.30)
Bromley	21.8	62.4	21.1		39	15	(27.20 - 45.30)
Camden	15.5	65.1	26		28	10	(44.60 - 55.10)
City of London		52.8	28.7				48
City of Westminster	15	59.3	25.4		24	10	(48.60 - 52.10)
Croydon	24.3	58.9	19.8		44	17	(35.50 - 48.8)
Ealing	18.1	48.2	14.6		39	15	(41.10 - 55.40)
Enfield	23.2	50.7	18.6		36	14	(33.90 - 41.90)
Greenwich	22.6	55.4	19.5		32	12	(32.70 - 42.20)
Hackney	22.6	58.9	24		27	10	(34.90 - 41.60)
Hammersmith & Fulham	15.6	66.4	27.6		25	10	(41.70 - 48.20)
Haringey	20.1	54.9	17.7		36	14	(39.20 - 48.00)
Harrow	19.2	51.7	17.1		31	12	(39.70 - 47.60)
Havering	27.3	52.5	16.4		30	12	(30.80 - 37.30)
Hillingdon	23.2	48.9	14.1		32	12	(34.20 - 45.40)
Hounslow	20.5	52.4	17.8		28	10	(36.90 - 47.20)
Islington	18	61.3	22.4		23	7	(27.60 - 40.80)

Kensington & Chelsea	13.9	63.5	21.5		21	8	(50.70 - 54.30)
Kingston upon Thames	16.7	61.2	23.1		20	8	(41.90 - 49.40)
Lambeth	20.7	62	30.2		35	13	(36.00 - 42.90)
Lewisham	23.7	56.4	21.3		36	14	(36.00 - 42.90)
Merton	19.1	55	17.5		25	10	(41.40 - 55.40)
Newham	25.3	45.7	17.3		37	13	(32.60 - 36.60)
Redbridge	22.3	54.5	19.4		33	12	(35.50 - 43.30)
Richmond upon Thames	14.9	69.3	27.4		23	8	(44.70 - 48.30)
Southwark	22.5	59.5	19.5		33	11	(37.50% - 43.30)
Sutton	21.6	64.2	19.7		24	9	(35.20 - 44.30)
Tower Hamlets	19.4	55.9	19.7		31	12	(29.70 - 42.90)
Waltham Forest	23.4	56.2	20.3		28	10	(33.70 - 37.40)
Wandsworth	15	66.4	26.9		37	15	(42.30 - 46.80)
Average	20.6	57.0	20.7		30.7	11.6	48.0
London	20.7			22.53			
England	24.2			19.2			
Source	Health Needs Assessment Toolkit	National Obesity Observatory (2010-2011)		Health Needs Assessment Toolkit			

