

Chapter 9

Sustainable Infrastructure



Policy SI1 Improving air quality

- A London's air quality should be significantly improved and exposure to poor air quality, especially for vulnerable people, should be reduced:
- 1) Development proposals should not:
 - a) lead to further deterioration of existing poor air quality
 - b) create any new areas that exceed air quality limits, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits
 - c) reduce air quality benefits that result from the Mayor's or boroughs' activities to improve air quality
 - d) create unacceptable risk of high levels of exposure to poor air quality.
 - 2) Development proposals should use design solutions to prevent or minimise increased exposure to existing air pollution and make provision to address local problems of air quality. Particular care should be taken with developments that are in Air Quality Focus Areas or that are likely to be used by large numbers of people particularly vulnerable to poor air quality, such as children or older people.
 - 3) The development of large-scale redevelopment areas, such as Opportunity Areas and those subject to an Environmental Impact Assessment should propose methods of achieving an Air Quality Positive approach through the new development. All other developments should be at least Air Quality Neutral.
 - 4) Development proposals must demonstrate how they plan to comply with the Non-Road Mobile Machinery Low Emission Zone and reduce emissions from the demolition and construction of buildings following best practice guidance¹¹⁵.
 - 5) Air Quality Assessments (AQAs) should be submitted with all major developments, unless they can demonstrate that transport and building emissions will be less than the previous or existing use.

¹¹⁵ Guidance is currently in 'The control of dust and emissions for construction and demolition SPG'

6) Development proposals should ensure that where emissions need to be reduced, this is done on-site. Where it can be demonstrated that on-site provision is impractical or inappropriate, off-site measures to improve local air quality may be acceptable, provided that equivalent air quality benefits can be demonstrated.

- 9.1.1 **Poor air quality** is a major issue for London which is failing to meet requirements under legislation. Poor air quality has direct impacts on the health, quality of life and life expectancy of Londoners. The impacts tend to be most heavily felt in some of London's most deprived neighbourhoods, and by people who are most vulnerable to the impacts.
- 9.1.2 The aim of this policy is to ensure that new developments are designed and built, as far as is possible, to **improve local air quality and reduce the extent to which the public are exposed to poor air quality**. This means that new developments, as a minimum, must not cause new exceedances of legal air quality standards, or delay the date at which compliance will be achieved in areas that are currently in exceedance of legal limits¹¹⁶. Where limit values are already met, or are predicted to be met at the time of completion, new developments must endeavour to maintain the best ambient air quality compatible with sustainable development principles.
- 9.1.3 For larger-scale development areas such as Opportunity Areas, or those large enough to already require an Environmental Impact Assessment, there should be an aim to be **Air Quality Positive** by implementing measures across the area that will actively reduce air pollution. This could be achieved, for example, by the provision of low or zero-emission heating and energy, or improvements to public transport, walking and cycling infrastructure, and designing out features such as street canyons that prevent effective dispersion of pollutants. Data from the use of smart infrastructure such as sensors could contribute to beneficial design solutions.
- 9.1.4 For major developments, a **preliminary AQA** should be carried out before designing the development to inform the design process. The aim of a preliminary assessment is to assess:
- The most significant sources of pollution in the area
 - Constraints imposed on the site by poor air quality

¹¹⁶

Air Quality Standards Regulations 2010, or subsequent revisions thereof

- Appropriate land uses for the site
- Appropriate design measures that could be implemented to ensure that development reduces exposure and improves air quality.

- 9.1.5 **Further assessments** should then be carried out as the design evolves to ensure that impacts from emissions are prevented or minimised as far as possible, and to fully quantify the expected effect of any proposed mitigation measures, including the cumulative effect where other nearby developments are also underway or likely to come forward.
- 9.1.6 Assessment of the impacts of a scheme on local air pollution should include fixed plant, such as boiler and emergency generators, as well as expected transport-related sources. **Impact assessments** should always include all relevant pollutants. Industrial, waste and other working sites may need to include on-site vehicles and mobile machinery as well as fixed machinery and transport sources.
- 9.1.7 The GLA maintains and publishes an **inventory of emission sources** (the London Atmospheric Emissions Inventory or LAEI). This inventory is based on a detailed assessment of all current sources of pollution in London and can be used to help understand the existing environment at development sites.
- 9.1.8 **Air Quality Focus Areas** (AQFA) are locations that not only exceed the EU annual mean limit value for nitrogen dioxide (NO₂) but are also locations with high human exposure. AQFAs are not the only areas with poor air quality but they have been defined to identify areas where currently planned measures to reduce air pollution may not fully resolve poor air quality issues. There are currently 187 AQFAs across London (Figure 9.1). The list of Air Quality Focus Areas is updated from time to time as the London Atmospheric Inventory is reviewed and the latest list in the London Datastore should always be checked.
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Figure 9.1 - Air Quality Focus Areas**London's Air Quality Focus Areas**

● Air Quality Focus Area (AQFA)

Source: GLA
Environment

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database right (2017)

- 9.1.9 It may not always be possible in practice for developments to achieve Air Quality Neutral standards or to acceptably minimise impacts using on-site measures alone. If a development can demonstrate that it has exploited all relevant on-site measures it may be possible to make the development acceptable through additional **mitigation or offsetting payments**.
- 9.1.10 Where there have been significant improvements to air quality resulting in an area no longer exceeding air quality limits, development should not take advantage of this investment and worsen the local air quality back to a poor level.
- 9.1.11 Further **guidance** will be published on Air Quality Neutral and Air Quality Positive standards as well as guidance on how to reduce construction and demolition impacts.

Policy SI2 Minimising greenhouse gas emissions

- A Major development should be net zero-carbon. This means reducing carbon dioxide emissions from construction and operation, and minimising both annual and peak energy demand in accordance with the following energy hierarchy:
- 1) Be lean: use less energy and manage demand during construction and operation.
 - 2) Be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly. Development in Heat Network Priority Areas should follow the heating hierarchy in [Policy SI3 Energy infrastructure](#).
 - 3) Be green: generate, store and use renewable energy on-site.
- B Major development should include a detailed energy strategy to demonstrate how the zero-carbon target will be met within the framework of the energy hierarchy and will be expected to monitor and report on energy performance.
- C In meeting the zero-carbon target a minimum on-site reduction of at least 35 per cent beyond Building Regulations¹¹⁷ is expected. Residential development should aim to achieve 10 per cent, and non-residential development should aim to achieve 15 per cent through energy efficiency

¹¹⁷

Building Regulations 2013. If these are updated, the policy threshold will be reviewed

measures. Where it is clearly demonstrated that the zero-carbon target cannot be fully achieved on-site, any shortfall should be provided:

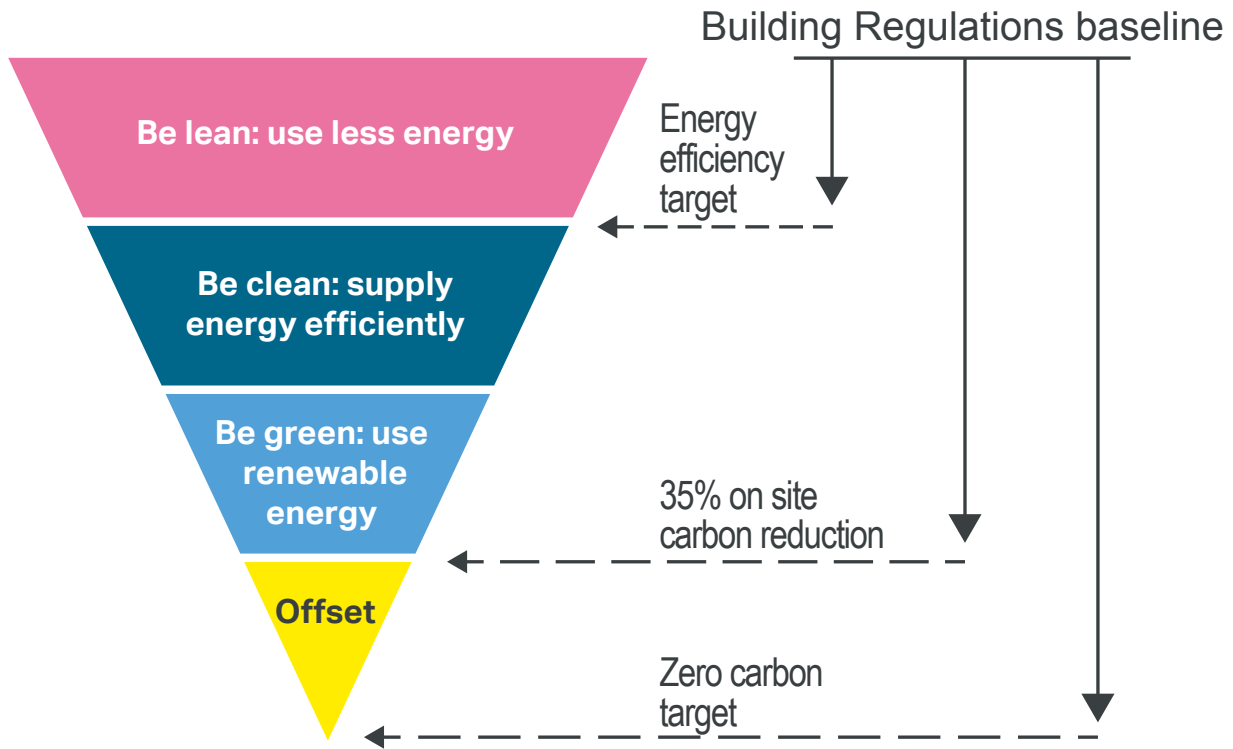
- 1) through a cash in lieu contribution to the relevant borough's carbon offset fund, and/or
- 2) off-site provided that an alternative proposal is identified and delivery is certain.

D Boroughs must establish and administer a carbon offset fund. Offset fund payments must be ring-fenced to implement projects that deliver greenhouse gas reductions. The operation of offset funds should be monitored and reported on annually.

- 9.2.1 The Mayor is committed to London **becoming a zero-carbon city**. This will require reduction of all greenhouse gases, of which carbon dioxide is the most prominent¹¹⁸. London's homes and workplaces are responsible for producing approximately 78 per cent of its greenhouse gas emissions. If London is to achieve its objective of becoming a zero-carbon city by 2050, new development needs to meet the requirements of this policy. Development involving major refurbishment should also aim to meet this policy.
- 9.2.2 **The energy hierarchy** (Figure 9.2) should inform the design, construction and operation of new buildings. The priority is to minimise energy demand, and then address how energy will be supplied and renewable technologies incorporated. An important aspect of managing demand will be to reduce peak energy loadings.
- 9.2.3 Boroughs should ensure that all developments maximise opportunities for **on-site electricity and heat production** from solar technologies (photovoltaic and thermal) and use innovative building materials and smart technologies. This approach will reduce carbon emissions, reduce energy costs to occupants, improve London's energy resilience and support the growth of green jobs.

¹¹⁸ 'Carbon' is used in the London Plan as a shorthand term for all greenhouse gases. London's carbon accounting is measured in carbon dioxide equivalent, which includes the conversion of other greenhouse gases into their equivalent carbon dioxide emissions.

Figure 9.2 - The energy hierarchy and associated targets



Source: Greater London Authority

- 9.2.4 A zero-carbon target for major residential developments has been in place for London since October 2016. This target will be **extended to include major non-residential developments** on final publication of this Plan (expected 2019).
- 9.2.5 To meet the zero-carbon target, an on-site reduction of at least 35 per cent beyond the baseline of part L of the current Building Regulations is required¹¹⁹. The minimum **improvement over the Target Emission Rate** (TER) will increase over a period of time in order to achieve the zero-carbon London ambition and reflect the costs of more efficient construction methods. This will be reflected in future updates to the London Plan.
- 9.2.6 Developments are expected to achieve carbon reductions beyond part L from **energy efficiency measures** alone to reduce energy demand

¹¹⁹ Building Regulations 2013. If these are updated, the policy threshold will be reviewed.

as far as possible. Residential development should aim to achieve 10 per cent and non-residential development should aim to achieve 15 per cent over part L. Achieving energy credits as part of a Building Research Establishment Environmental Assessment Method (BREEAM) rating can help demonstrate that energy efficiency targets have been met. Boroughs are encouraged to include BREEAM targets in their Local Plans where appropriate.

- 9.2.7 The price for offsetting carbon¹²⁰ is regularly reviewed. Changes to the GLA's suggested **carbon offset price** will be updated, in future guidance. New development is expected to get as close as possible to zero-carbon on-site, rather than relying on offset fund payments to make up any shortfall in emissions. However, **offset funds** do have the potential to unlock carbon savings from the existing building stock through energy efficiency programmes and by installing renewable technologies – typically more expensive to deliver in London due to the building age, type and tenure.
- 9.2.8 The Mayor provides **support to boroughs** by advising those which are at the early stages of setting up their carbon offsetting funds, and by setting out guidance on how to select projects. To ensure that offset funds are used effectively to reduce carbon whilst encouraging a holistic approach to retrofitting, Mayoral programmes offer additional support¹²¹.
- 9.2.9 The move towards zero-carbon development requires comprehensive **monitoring of energy demand and carbon emissions** to ensure that planning commitments are being delivered. Major developments are required to monitor and report on energy performance, such as by displaying a Display Energy Certificate (DEC) and reporting to the Mayor for at least five years via an online portal to enable the GLA to identify good practice and report on the operational performance of new development in London.
- 9.2.10 The Mayor may publish further planning guidance on sustainable design and construction¹²² and will continue to regularly update the guidance

¹²⁰ Boroughs should develop a price for offsetting carbon using either a nationally recognised carbon pricing mechanism or a price based on the cost of offsetting carbon across the borough. A nationally recognised non-traded price of £95/tonne has been tested as part of the viability assessment for the London Plan which boroughs may use to collect offset payments.

¹²¹ For examples see London Environment Strategy.

¹²² This will build on the 2014 Sustainable Design and construction SPG.

on preparing energy strategies for major development. Boroughs are encouraged to request **energy strategies** for other development proposals where appropriate. As a minimum, energy strategies should contain the following information:

- a. A calculation of the energy demand and carbon dioxide emissions covered by Building Regulations and, separately, the energy demand and carbon dioxide emissions from any other part of the development, including plant or equipment, that are not covered by the Building Regulations (i.e. the unregulated emissions), at each stage of the energy hierarchy.
 - b. Proposals to reduce carbon dioxide emissions beyond Building Regulations through the energy efficient design of the site, buildings and services, whether it is categorised as a new build, a major refurbishment or a consequential improvement.
 - c. Proposals to further reduce carbon dioxide emissions through the use of zero or low-emission decentralised energy where feasible, prioritising connection to district heating and cooling networks and utilising local secondary heat sources. (Development in Heat Network Priority Areas should follow the heating hierarchy in [Policy SI3 Energy infrastructure](#)).
 - d. Proposals to further reduce carbon dioxide emissions through the generation and use of on-site renewable energy, utilising storage technologies where appropriate.
 - e. Proposals to address air quality risks (see [Policy SI1 Improving air quality](#)). Where an air quality assessment has been undertaken, this could be referenced instead.
 - f. The results of dynamic overheating modelling which should be undertaken in line with relevant Chartered Institution of Building Services Engineers (CIBSE) guidance, along with any mitigating actions (see [Policy SI4 Managing heat risk](#)).
 - g. Proposals for demand-side response, specifically through installation of smart meters, minimising peak energy demand and promoting short-term energy storage, as well as consideration of smart grids and local micro grids where feasible.
 - h. Proposals for how energy demand and carbon dioxide emissions post-construction will be monitored annually (for at least five years).
 - i. Proposals explaining how the site has been future-proofed to achieve zero-carbon on-site emissions by 2050.
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- j. Confirmation of offsetting arrangements, if required.
- k. Proposals to minimise the embodied carbon in construction.
- l. Analysis of the expected cost to occupants associated with the proposed energy strategy.

Policy SI3 Energy infrastructure

- A Boroughs and developers should engage at an early stage with relevant energy companies and bodies to establish the future energy requirements and infrastructure arising from large-scale development proposals such as Opportunity Areas, Town Centres, other growth areas or clusters of significant new development.
- B Energy masterplans should be developed for large-scale development locations which establish the most effective energy supply options. Energy masterplans should identify:
 - 1) major heat loads (including anchor heat loads, with particular reference to sites such as universities, hospitals and social housing)
 - 2) heat loads from existing buildings that can be connected to future phases of a heat network
 - 3) major heat supply plant
 - 4) possible opportunities to utilise energy from waste
 - 5) secondary heat sources
 - 6) opportunities for low temperature heat networks
 - 7) possible land for energy centres and/or energy storage
 - 8) possible heating and cooling network routes
 - 9) opportunities for futureproofing utility infrastructure networks to minimise the impact from road works
 - 10) infrastructure and land requirements for electricity and gas supplies
 - 11) implementation options for delivering feasible projects, considering issues of procurement, funding and risk, and the role of the public sector.

C Development Plans should:

- 1) identify the need for, and suitable sites for, any necessary energy infrastructure requirements including upgrades to existing infrastructure
- 2) identify existing heating and cooling networks and opportunities for expanding existing networks and establishing new networks.

D Major development proposals within Heat Network Priority Areas should have a communal heating system

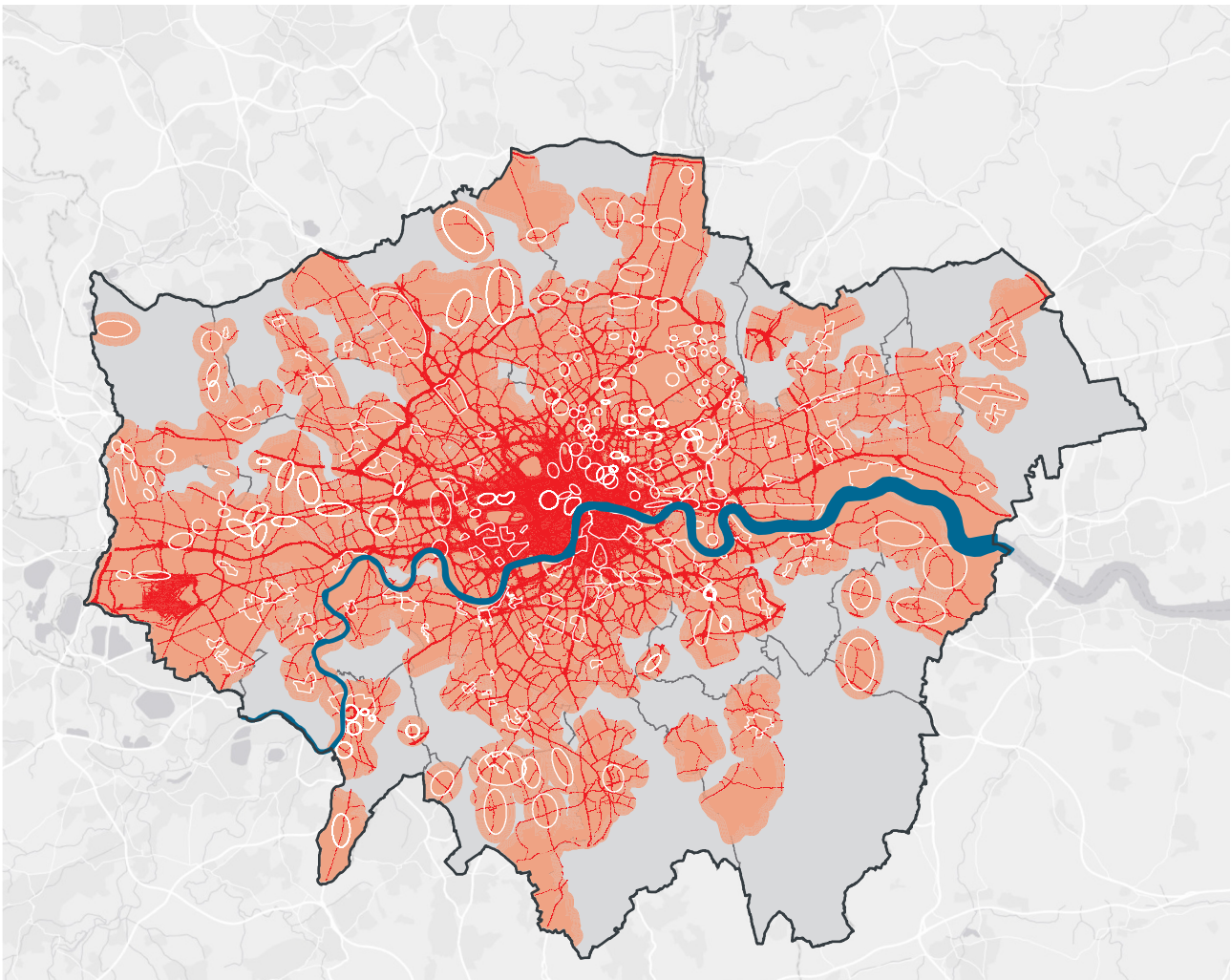
- 1) the heat source for the communal heating system should be selected in accordance with the following heating hierarchy:
 - a) connect to local existing or planned heat networks
 - b) use available local secondary heat sources (in conjunction with heat pump, if required, and a lower temperature heating system)
 - c) generate clean heat and/or power from zero-emission sources
 - d) use fuel cells (if using natural gas in areas where legal air quality limits are exceeded all development proposals must provide evidence to show that any emissions related to energy generation will be equivalent or lower than those of an ultra-low NO_x gas boiler)
 - e) use low emission combined heat and power (CHP) (in areas where legal air quality limits are exceeded all development proposals must provide evidence to show that any emissions related to energy generation will be equivalent or lower than those of an ultra-low NO_x gas boiler)
 - f) use ultra-low NO_x gas boilers.
- 2) CHP and ultra-low NO_x gas boiler communal or district heating systems should be designed to ensure that there is no significant impact on local air quality.
- 3) Where a heat network is planned but not yet in existence the development should be designed for connection at a later date.

9.3.1 The Mayor will work with boroughs, energy companies and major developers to promote the **timely and effective development of London's energy system** (energy production, distribution, storage, supply and consumption).

- 9.3.2 London is part of a national energy system and currently sources approximately 95 per cent of its energy from outside the GLA boundary. Meeting the **Mayor's zero-carbon target by 2050** requires changes to the way we use and supply energy so that power and heat for our buildings and transport is generated from clean, low-carbon and renewable sources. London will need to shift from its reliance on using natural gas as its main energy source to a more diverse range of low and zero-carbon sources, including renewable energy and secondary heat sources. Decentralised energy will become an increasingly important element of London's energy supply and will help London become more self-sufficient in relation to its energy needs.
- 9.3.3 Developments should connect to existing **heat networks**, wherever feasible. Stimulating the delivery of new district heating infrastructure enables the opportunities that district heating can deliver to be maximised. The Mayor has identified Heat Network Priority Areas, which can be found on the London Heat Map website¹²³. These identify where in London the heat density is sufficient for heat networks to provide a competitive solution for supplying heat to buildings and consumers. Data relating to new and expanded networks will be regularly captured and made publicly available.
- 9.3.4 Where developments are proposed within Heat Network Priority Areas but are beyond existing heat networks, the heating system should be designed to **facilitate future connection**. This may include for example, allocating space in plant rooms for heat exchangers, safeguarding suitable routes for pipework and making provision for connections at the site boundary. The Mayor is taking a more direct role in the delivery of heat networks so that more new and existing communally-heated developments will be able to connect into them, and has developed a comprehensive decentralised energy support package. Further details are available in the London Environment Strategy.
- 9.3.5 To ensure heat networks operate efficiently, effectively and reliably, the Mayor supports standards such as the CIBSE CP1 Heat Networks: Code of Practice for the UK and the Heat Trust standard. These set out principles for good design, specification and operation of networks and can help ensure fairness for customers of heat networks. The Mayor also supports the development of **low-temperature networks** for both new and existing systems as this allows cost-effective use of low-grade waste heat.