Table 5 Fuel Poverty Data

	Excess winter deaths 2010/11	Population Aged 65			Households in privately- rented 2011	Percentage in privately-rented 2011
		2012	2025	2040		
Barking and Dagenham	60	19,700	24,700	35,900	17,000	22.9
Barnet	90	49,400	65,600	88,100	28,000	20.5
Bexley	90	38,500	45,100	56,300	10,000	10.9
Brent	40	33,800	46,300	61,100	26,000	29.2
Bromley	190	54,200	64,200	79,500	17,000	12.6
Camden	70	24,800	30,200	39,300	29,000	26.8
City of London	10	1,100	1,700	2,800	1,000	8.6
Croydon	70	46,200	61,200	84,100	19,000	13.9
Ealing	90	37,500	49,000	65,300	29,000	24.3
Enfield	150	40,000	49,900	64,300	27,000	22.7
Greenwich	70	27,300	38,200	54,100	18,000	19.7
Hackney	30	17,900	23,900	34,500	21,000	22.8
Hammersmith and Fulham	40	16,900	20,200	26,100	21,000	26.4
Haringey	60	23,000	29,000	38,600	20,000	23.3
Harrow	60	34,800	43,700	50,000	18,000	22.2
Havering	130	44,000	53,800	64,600	10,000	9.4
Hillingdon	120	36,400	44,300	56,100	21,000	19.8
Hounslow	110	27,800	35,500	45,900	25,000	27.9
Islington	30	18,400	22,500	31,000	22,000	24.2
Kensington and Chelsea	50	20,100	26,600	33,500	18,000	23.0
Kingston upon Thames	70	21,100	26,600	34,100	16,000	22.6
Lambeth	60	23,700	31,200	45,600	29,000	23.2
Lewisham	90	26,600	32,100	44,800	25,000	21.7
Merton	60	23,800	29,800	39,800	19,000	24.4
Newham	70	21,300	30,900	44,300	29,000	35.4
Redbridge	80	34,300	41,200	51,400	25,000	25.8
Richmond upon Thames	40	26,500	33,100	42,000	17,000	21.5
Southwark	90	22,900	30,200	43,500	29,000	22.4
Sutton	60	28,600	34,500	44,100	14,000	16.9
Tower Hamlets	40	15,800	20,600	31,200	32,000	33.9
Waltham Forest	110	26,500	34,600	48,100	24,000	26.6
Wandsworth	150	27,700	33,000	43,600	41,000	34.6
Westminster	20	25,200	30,400	39,400	44,000	35.9
	75.8	28357.6	35872.7	47363.6	22454.5	22.9
Source:						

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Hindi

यदि आप इस दस्तावेज की प्रति अपनी
भाषा में चाहते हैं, तो कृपया निम्नलिखित
नंबर पर फोन करें अथवा नीचे दिये गये
पते पर संपर्क करें

Vietnamese

Nếu bạn muốn có bản bản tài liệu
này bằng ngôn ngữ của mình, hãy
liên hệ theo số điện thoại hoặc địa
chỉ dưới đây.

Bengali

আপনি যদি আপনার ভাষায় এই দলিলের প্রতিলিপি
(কপি) চান, তা হলে নিচের ফোন নম্বরে
বা ঠিকানায় অনুগ্রহ করে যোগাযোগ করুন।

Greek

Αν θέλετε να αποκτήσετε αντίγραφο του παρόντος
εγγράφου στη δική σας γλώσσα, παρακαλείστε να
επικοινωνήσετε τηλεφωνικά στον αριθμό αυτό ή ταχυ-
δρομικά στην παρακάτω διεύθυνση.

Urdu

اگر آپ اس دستاویز کی نقل اپنی زبان میں
چاہتے ہیں، تو براہ کرم نیچے دئے گئے نمبر
پر فون کریں یا دیئے گئے پتے پر رابطہ کریں

Turkish

Bu belgenin kendi dilinizde
hazırlanmış bir nüshasını
edinmek için, lütfen aşağıdaki
telefon numarasını arayınız
veya adrese başvurunuz.

Arabic

إذا أردت نسخة من هذه الوثيقة بلغتك، يرجى
الاتصال برقم الهاتف أو مراسلة العنوان
أدناه

Punjabi

ਜੇ ਤੁਹਾਨੂੰ ਇਸ ਦਸਤਾਵੇਜ਼ ਦੀ ਕਾਪੀ ਤੁਹਾਡੀ ਆਪਣੀ ਭਾਸ਼ਾ
ਵਿਚ ਚਾਹੀਦੀ ਹੈ, ਤਾਂ ਹੇਠ ਲਿਖੇ ਨੰਬਰ 'ਤੇ ਫ਼ੋਨ ਕਰੋ ਜਾਂ ਹੇਠ
ਲਿਖੇ ਪਤੇ 'ਤੇ ਰਾਬਤਾ ਕਰੋ:

Gujarati

જો તમને આ દસ્તાવેજની નકલ તમારી ભાષામાં
જોઈતી હોય તો, કૃપા કરી આપેલ નંબર ઉપર
ફોન કરો અથવા નીચેના સરનામે સંપર્ક સાધો.