9.3.6 Further information about the relevance of **CHP** in developments of various scales will also be provided in the Energy Planning Guidance document, which will be kept updated as technology changes. However, it is not expected that gas engine CHP will be able to meet the standards required within areas exceeding air quality limits with the technology that is currently available.

Figure 9.3 - Heat Network Priority Areas



Heat Network Priority Areas and Heat Density in London

Relative heat demand based on fuel use kWh/m²/year

- Heat Network Priority Areas
- Areas where legal air quality limits are exceeded
- Local Authority Heat Network Studies

Source: GLA Environment

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- 9.3.7 Increasing the amount of new **renewable energy sources** in London developments is supported. This includes the use of energy from waste schemes that are connected to a heat network, as well as solar photovoltaics and solar thermal, both on buildings and at a larger scale on appropriate sites. There is also potential for wind and hydropower-based renewable energy in some locations within London.
- 9.3.8 **Electricity** is essential for the functioning of any modern city. Demand is expected to rise in London in response to a growing population and economy, the increased take up of electric vehicles, and the switch to electrifying heating systems (such as through heat pumps). It is of concern that the electricity network and substations are at or near to capacity in a number of areas, especially in central London. The Mayor will work with the electricity industry, boroughs and developers to ensure that appropriate infrastructure is in place to meet London's needs. Energy masterplans are expected to identify any necessary electricity infrastructure.
- 9.3.9 Demand for **natural gas** in London has been decreasing over the last few years, with a 25 per cent reduction since 2000¹²⁴. This trend is expected to continue due to improved efficiency and a move away from individual gas boilers. Alongside the continuing programme of replacing old metal gas mains (predominantly with plastic piping), local infrastructure improvements may be required to supply growth in Opportunity Areas and there may also be a requirement for the provision of new pressure reduction stations. These requirements should be identified in energy masterplans.
- 9.3.10 National Grid and Southern Gas Networks operate London's gas distribution network. Both companies are implementing significant **gasholder de-commissioning programmes**, replacing them with smaller gas pressure reduction stations. The Mayor will work with key stakeholders including the Health and Safety Executive to achieve the release of the resulting brownfield sites for redevelopment.
- 9.3.11 Land will be required for energy supply infrastructure including **energy centres**. These centres can capture and store energy as well as generate, supply and distribute it. The ability to efficiently store energy could reduce overall energy consumption, reduce peak demand and make renewable energy more effective.

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Based on data from London Energy and Greenhouse Gas Inventory (LEGGI)

Policy SI4 Managing heat risk

- A Development proposals should minimise internal heat gain and the impacts of the urban heat island through design, layout, orientation and materials.
- B Major development proposals should demonstrate through an energy strategy how they will reduce the potential for overheating and reliance on air conditioning systems in accordance with the following cooling hierarchy:
- 1) minimise internal heat generation through energy efficient design
 - 2) reduce the amount of heat entering a building through orientation, shading, albedo, fenestration, insulation and the provision of green roofs and walls
 - 3) manage the heat within the building through exposed internal thermal mass and high ceilings
 - 4) provide passive ventilation
 - 5) provide mechanical ventilation
 - 6) provide active cooling systems.

- 9.4.1 Climate change means London is already experiencing higher than historic average temperatures and more severe hot weather events. This, combined with a growing population and the urban heat island effect, means that **London must manage heat risk** in new developments, using the cooling hierarchy set out above.
- 9.4.2 In managing heat risk, new developments in London face two challenges - the need to ensure London does not overheat (the urban heat island effect) and the need to ensure that individual buildings do not overheat. **The urban heat island effect** is caused by the extensive built up area absorbing and retaining heat during the day and night leading to parts of London being several degrees warmer than the surrounding area. This can become problematic on the hottest days of the year as daytime temperatures can reach well over 30 °C and not drop below 18 °C at night. These circumstances can lead many people to feel too hot or not be able to sleep, but for those with certain health conditions, and some young or elderly Londoners, the effects can be potentially lethal. Green roofs

can provide some mitigation of this effect by shading roof surfaces and through evapotranspiration.

- 9.4.3 Many aspects of building design can lead to increases in overheating risk, including high proportions of glazing and an increase in the air tightness of buildings. There are a number of low-energy-intensive measures that can **mitigate overheating risk**. These include solar shading, building orientation and solar-controlled glazing.
- 9.4.4 The increased use of **air conditioning systems** is not desirable as these have significant energy requirements and, under conventional operation, expel hot air, thereby adding to the urban heat island effect. Therefore, passive ventilation should be prioritised. If active cooling systems, such as air conditioning systems, are unavoidable, these should be designed to reuse the waste heat they produce. Future district heating networks are expected to be supplied with heat from waste heat sources such as building cooling systems.
- 9.4.5 The Chartered Institution of Building Services Engineers (CIBSE) has produced **guidance on assessing and mitigating overheating risk in new developments**, which can also be applied to refurbishment projects. TM 59 should be used for domestic developments and TM 52 should be used for non-domestic developments. In addition, TM 49 guidance and datasets should also be used to ensure that all new development is designed for the climate it will experience over its design life. The GLA's Energy Planning Guidance provides further information on how these guidance documents and datasets should be used.

Policy SI5 Water infrastructure

- A In order to minimise the use of mains water, water supplies and resources should be protected and conserved in a sustainable manner.
- B Development Plans should promote improvements to water supply infrastructure to ensure security of supply. This should be done in a timely, efficient and sustainable manner taking energy consumption into account.
- C Development proposals should:
- 1) minimise the use of mains water in line with the Optional Requirement of the Building Regulations (residential development), achieving mains water consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption)
 - 2) achieve at least the BREEAM excellent standard (commercial development)
 - 3) be encouraged to incorporate measures such as smart metering, water saving and recycling measures, including retrofitting, to help to achieve lower water consumption rates and to maximise future-proofing.
- D In terms of water quality Development Plans should:
- 1) promote the protection and improvement of the water environment in line with the Thames River Basin Management Plan, and should take account of Catchment Plans
 - 2) support strategic wastewater treatment infrastructure investment to accommodate London's growth and climate change impacts. Such infrastructure should be constructed in a timely and sustainable manner taking account of new, smart technologies, intensification opportunities on existing sites, and energy implications. Boroughs should work with Thames Water in relation to local wastewater infrastructure requirements.
- E Development proposals should:
- 1) seek to improve the water environment and ensure that adequate wastewater infrastructure capacity is provided

2) be designed to ensure that misconnections between foul and surface water networks are eliminated and not easily created through future building alterations.

- 9.5.1 Londoners consume on average 156 litres of water per person per day – around 17 litres above the national average. All water companies that serve London are located in areas classified as seriously water-stressed. London is at risk of drought after two dry winters. During 2006 and 2012 **water use restrictions** affecting London were imposed. These restrictions were limited to sprinkler, hosepipe and non-essential user bans. A severe drought – with rota cuts, standpipes, reduced mains pressure or adding non-potable water to the mains supply – would have major implications for Londoners' health and wellbeing, the environment and London's economy. The Mayor will work with the water industry to prevent this level of water restriction being required for London in future.
- 9.5.2 An important aspect of avoiding the most severe water restrictions is to ensure that leakage is reduced and **water used as efficiently as possible**. The Optional Requirement set out in part G of the Building Regulations should be applied across London¹²⁵. A fittings-based approach should be used to determine the water consumption of a development. This approach is transparent and compatible with developers' procurement and the emerging Water Label¹²⁶, which Government and the water companies serving London are supporting.
- 9.5.3 Even with increased water efficiency and reduced leakage, water companies are forecasting an increasing demand for water. Without additional sources of supply, the increased demand will increase the risk of requiring water restrictions during drought periods. **Security of supply** should be ensured. Demand forecasts need to continue to be monitored and based on the consistent use of demographic data across spatial and infrastructure planning regimes.
- 9.5.4 Variations of the following **four strategic water supply options** to serve London are under consideration through Thames Water's Water Resource

¹²⁵ Planning Practice Guidance: Paragraph 014 Reference ID: 56-014-20150327: Where there is a clear local need, boroughs can set out Local Plan policies requiring new dwellings to meet the tighter Building Regulations optional requirement.

¹²⁶ <http://www.europeanwaterlabel.eu/thelabel.asp>

Management Plan process and one or a combination of some of these are expected to be proposed to serve parts of the Wider South East including London:

- treatment / re-use of effluent from sewage treatment works – likely within London
- desalination – potentially within London
- transfer of river water from the River Severn to the River Thames catchment
- a new reservoir – likely to be near the Upper Thames in Oxfordshire.

9.5.5 The Mayor is reviewing the available information on each of the supply options alongside evidence of their impacts on Londoners and Mayoral priorities. In preparing its Water Resource Management Plans, Thames Water is exploring coordinated supply options with the other water companies serving London and the South East of England through the Water Resource South East expert group. Water Resource East is undertaking similar work in the East of England area. All this will involve **partnership working** with key stakeholders within London and beyond its boundaries.

9.5.6 **Infrastructure investment** is constrained by the short-term nature of water companies' investment plans. Similar to the approach to electricity supply (see also paragraph 9.3.8), in order to facilitate the delivery of development it is important that investment in water supply infrastructure is provided ahead of need. To minimise wastage, water supply infrastructure improvements should give consideration to the replacement of ageing trunk mains.

9.5.7 In the context of the significant investment needed, measures to **protect and support vulnerable customers** in particular from rising water bills are important.

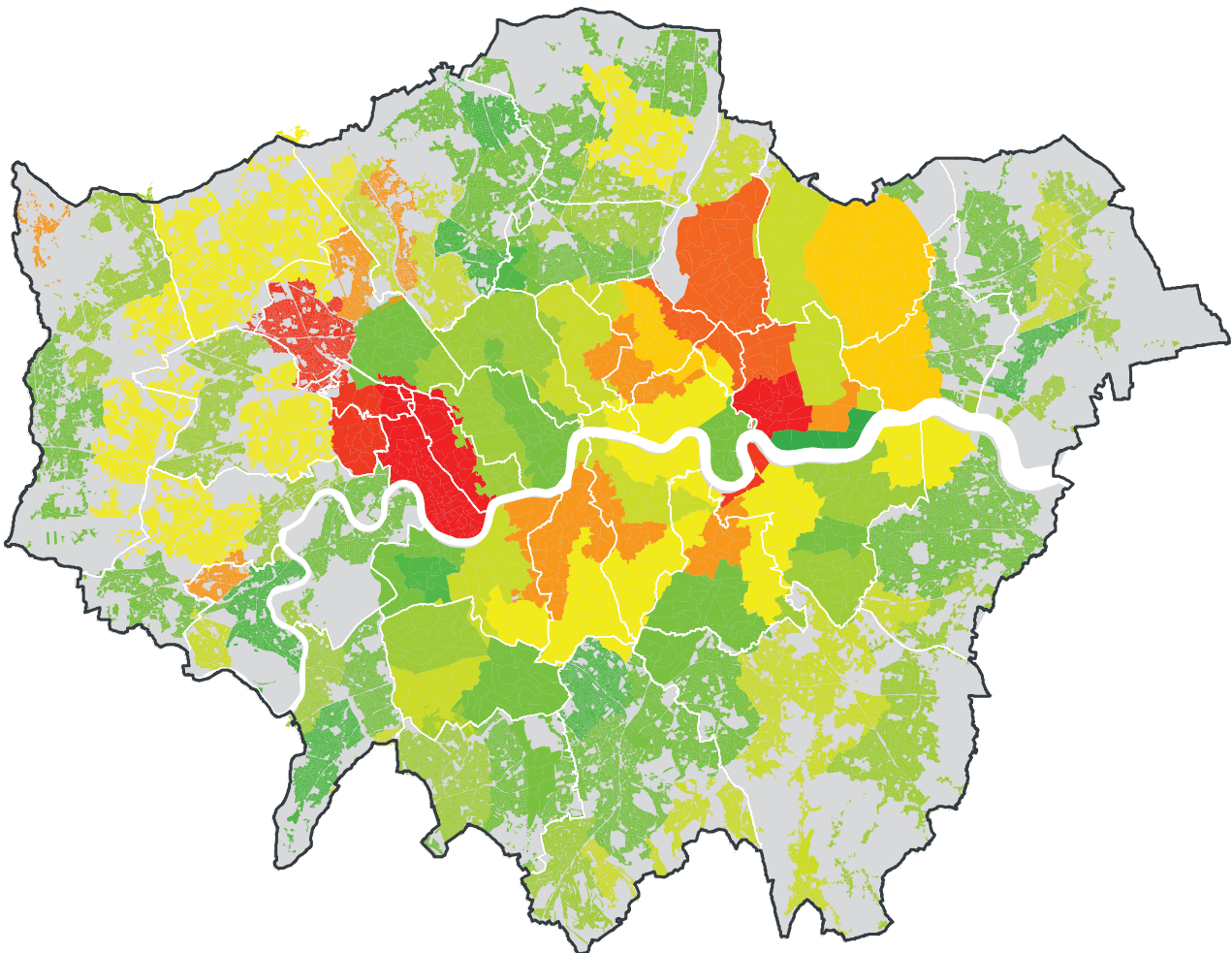
9.5.8 In relation to **wastewater**, Water Framework Directive requirements should be maintained through the Thames River Basin Management Plan and the Catchment Plans prepared by the Catchment Partnerships, of which there are 12 in London. These Partnerships share lessons, experiences and best practice, and help achieve a coordinated approach to delivering the Thames River Basin Management Plan.

9.5.9 The Urban Wastewater Treatment Directive drives improvements in **wastewater treatment infrastructure**. Figure 9.4 provides a spatial illustration of the wastewater drainage capacity across London. Additional land may be required for upgrades or improvements at some wastewater

treatment plants during the Plan period. Different wastewater treatment options may vary significantly in terms of their energy requirements, and there are significant opportunities for energy generation from wastewater treatment (sewage sludge).

- 9.5.10 The Thames Tideway Tunnel is under construction and will help to improve the water quality of the River Thames by significantly reducing the frequency of untreated sewage being discharged into the Thames (known as combined sewer overflows). Thames Water is also planning a major sewer tunnel in the Counters Creek catchment of west London. **Sustainable drainage** measures are of particular importance in areas with sewer capacity limitations and their widespread implementation over the coming decades will help the resilience of London and avoid the need for further major sewer tunnel projects.
- 9.5.11 London's tributary rivers suffer significant pollution from **misconnected sewers**. This allows untreated sewage into what are often small streams, many of which flow through London's parks and open spaces. Conversely, if surface water is misconnected to the foul system, sewer capacity issues are created within sewers and at sewage treatment works. Development proposals should therefore be designed to ensure that the potential for misconnections is eliminated.
- 9.5.12 **Integrated Water Management Strategies** should be considered for major development locations such as Opportunity Areas, where particular flood risk and water-related constraints such as limited sewer capacity require an integrated approach to the provision of infrastructure and management of risk.
- 9.5.13 A **water advisory group** has been established to advise the Mayor on strategic water and flood risk management issues.

Figure 9.4 - Spatial illustration of the wastewater drainage capacity across London



**Flow Capacity Utilisation 2015
Percent**

● 14	● 61 - 70
● 15 - 20	● 71 - 80
● 21 - 30	● 81 - 90
● 31 - 40	● 91 - 100
● 41 - 50	● 101 - 123
● 51 - 60	

Source: Thames Water

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This figure must be used
in conjunction with para-
graph 9.5.14 of the
London Plan (draft
December 2017)

- 9.5.14 Note for Figure 9.4: Thames Water has developed a model of its drains and sewers in London to assess waste water flows. The model compares the theoretical capacity of the drain or sewer pipe against how much waste water flow the pipe is currently receiving during a one in two-year rainfall event. The model's outputs can be visualised as a 'heat map' which highlights at a strategic scale where there is a higher (green) or lower (red) ability to receive additional flows. 'Green' areas do not mean that no additional drainage infrastructure is required. The modelling does not consider how waste water is routed through the network, so it should be noted that some 'green' areas will flow into 'red' areas and hence increasing flows upstream will exacerbate performance in the downstream catchments.

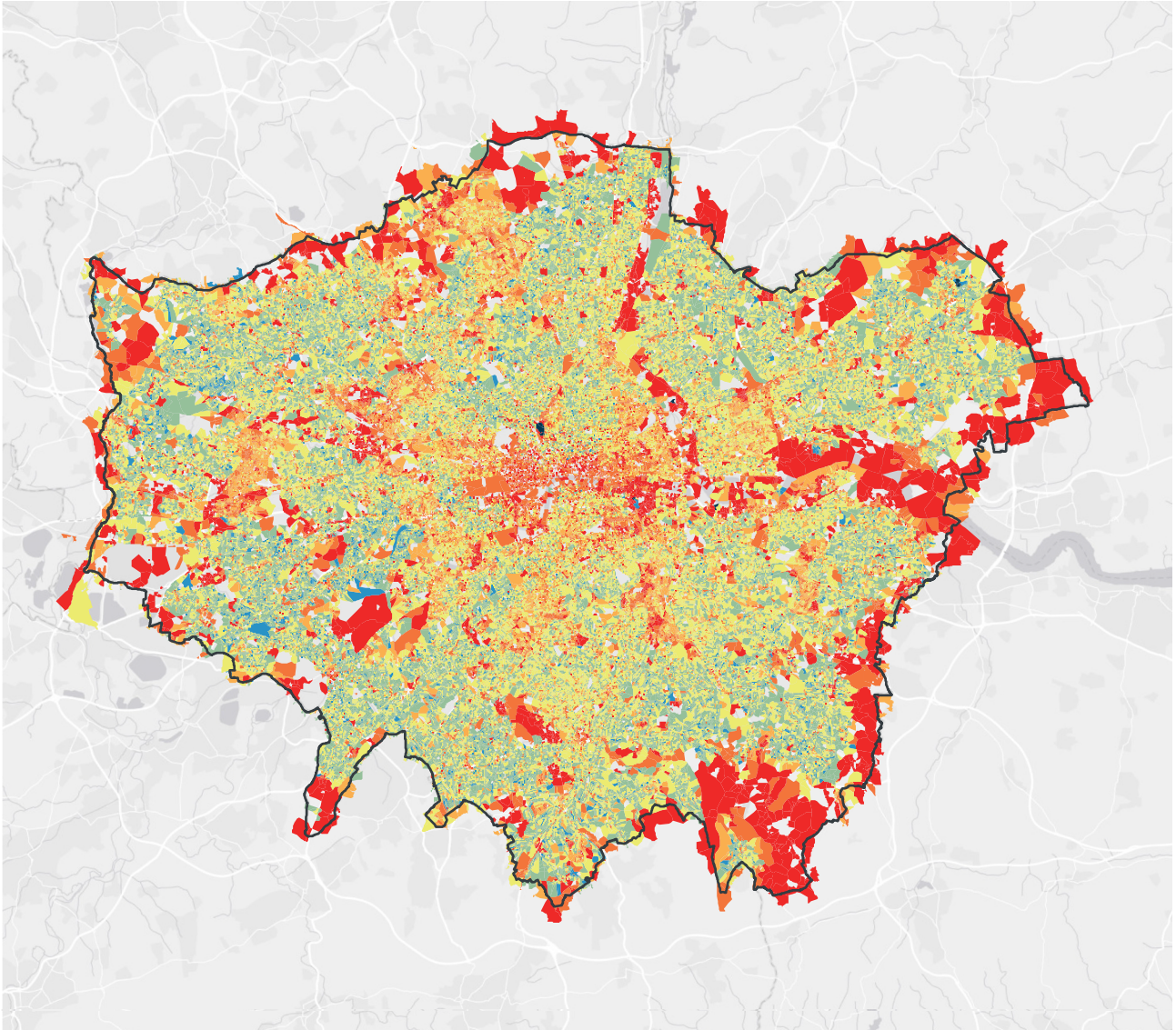
Policy SI6 Digital connectivity infrastructure

- A To ensure London's global competitiveness now and in the future, development proposals should:
- 1) achieve greater digital connectivity than set out in part R1 of the Building Regulations
 - 2) ensure that sufficient ducting space for future digital connectivity infrastructure is provided
 - 3) meet requirements for mobile connectivity within the development and take appropriate mitigation measures to avoid reducing mobile connectivity in surrounding areas
 - 4) support the effective use of the public realm (such as street furniture and bins) to accommodate well-designed and located mobile digital infrastructure.

- 9.6.1 The **provision of digital infrastructure** is as important for the proper functioning of development as energy, water and waste management services and should be treated with the same importance. London should be a world-leading tech hub with world-class digital connectivity that can anticipate growing capacity needs and serve hard to reach areas. Fast, reliable digital connectivity is essential in today's economy and especially for digital technology and creative companies. It supports every aspect of

how people work and take part in modern society, helps smart innovation and facilitates regeneration.

- 9.6.2 **London's capability** in this area is currently limited by a range of issues, including the availability of fibre and the speeds delivered. The industry regulator Ofcom publishes the data on digital connectivity coverage on which Figure 9.5 is based, but there are some limitations to the practicality of the data that is collected. Further work will be done to accurately identify locations in the capital where current connectivity provisions are not suitable for the needs of the area.
- 9.6.3 **Better digital connectivity** with a focus on affordability, security, resilience and the provision of appropriate electrical power supply should be promoted across the capital. The specific requirements of business clusters, such as a symmetrical service with the same upload and download speeds, should also be met.
- 9.6.4 Given the fast pace at which digital technology is changing, a flexible approach to development is needed that supports **innovation and choice**. Part R1 of the Building Regulations 2010 requires buildings to be equipped with high-speed (at least 30 Mbps) ready in-building physical infrastructure, however new developments using higher-grade infrastructure could achieve connectivity speeds closer to 1 Gbps. Innovation is driving reductions in the size of infrastructure, with marginal additional unit costs, but greater digital connectivity is needed in more locations.
- 9.6.5 For some types of development (such as commercial) specific requirements regarding **communications access and security** may apply. Data centres, in particular, depend on reliable connectivity and electricity infrastructure. Warehouse-based data centres have emerged as a driver of industrial demand in London over recent years and this will need to be taken into account when assessing demand for industrial land (see [Policy E4 Land for industry, logistics and services to support London's economic function](#), [Policy E5 Strategic Industrial Locations \(SIL\)](#), [Policy E6 Locally Significant Industrial Sites](#) and [Policy E7 Intensification, co-location and substitution of land for industry, logistics and services to support London's economic function](#)).
- 9.6.6 The Mayor will work with providers, developers, councils and Government to develop guidance and share good practice to **increase awareness and capability** amongst boroughs and developers of the effective provision of digital connectivity and to support the delivery of policy requirements. The Mayor will also help to identify spatial gaps in connectivity and overcome
-

Figure 9.5 - Broadband speed 2016**Average download speed of all connections - 2016**

in Mbit/s

● 0 - 10	● 76 - 200
● 11 - 20	● 201 - 300
● 21 - 30	
● 31 - 50	
● 51 - 75	

Source: Ofcom

Contains OS data ©
Crown copyright and
database right (2017)

barriers to delivery to address this form of digital exclusion, in particular through his 'not-spot' work. Boroughs should encourage the delivery of high-quality / world-class digital infrastructure as part of their digital strategies or corporate plans.

- 9.6.7 Digital connectivity supports **smart technologies** in terms of the collection, analysis and sharing of data on the performance of the built and natural environment, including for example, water and energy consumption, air quality, noise and congestion. Development should be fitted with smart infrastructure, such as sensors, to enable better collection and monitoring of such data. As digital connectivity and the capability of these sensors improves, and their cost falls, more and better data will become available to improve monitoring of planning agreements and impact assessments, for example related to urban design. Further guidance will be developed to make London a smarter city.

Policy SI7 Reducing waste and supporting the circular economy

- A Waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by:
- 1) promoting a more circular economy that improves resource efficiency and innovation to keep products and materials at their highest use for as long as possible
 - 2) encouraging waste minimisation and waste avoidance through the reuse of materials and using fewer resources in the production and distribution of products
 - 3) ensuring that there is zero biodegradable or recyclable waste to landfill by 2026
 - 4) meeting or exceeding the recycling targets for each of the following waste streams and generating low-carbon energy in London from suitable remaining waste:
 - a) municipal waste¹²⁷ – 65 per cent by 2030
 - b) construction, demolition and excavation waste – 95 per cent by 2020

¹²⁷

Based on the EU definition of municipal waste being household waste and other waste similar in composition to household waste. This includes local authority collected waste and waste collected by the private sector.

- 5) designing developments with adequate and easily accessible storage space that supports the separate collection of dry recyclables (at least card, paper, mixed plastics, metals, glass) and food.

B Referable applications should promote circular economy outcomes and aim to be net zero-waste. A Circular Economy Statement should be submitted, to demonstrate:

- 1) how all materials arising from demolition and remediation works will be re-used and/or recycled
- 2) how the proposal's design and construction will enable building materials, components and products to be disassembled and re-used at the end of their useful life
- 3) opportunities for managing as much waste as possible on site
- 4) adequate and easily accessible storage space to support recycling and re-use
- 5) how much waste the proposal is expected to generate, and how and where the waste will be handled.

9.7.1 Waste is defined as anything that is discarded. A **circular economy** is one where materials are retained in use at their highest value for as long as possible and are then re-used or recycled, leaving a minimum of residual waste. London should move to a more circular economy as this will save resources, increase the resource efficiency of London's businesses, and help to reduce carbon emissions. The successful implementation of circular economy principles will help to reduce the volume of waste that London produces and has to manage.

9.7.2 In 2015¹²⁸ London produced just under 18 million tonnes (mt) of waste, comprising:

- 3.1mt household waste – 17 per cent
- 5.0mt commercial/industrial waste – 28 per cent
- 9.7mt construction, demolition and excavation waste – 54 per cent

¹²⁸

<https://www.london.gov.uk/what-we-do/planning/london-plan/london-plan-technical-and-research-reports>

- 9.7.3 The London Environment Strategy sets out the Mayor's approach to waste management in detail. The Mayor is committed to meeting or exceeding the **recycling targets** for each of the following waste streams, and to generating low-carbon energy in London from suitable remaining waste:
- municipal waste¹²⁹ – 65 per cent recycling/composting by 2030
 - construction, demolition and excavation waste – 95 per cent recycling by 2020
- 9.7.4 Re-use and recycling rates for **construction, demolition and excavation** waste (CD&E) in London is estimated between 50-60 per cent¹³⁰ for 2015 with some large construction projects including the Olympic Park achieving 85 – 95 per cent recycling rates. Nevertheless, more beneficial and higher order uses of this inert waste, for example in conjunction with land reclamation or coastal defences, are possible. A combination of mobile facilities on construction sites, effective use of existing waste processing sites and, where appropriate, safeguarded wharves, as well as the provision of recycling facilities at aggregate extraction sites, should be capable of meeting the anticipated future requirement within London to achieve a more beneficial re-use of this material.
- 9.7.5 When it is intended to **export waste** to landfill outside of London, it will be important to show that the receiving authority has the capacity to deal with waste over the lifetime of the development. This will also help receiving authorities plan for future needs.
- 9.7.6 Further guidance on Circular Economy Statements will be produced.

¹²⁹ Based on the EU definition of municipal waste being household waste and other waste similar in composition to household waste. This includes local authority collected waste and commercial waste.

¹³⁰ Based on CDE waste data interrogator data 2015. Estimate only as actual CDE waste performance data is not available and not a requirement to report. Actual performance likely to be higher as waste reused or recycled on-site is not reported through the waste data interrogator.

Policy SI8 Waste capacity and net waste self-sufficiency

- A In order to manage London's waste sustainably:
- 1) the equivalent of 100 per cent of London's waste should be managed within London (i.e. net self-sufficiency) by 2026
 - 2) existing waste management sites should be safeguarded (see [Policy SI9 Safeguarded waste sites](#))
 - 3) the waste management capacity of existing sites should be optimised
 - 4) new waste management sites should be provided where required
 - 5) environmental, social and economic benefits from waste and secondary materials management should be created.
- B Development Plans should:
- 1) identify how waste will be reduced, in line with the principles of the Circular Economy and how remaining quantum of waste will be managed
 - 2) allocate sufficient land and identify waste management facilities to provide the capacity to manage the apportioned tonnages of waste, as set out in Table 9.2 - boroughs are encouraged to collaborate by pooling their apportionment requirements
 - 3) identify the following as suitable locations to manage borough waste apportionments:
 - a) existing waste and secondary material sites/land, particularly waste transfer facilities, with a view to maximising their capacity
 - b) Strategic Industrial Locations and Locally Significant Employment Sites / land
 - c) safeguarded wharves with an existing or future potential for waste and secondary material management.
- C The following are particularly encouraged – development proposals which:
- 1) deliver a range of complementary waste management and secondary material processing facilities on a single site
 - 2) support prolonged product life and production of secondary materials including repair, refurbishment and remanufacture

- 3) contribute towards renewable energy generation, especially renewable gas technologies from organic/biomass waste
- 4) provide combined heat and power and/or combined cooling heat and power
- 5) contain proposals to effectively deal with CD&E waste on site and minimise export to landfill.

D Developments proposals for new waste sites or to increase the capacity of existing sites should be evaluated against the following criteria:

- 1) the nature of the activity, its scale and location
 - 2) job creation and social value benefits including skills, training and apprenticeship opportunities
 - 3) achieving a positive carbon outcome (i.e. re-using and recycling high carbon content materials) resulting in significant greenhouse gas savings - facilities generating energy from waste will need to meet, or demonstrate that steps are in place to meet, a minimum performance of 400g of CO₂ equivalent per kilowatt hour of electricity produced
 - 4) the impact on amenity in surrounding areas (including but not limited to noise, odours, air quality and visual impact) - where a site is likely to produce significant air quality, dust or noise impacts, it should be fully enclosed
 - 5) the transport and environmental impacts of all vehicle movements related to the proposal - the use of renewable fuels from waste sources and the use of rail and waterway networks to transport waste should be supported.
-

Table 9.1 - Forecast arisings of Household and Commercial & Industrial waste by borough 2021-2041 (000's tonnes)

Borough	2021	2041
Barking & Dagenham	214	230
Barnet	315	340
Bexley	225	242
Brent	260	274
Bromley	250	268
Camden	360	374
City of London	230	238
Croydon	305	327
Ealing	291	306
Enfield	305	327
Greenwich	209	227
Hackney	183	196
Hammersmith & Fulham	183	190
Haringey	190	201
Harrow	188	205
Havering	230	249
Hillingdon	347	367
Hounslow	260	276
Islington	242	252
Kensington & Chelsea	202	211
Kingston	152	161
Lambeth	208	220
Lewisham	191	206
Merton	173	184
Newham	244	261
Redbridge	196	216
Richmond	180	191
Southwark	292	308
Sutton	161	173
Tower Hamlets	260	273
Waltham Forest	202	180
Wandsworth	250	264
City of Westminster	722	750
London total	8,216	8,726

Table 9.2 - Borough-level apportionments of Household and Commercial & Industrial waste 2021-2041 (000's tonnes)

Borough	Apportionment*	2021	2041
Barking & Dagenham	6.1	505	537
Barnet	2.6	215	229
Bexley	5.6	456	485
Brent	5.0	412	438
Bromley	2.3	192	204
Camden	1.6	133	141
City of London	1.0	84	89
Croydon	3.1	252	268
Ealing	6.6	543	576
Enfield	4.3	356	379
Greenwich	4.1	338	359
Hackney	1.3	110	118
Hammersmith & Fulham	2.6	210	222
Haringey	2.3	192	204
Harrow	1.9	151	170
Havering	4.5	369	383
Hillingdon	5.1	423	450
Hounslow	5.0	407	432
Islington	1.2	102	108
Kensington & Chelsea	1.4	116	123
Kingston	2.3	187	199
Lambeth	1.7	143	152
Lewisham	2.2	184	195
Merton	2.9	238	253
Newham	4.7	384	407
Redbridge	1.8	151	160
Richmond	1.8	148	157
Southwark	1.8	151	160
Sutton	2.6	210	224
Tower Hamlets	2.4	195	207
Waltham Forest	2.4	199	211
Wandsworth	3.2	264	280
City of Westminster	2.3	188	199
London total	100.0	8,216	8,726

* Apportionment is per cent share of London's total waste to be managed by borough

Table 9.3 - Projected exports of Household and Commercial & Industrial waste from London (000's tonnes)

	2015	2021	2026	2041
London's arisings	8,100	8,216	8,299	8,726
London's exports	3,449	1,725	0	0

Note: 2015 is an actual figure (SLR May 2017), data for 2021, 2026 and 2041 are projections

- 9.8.1 In 2015, London managed 7.5mt of its own waste and exported 11.4mt of waste. London also imported 3.6mt of waste. This gives London a current **waste net self-sufficiency** figure of approximately 60 per cent. Around 5mt (49 per cent) of waste exported from London went to the East of England and 4.2mt (42 per cent) to the South East. The bulk of this waste is CD&E waste. Approximately 1.3mt of waste was exported overseas.
- 9.8.2 In 2015, 2.9mt of the waste sent to the East of England went to landfill and 2.2mt went to landfill in the South East. Some 32 per cent of London's waste that was biodegradable or recyclable was sent to landfill. The Mayor is committed to sending **zero biodegradable or recyclable waste to landfill by 2026** (see Table 9.3).
- 9.8.3 Waste contracts do not recognise administrative boundaries and waste flows across borders. Therefore, sufficient sites should be identified within London to deal with the equivalent of 100 per cent of the waste apportioned to the boroughs as set out in Table 9.2. The Mayor will work with boroughs, the London Waste and Recycling Board, and the London and neighbouring Regional Technical Advisory Bodies to address **cross-boundary waste flow issues**.
- 9.8.4 Waste is deemed to be managed in London if any of the following activities take place within London:
- waste is used for energy recovery
 - it relates to production of solid recovered fuel (SRF), or it is high-quality refuse-derived fuel (RDF) meeting the Defra RDF definition as a minimum¹³¹
 - it is sorted or bulked for re-use (including repair and re-manufacture) reprocessing or recycling (including anaerobic digestion)
 - It is reused, recycled or reprocessed.
- 9.8.5 Supporting the production of **SRF and high quality RDF feedstock** will promote local energy generation and benefit Londoners, improving London's energy security, helping to achieve regional self-sufficiency and

¹³¹ <http://www.sita.co.uk/services-and-products/our-products/rdf-srf> for an explanation of the differences between SRF and RDF.

possibly reducing leakage of SRF and RDF overseas. London facilities should produce high-quality waste feedstock with very little recyclable content (i.e. plastics), supporting renewable energy generation.

- 9.8.6 Table 9.1 shows projected arisings for Household and Commercial & Industrial waste for each borough. National policy guidance requires boroughs to have regard to the waste apportionments set out in the London Plan. The Plan's **waste apportionment** model defines the proportion of London's total Household and Commercial & Industrial waste that each borough should plan for, and these apportionments are set out in Table 9.2. Part B.2 of Policy SI8 Waste capacity and net waste self-sufficiency requires boroughs to allocate sufficient land (sites and/or areas) and identify waste management facilities to provide the capacity to manage their apportioned tonnages of waste. Boroughs are encouraged to collaborate by pooling their apportionment requirements.
- 9.8.7 Boroughs should examine in detail **how capacity can be delivered at the local level** through site allocations in Development Plans to meet their apportionments, and should aim to meet their waste apportionment as a minimum. However, this may not always be possible and boroughs will need to agree the transfer of apportioned waste. Boroughs should identify suitable additional sites for waste including waste transfer sites where practicable. Where apportionments are pooled, boroughs must demonstrate how their joint apportionment targets will be met, for example through joint waste Development Plan Documents, joint evidence papers or bilateral agreements. Mayoral Development Corporations should cooperate with boroughs to ensure that the boroughs' apportionment requirements are met. This could be widened to cover boroughs in the relevant waste disposal authority. Plans or agreements safeguarding waste sites should take a flexible approach. They should be regularly reviewed and updated to take account of development that may lead to the integration of waste sites or appropriate relocation of lost waste sites. Waste plans should be responsive to strategic opportunities across borough and joint waste planning boundaries for optimising capacity on existing waste sites, or that help to unlock investment in developing new waste sites.
- 9.8.8 Land in Strategic Industrial Locations will provide the main opportunities for locating waste treatment facilities. Existing **waste management sites** should be clearly identified and safeguarded for waste use. Boroughs should also look to Locally Significant Industrial Sites and existing waste management sites. Large-scale redevelopment opportunities and redevelopment proposals should incorporate waste management facilities
-

within them. The London Waste Map¹³² shows the locations of London's permitted waste facilities and sites that may be suitable for waste facility location.

- 9.8.9 As noted above waste flows across boundaries and London exported 3.4mt of Household and Commercial & Industrial waste in 2015. To meet the Mayor's policy commitment of net self-sufficiency by 2026 there needs to be a **reduction in exports** over the decade to 2026. Table 9.3 is included to help neighbouring authorities plan for London's waste exports.
- 9.8.10 Tables 9.1, 9.2 and 9.3 only refer to Household and Commercial and Industrial Waste, not Construction, Demolition and Excavation (CD&E) Waste. As the reliability of CD&E waste data is low, apportionments for this waste stream are not set out. For a fuller discussion of the issues around CD&E data see the SLR consulting report (task 2) (May 2017).
- 9.8.11 To support the shift towards a low-carbon circular economy, all facilities generating energy from waste should meet, or demonstrate that they can meet in future, a measure of minimum greenhouse gas performance known as the **carbon intensity floor (CIF)**. The CIF is set at 400g of CO₂ equivalent generated per kilowatt hour (kwh) of electricity generated. The GLA's free on-line ready reckoner tool can assist boroughs and applicants in measuring and determining performance against the CIF¹³³. Achieving the CIF effectively rules out traditional mass burn incineration techniques generating electricity only. Instead, it supports techniques where both heat and power generated are used, and technologies are able to achieve high efficiencies, such as when linked with gas engines and hydrogen fuel cells. More information on how the CIF has been developed and how to meet it can be found in the London Environment Strategy.
- 9.8.12 Waste to energy facilities should be equipped with a **heat off-take** from the outset such that a future heat demand can be supplied without the need to modify the heat producing plant in any way or entail its unplanned shut-down. It should be demonstrated that capacity of the heat off-take meets the CIF at 100 per cent heat supply. In order to ensure it remains relevant, the CIF level will be kept under review.
- 9.8.13 Examples of the **'demonstrable steps' required under part D3 of Policy SI8 Waste capacity and net waste self-sufficiency** are:

¹³² <https://maps.london.gov.uk/webmaps/waste/>

¹³³ <http://www.london.gov.uk/priorities/environment/putting-waste-good-use/making-the-most-of-waste>

- A commitment to source truly residual waste – waste with as little recyclable material as possible.
- A commitment (via a Section 106 obligation) to deliver the necessary means for infrastructure to meet the minimum CO₂ standard, for example investment in the development of a heat distribution network to the site boundary, or technology modifications that improve plant efficiency.
- An agreed timeframe (via a Section 106 agreement) as to when proposed measures will be delivered.
- The establishment of a working group to progress the agreed steps and monitor and report performance to the consenting authority.

9.8.14 To assist in the delivery of 'demonstrable steps' the GLA can help to advise on heat take-off opportunities for waste to energy projects, particularly where these are linked to GLA supported energy masterplans.

9.8.15 In 2015 around 324,000 tonnes of **hazardous waste** was produced in London. London sends small amounts of hazardous waste to landfill outside of London, approximately three per cent of the national total. The amount of such waste produced has continued to grow in the short and medium term. Without sustained action, there remains the risk of a major shortfall in our capacity to treat and dispose of hazardous waste safely. This could lead to storage problems, illegal disposal (including fly tipping) and rising public concern about health and environmental impacts. There is therefore a need to continue to identify hazardous waste capacity for London. The main requirement is for sites for regional facilities to be identified. Boroughs will need to work with neighbouring authorities to consider the necessary facilities when planning for their hazardous waste.

9.8.16 **Waste processing facilities** should be well designed. They should respect context, not be visually overbearing and should contribute to the local economy as a source of new products and new jobs. They should be developed and designed in consultation with local communities, taking account of health and safety within the facility, the site and adjoining neighbourhoods. Developments supporting circular economy outcomes such as re-use, repair and re-manufacture, will be encouraged. Where movement of waste is required, priority should be given to facilities for movement by river or rail. Opportunities for combined heat, power and cooling should be taken wherever possible. Although no further landfill proposals in London are identified or anticipated within the Plan period, if proposals do come forward for new or extended landfill capacity or for

land-raising, boroughs should ensure that the resultant void-space has regard to the London Environment Strategy.

- 9.8.17 Following the Agent of Change principle, developments adjacent to waste management sites should be designed to **minimise the potential for disturbance and conflicts of use**. Developers should refer to the London Waste and Recycling Board's design guide for ensuring adequate and easily accessible storage space for high-rise developments, see part G of [Policy D4 Housing quality and standards](#).

Policy SI9 Safeguarded waste sites

- A Existing waste sites should be safeguarded and retained in waste management use.
- B Waste facilities located in areas identified for non-waste related development should be integrated with other uses as a first principle where they deliver clear local benefits.
- C Waste plans should be adopted before considering the loss of waste sites. The proposed loss of an existing waste site will only be supported where appropriate compensatory capacity is made within London that must at least meet, and should exceed, the maximum achievable throughput of the site proposed to be lost.
- 9.9.1 London has approximately 500 **waste sites**, defined as land with planning permission for a waste use or a permit from the Environment Agency for a waste use. This applies to land used for any waste stream. These sites cover a wide range of waste activities and perform a valuable service to London, its people and economy.
- 9.9.2 Any **waste site release** should be part of a plan-led process, rather than on an ad-hoc basis. Waste sites should only be released to other land uses where waste processing capacity is re-provided elsewhere within London, based on the maximum achievable throughput of the site proposed to be lost. When assessing the throughput of a site, the maximum throughput achieved over the last three years should be used.
- 9.9.3 [Policy SI8 Waste capacity and net waste self-sufficiency](#) promotes **capacity increases at waste sites** where appropriate to maximise their use. If such increases are implemented over the Plan period, it may be possible to justify the release of waste sites without capacity re-provision

if it can be demonstrated that there is sufficient capacity available elsewhere at appropriate sites over the Plan period. In such cases, sites could be released for other land uses.

Policy SI10 Aggregates

- A An adequate supply of aggregates to support construction in London will be achieved by:
- 1) encouraging re-use and recycling of construction, demolition and excavation waste within London
 - 2) extracting land-won aggregates within London
 - 3) importing aggregates to London by sustainable transport modes
 - 4) meeting the target of 95 per cent recycling/re-use of construction, demolition and excavation waste by 2020 and recycling 50 per cent of that waste as aggregates by 2020.
- B Development Plans should make provision for the maintenance of a landbank (i.e. seven years' supply) of at least five million tonnes of land-won aggregates up to 2041, in particular through a landbank apportionment of:
- 1) at least 1.75 mt to London Borough of Havering
 - 2) at least 0.7 mt to London Borough of Redbridge
 - 3) at least 1.75 mt to London Borough of Hillingdon
 - 4) at least 0.7 mt to London Borough of Hounslow.
- C All Mineral Planning Authorities in London should identify and safeguard aggregate resources in Development Plans, including aggregate recycling facilities.
- D To reduce the environmental impact of aggregates, Development Plans should:
- 1) ensure that appropriate use is made of planning conditions dealing with aftercare, restoration and re-use of minerals sites following extraction, with particular emphasis on promoting green infrastructure, especially biodiversity
 - 2) safeguard wharves and/or railheads with existing or potential capacity for aggregate distribution and/or processing to minimise

the movement of aggregates by road and maximise the movement of aggregates by sustainable modes.

- 9.10.1 London needs a **reliable supply of construction materials** to support continued growth. National planning policy requires Mineral Planning Authorities to maintain a steady and adequate supply of aggregates. These include land-won sand and gravel, crushed rock, marine sand and gravel, and recycled materials. Most aggregates used in the capital come from outside London, including marine sand and gravel and land-won aggregates, principally crushed rock from other regions. There are relatively small resources of workable land-won sand and gravel in London.
- 9.10.2 A realistic **landbank figure** (i.e. seven years' supply) of at least 5 million tonnes of land-won aggregates for London throughout the Plan period has been apportioned to boroughs as set out in the policy above. There remains some potential for extraction beyond the four boroughs identified in [Policy SI10 Aggregates](#), including within the Lee Valley, and boroughs with aggregates resources should consider extraction opportunities.
- 9.10.3 Aggregates are bulky materials so Development Plans should maximise their use and re-use and minimise their movement, especially by road. The objective of proximity dictates the best and most local use of materials that can be extracted in London. The **re-use/recycling** of building materials and aggregates is a significant and well established component of the circular economy advocated in [Policy SI7 Reducing waste and supporting the circular economy](#) and reduces the demand for natural materials.
- 9.10.4 Boroughs should protect existing, planned and potential **sites for aggregate extraction and transportation**. Existing and future wharf capacity is essential, especially for transporting marine-dredged aggregates, and should be protected in accordance with [Policy SI15 Water transport](#). Equally important are railway depots for importing crushed rock from other parts of the UK. Railheads are vital to the sustainable movement of aggregates and boroughs should protect them.
- 9.10.5 **Sites for depots** may be particularly appropriate in preferred industrial locations and other employment areas. Boroughs should examine the feasibility of using quarries as CD&E recycling sites once mineral extraction has finished.

- 9.10.6 Mineral Planning Authorities are required to prepare an annual **Local Aggregates Assessment** (LAA). It is not reasonable to expect boroughs without mineral resources or aggregate facilities to produce their own LAAs, so the Mayor will continue to prepare a joint London-wide LAA to supplement individual LAAs from boroughs with resources and facilities.

Policy SI11 Hydraulic fracturing (Fracking)

- A Development proposals for exploration, appraisal or production of shale gas via hydraulic fracturing should be refused.
- 9.11.1 In line with the Plan's policy approach to energy efficiency, renewable energy, climate change, air quality, and water resources, the Mayor does not support fracking in London.
- 9.11.2 The British Geological Survey concluded in a 2014 report for the Department of Energy and Climate Change that "there is no significant Jurassic shale gas potential in the Weald Basin"¹³⁴. It is highly unlikely that there is any site that is geologically suitable for a fracking development in London.
- 9.11.3 Should any London fracking proposal come forward there is a high probability that it would be located on **Green Belt or Metropolitan Open Land**. Furthermore, London and the south east of England are seriously **water-stressed areas**. Fracking operations not only use large amounts of water but also presents risks of potential contamination, presenting significant risks to London.
- 9.11.4 In addition to avoiding or mitigating adverse construction and operational impacts (noise, dust, visual intrusion, vehicle movements and lighting, on both the natural and built environment, including air quality and the water environment), any fracking proposal would need to take full account, where relevant, of the following **environmental constraints**:
- Areas of Outstanding Natural Beauty
 - Sites of Special Scientific Interest

¹³⁴ The Jurassic shales of the Weald Basin: geology and shale oil and shale gas resource estimation. British Geological Survey for DECC 2014 https://www.ogauthority.co.uk/media/2773/bgs_decc_jurassicwealdshale_study_2014_main_report.pdf

- Groundwater Source Protection Zone 1
- Special Protection Areas (adopted or candidate)
- Special Areas of Conservation (adopted or candidate)
- Sites of Metropolitan Importance for Nature Conservation
- Groundwater or surface water

9.11.5 The United Kingdom Onshore Oil and Gas Group (UKOOG), which represents the industry, has established a **Community Engagement Charter** for new onshore oil and gas proposals¹³⁵. The Charter sets out a number of commitments for operators which includes engagement with local communities at each of the three main stages of operations (exploration, appraisal and production). Where any proposals for fracking to come forward, applicants who are members of UKOOG would be expected to comply with these commitments.

Policy SI12 Flood risk management

- A Current and expected flood risk from all sources across London should be managed in a sustainable and cost effective way in collaboration with the Environment Agency, the Lead Local Flood Authorities, developers and infrastructure providers.
- B Development Plans should use the Mayor's Regional Flood Risk Appraisal and their Strategic Flood Risk Assessment as well as Surface Water Management Plan, where necessary, to identify areas where particular flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. Boroughs should co-operate and jointly address cross-boundary flood risk issues including with authorities outside London.
- C Development proposals which require specific flood risk assessments should ensure that flood risk is minimised and mitigated, and that residual risk is addressed. This should include, where possible, making space for water and aiming for development to be set back from the banks of watercourses.
- D Developments Plans and development proposals should contribute to the delivery of the measures set out in Thames Estuary 2100 Plan. The

¹³⁵ Community Engagement Charter – oil and gas from unconventional reservoirs, UKCOOG 2013 <http://www.ukoog.org.uk/community/charter>

Mayor will work with the Environment Agency and relevant local planning authorities, including authorities outside London, to safeguard an appropriate location for a new Thames Barrier.

- E Development proposals for utility services should be designed to remain operational under flood conditions and buildings should be designed for quick recovery following a flood.
 - F Development proposals adjacent to flood defences will be required to protect the integrity of flood defences and allow access for future maintenance and upgrading. Where possible, development proposals should set permanent built development back from flood defences to allow for any foreseeable future upgrades.
- 9.12.1 In London, the boroughs are **Lead Local Flood Authorities** (LLFAs) and are responsible, in particular, for local surface water flood risk management and for maintaining a register of flood risk. They identify areas of flood risk to help inform appropriate locations for development. LLFAs should cooperate on strategic and cross-boundary issues.
- 9.12.2 The **Regional Flood Risk Appraisal** (RFRA) considers all sources of flood risk including tidal, fluvial, surface water, sewer, groundwater and reservoir flooding and has been updated in collaboration with the Environment Agency. The RFRA provides a spatial analysis of flood risk including consideration of risks at major growth locations such as Opportunity Areas and Town Centres and key infrastructure assets. The Government's updated allowances for climate change are reflected in the expected sea level rise and increased flood risks considered in the RFRA. The updated allowances consider the lifetime, vulnerability and location of a development.
- 9.12.3 The Environment Agency's **Thames Estuary 2100 Plan** (TE2100) focuses on tidal flood risk management. It requires the ability to maintain and raise some tidal walls and embankments. The Environment Agency estimates that a new Thames Barrier is likely to be required towards the end of the century. Potential sites will be needed in Kent and/or Essex requiring close partnership working with the relevant local authorities.
- 9.12.4 The concept of Lead Local Flood Authorities producing **Riverside Strategies** was introduced through the TE2100 Plan to improve flood risk management in the vicinity of the river, create better access to and

along the riverside, and improve the riverside environment. The Mayor will support these strategies.

- 9.12.5 The Environment Agency's Thames River Basin District **Flood Risk Management Plan** is part of a collaborative and integrated approach to catchment planning for water. Making space for water when considering development proposals is particularly important where there is significant exposure to flood risk along tributaries and at the tidal-fluvial interface. The Flood Risk Management Plan should inform the boroughs' Strategic Flood Risk Assessments.
- 9.12.6 In terms of mitigating **residual risk**, it is important that a strategy for safe evacuation and quick recovery to address such risks is in place; this is also the case for utility services. In the case of a severe flood, especially a tidal flood, many thousands of properties could be affected. This will make rescue and the provision of temporary accommodation challenging. Designing buildings such that people can remain within them and be safe and comfortable in the unlikely event of such a flood, will improve London's resilience to such an event.
- 9.12.7 Development **adjacent to flood defences** will be required to protect the integrity of existing flood defences. Wherever possible it should be set back from the banks of watercourses and flood defences to allow their management, maintenance and upgrading to be undertaken in a sustainable and cost-effective way.

Policy SI13 Sustainable drainage

- A Lead Local Flood Authorities should identify – through their Local Flood Risk Management Strategies and Surface Water Management Plans – areas where there are particular surface water management issues and aim to reduce these risks.
- B Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible in line with the following drainage hierarchy:
- 1) rainwater harvesting (including a combination of green and blue roofs)
 - 2) infiltration techniques and green roofs
 - 3) rainwater attenuation in open water features for gradual release
 - 4) rainwater discharge direct to a watercourse (unless not appropriate)

5) rainwater attenuation above ground (including blue roofs)

6) rainwater attenuation below ground¹³⁶

7) rainwater discharge to a surface water sewer or drain

8) rainwater discharge to a combined sewer.

C Development proposals for impermeable paving should be refused where appropriate, including on small surfaces such as front gardens and driveways.

D Drainage should be designed and implemented in ways that address issues of water use efficiency, river water quality, biodiversity, amenity and recreation.

¹³⁶ The benefit of attenuation above compared to below ground or in a basement is that pumping is normally not required to empty the attenuation tank.

9.13.1 London is at particular risk from surface water flooding, mainly due to the large extent of impermeable surfaces. Lead Local Flood Authorities have responsibility for managing surface water drainage through the planning system, as well as maintenance arrangements. **Local Flood Risk Management Strategies** and **Surface Water Management Plans** should ensure they address flooding from sewers, drains and groundwater, and run-off from land and small watercourses that occurs as a result of heavy rainfall.

9.13.2 Development proposals should aim to get as close to greenfield run-off rates¹³⁷ as possible depending on site conditions. The well-established **drainage hierarchy** set out in this policy helps to reduce the rate and volume of surface water run-off. Rainwater should be managed as close to the top of the hierarchy as possible and there should be a preference for green over grey features. A blue roof is an attenuation tank at roof or podium level; the combination of a blue and green roof is particularly beneficial as the attenuated water is used to irrigate the green roof.

9.13.3 For many sites, it may be appropriate to use **more than one form of drainage**, for example a proportion of rainwater can be managed by more sustainable methods, with residual rainwater managed lower down the hierarchy. In some cases, direct discharge into the watercourse is an appropriate approach, for example rainwater discharge into the tidal

¹³⁷ The runoff that would occur from a site in undeveloped state.

Thames or a dock. This should include suitable pollution prevention measures. However, in other cases direct discharge will not be appropriate, for example discharge into a small stream at the headwaters of a catchment, which may cause flooding. This will need to be assessed on a case-by-case basis, taking into account the location, scale and quality of the discharge and the receiving watercourse. The maintenance of identified drainage measures should also be considered in development proposals.

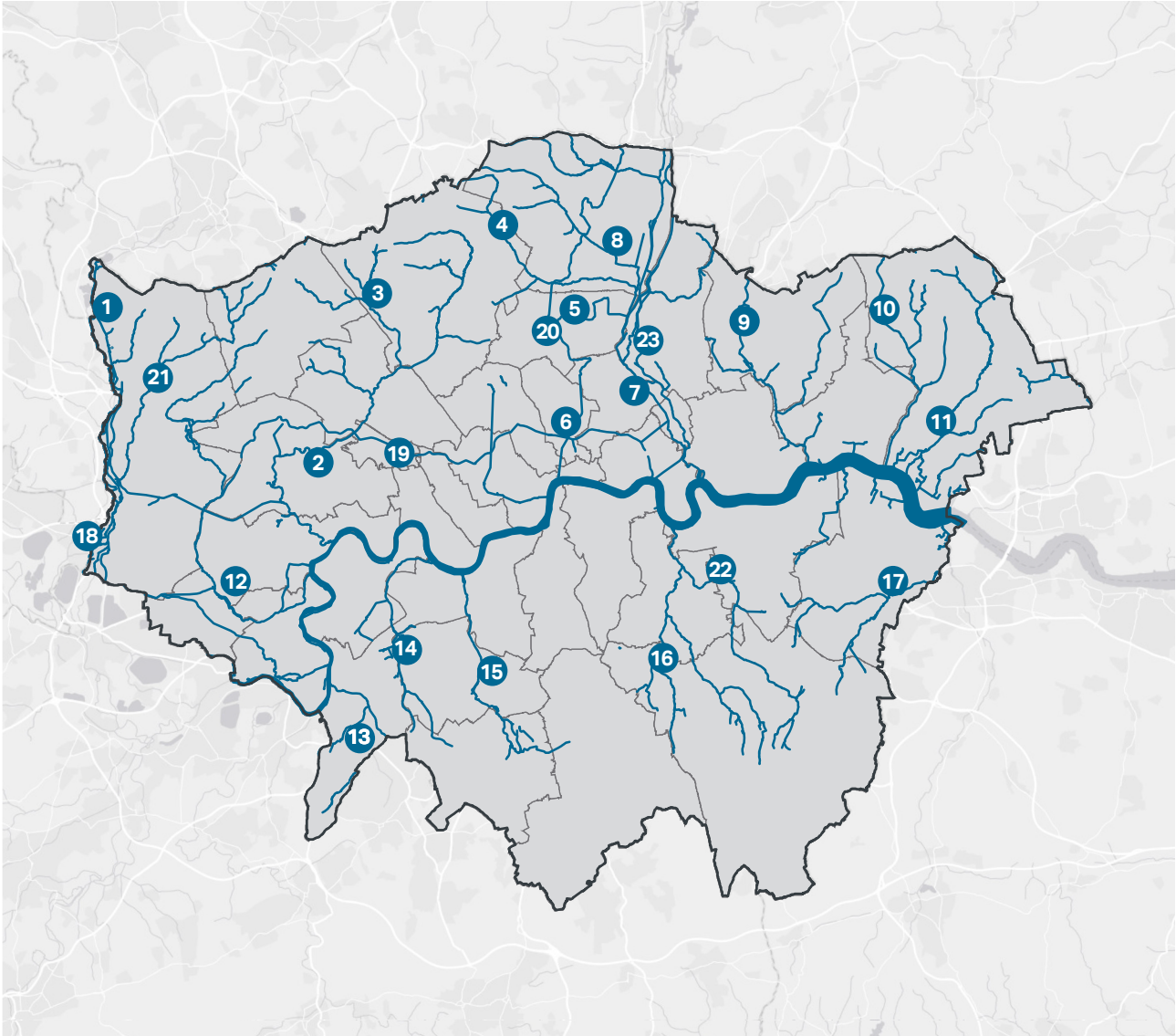
- 9.13.4 The **London Sustainable Drainage Action Plan** complements this policy. It contains a series of actions to make the drainage system work in a more natural way with a particular emphasis on retrofitting.

Policy SI14 Waterways – strategic role

- A To ensure coordination and alignment at the interface between terrestrial and marine planning, Development Plans and development proposals should take account of the emerging Marine Spatial Plans prepared by the Marine Management Organisation.
- B To reflect the distinctiveness of areas that specifically relate to the River Thames, relevant Development Plans should designate, and ensure the maintenance of, Thames Policy Areas. Boroughs are encouraged to work together on policies and to develop and update joint Thames Strategies that should support individual Development Plans.

- 9.14.1 The term 'waterways' does not only refer to the River Thames, its tributary rivers and canals, but also to other water spaces including docks, lakes and reservoirs. This **network of linked waterways** is of strategic importance for London. Every London borough contains some waterways – 17 border the Thames and 15 contain canals (see Figure 9.6).

Figure 9.6 - London's Network of Waterways



London's Waterways

● Waterways

Note: Not all tributaries shown

Source: OS Open Rivers

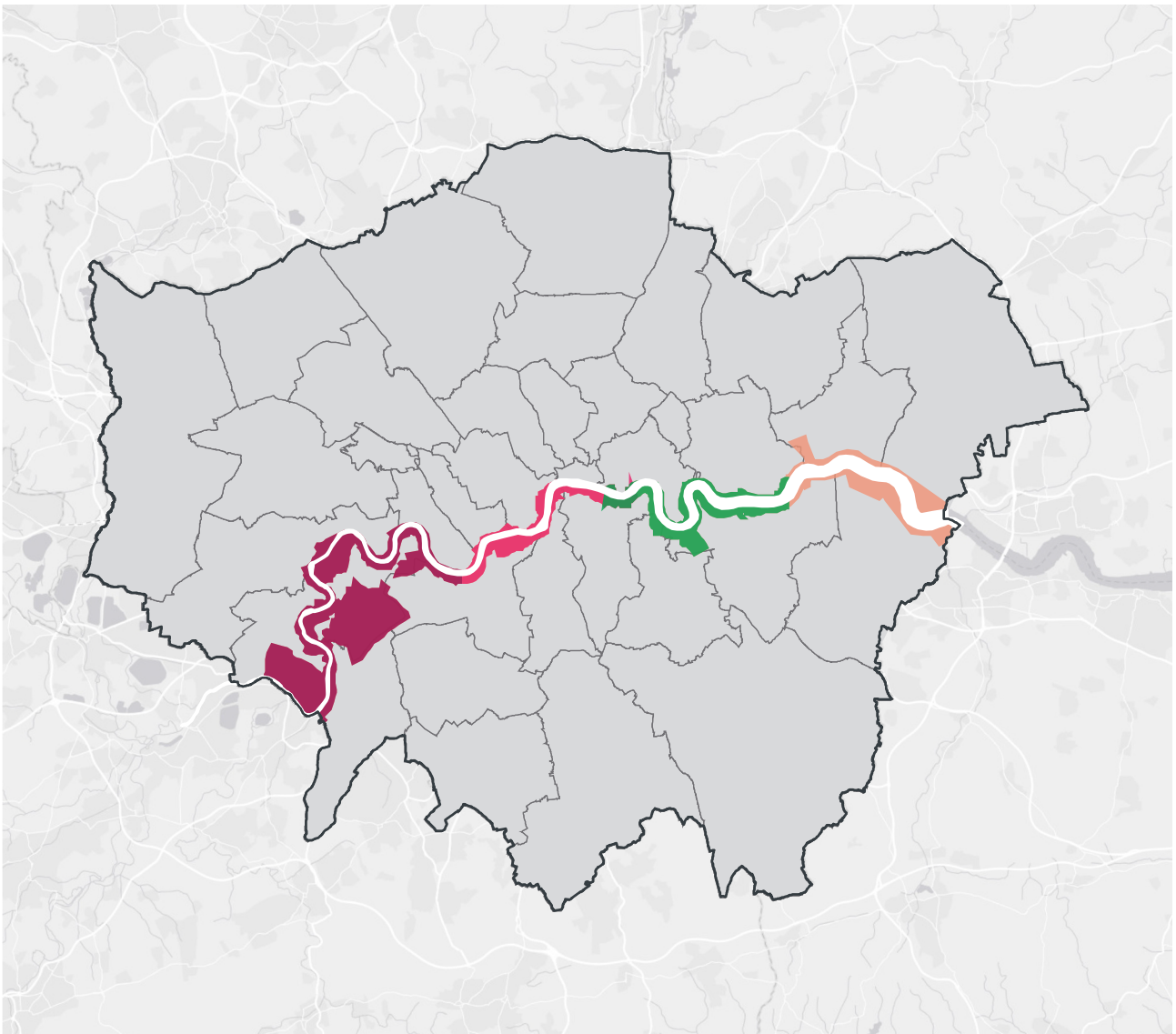
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- | | | | |
|----------------------|---------------------|---------------------|--------------------|
| 1. Grand Union Canal | 7. Lee Navigation | 13. Hogsmill River | 19. Paddington Arm |
| 2. River Brent | 8. Salmons Brook | 14. Beverley Brook | 20. New River |
| 3. Silk Stream | 9. River Roding | 15. R. Wandle | 21. River Pinn |
| 4. Pymmes Brook | 10. River Rom | 16. Ravensbourne R. | 22. River Quaggy |
| 5. Moselle Brook | 11. Ingrenbourne R. | 17. River Cray | 23. River Lea |
| 6. Regents Canal | 12. R. Crane | 18. River Colne | |

- 9.14.2 London's **waterways are multifunctional assets**. They provide transport and recreation corridors; green infrastructure; a series of diverse and important habitats; a unique backdrop for important heritage sites, landscapes, views, cultural and community activities; and drainage, flood and water management functions. As such, they provide environmental, economic and health and wellbeing benefits for Londoners. They are protected and their water-related use - in particular safe and sustainable passenger and freight transport, tourism, cultural, community and recreational activities, as well as biodiversity - is promoted. Many of these functions are also supported by boroughs' local Riverside Strategies, the Environment Agency's Thames River Basin Management Plan and the Port of London Authority's Vision for the Thames.
- 9.14.3 The **Thames and London Waterways Forum**¹³⁸ has been established jointly by the GLA, TfL and the Port of London Authority to address waterways priorities set out in this Plan, the Mayor's Transport Strategy, the London Environment Strategy and the Port of London Authority's Vision for the Thames.
- 9.14.4 The River Thames is a strategically-important and iconic feature of London. Its character changes on its way through London. Where **Thames Policy Areas** (TPAs) are not defined in Development Plans, the boundaries defined in Figure 9.7 apply. Within TPAs, lower-height thresholds for referable planning applications apply (25m compared to 30m elsewhere).
- 9.14.5 Setting **the boundary of TPAs** should be done in consultation with neighbouring authorities, including those across the river. In defining these boundaries, boroughs should have regard to the following:
- proximity to the Thames
 - clear visual links between areas, buildings and the river
 - specific geographical features such as main roads, railway lines and hedges
 - the whole curtilage of properties or sites adjacent to the Thames
 - areas and buildings whose functions relate or link to the Thames
 - areas and buildings that have an historic, archaeological or cultural association with the Thames
 - consistent boundaries with neighbouring authorities.

¹³⁸ The Forum replaces the former London Waterways Commission and the River Concordat Group.

Figure 9.7 - Thames Policy Areas



Thames Policy Areas

- Hampton to Wandsworth
- Wandsworth to Bermondsey
- Bermondsey to Woolwich
- Woolwich to Crayford Ness

Source: Town and Country Planning (Mayor of London) Order, CLG, 2008

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9.14.6 **Joint Thames Strategies** should cover:

- the local character of the river
- water-based passenger and freight transport nodes
- development sites and regeneration opportunities
- opportunities for environmental and urban design improvements
- sites of ecological or archaeological importance
- sites, buildings, structures, landscapes and views of particular sensitivity or importance
- focal points of public activity
- inclusive public access
- strategic cultural value
- recreation and marine infrastructure
- indicative flood risk and water quality.

9.14.7 Thames Strategies should specifically identify and address deficiencies in: water-based passenger, tourism and freight transport; sport, leisure and mooring facilities; marine support infrastructure; and inclusive access and safety provision. Thames Strategies are in place for Hampton–Kew, Kew–Chelsea and East (of Tower Bridge). No joint strategy currently exists for central section of the Thames (Chelsea–Tower Bridge).

9.14.8 The River Thames should not be designated as Metropolitan Open Land, as this may restrict the use of the river for transport infrastructure related uses.

9.14.9 The interface between terrestrial land-side and marine planning is at the centre of on-going coordination and engagement with the Marine Management Organisation (MMO). The **South East Inshore Marine Plan** is currently under development as part of a suite of Marine Spatial Plans¹³⁹. It covers the covers the coastline from Felixstowe to Dover including the tidal Thames. Development Plans and development proposals should take account of these plans.

Policy SI15 Water transport

- A Development proposals should protect and enhance existing passenger transport piers and their capacity. New piers will be supported in line with the Port of London Authority and Transport for London's Pier Strategy. The necessary provision of moorings, waste and sewage facilities for passenger vessels should be provided.
- B Existing boatyard sites should be protected and development proposals to increase their capacity or range of services should be supported. Alternative use of a boatyard site should only be accepted if the facilities of the site are re-provided at a site with equivalent or enhanced facilities. Proposals for a new strategic-scale boatyard site, at an appropriate site within London, will be supported.
- C Development proposals to facilitate an increase in the amount of freight transported by river should be supported.
- D The Mayor will keep the network of safeguarded wharves under regular review. Boroughs should protect existing locations and identify new locations for additional waterborne freight. There may be opportunities to consolidate wharves as part of strategic land use change, in particular, within Opportunity Areas; these will need to ensure that the capacity and operability of the wharves is retained and where possible expanded.
- E Safeguarded wharves should only be used for waterborne freight-handling use, including consolidation centres. The redevelopment of safeguarded wharves for other land uses should only be accepted if the wharf is no longer viable or capable of being made viable for waterborne freight-handling (see viability testing criteria). Temporary uses should only be allowed where they do not preclude the wharf being reused for waterborne freight-handling uses.
- F Development proposals which increase the use of safeguarded wharves for waterborne freight transport, especially on wharves which are currently not handling freight by water, will be supported.
- G Development proposals that include the provision of a water freight use on a safeguarded wharf, with other land uses above or alongside, will need to ensure that the development is designed so that there are no conflicts of use and that the freight-handling capacity of the wharf is not reduced.

- H Development proposals adjacent to or opposite safeguarded wharves should be designed to minimise the potential for conflicts of use and disturbance, in line with the Agent of Change principle.
- I Development proposals close to navigable waterways should maximise water transport for bulk materials during demolition and construction phases.

- 9.15.1 The Mayor will work with relevant partners to **increase the number of people travelling by river** on passenger and tourist services in line with the 20 million by 2035 patronage target outlined in the Port of London Authority (PLA) Thames Vision. This builds on significant passenger trip increases in recent years.
- 9.15.2 The PLA and Transport for London's **Pier Strategy** promotes extending river services to East London and its growth areas to encourage modal shift to the river. This will relieve road congestion and better integrate other forms of transport such as walking and cycling.
- 9.15.3 **Boatyards** are essential for servicing passenger and other vessels. Beyond the existing strategic-scale boatyard at Bay Wharf, Greenwich, research indicates that a further facility with the capability to repair and service large commercial boats is required. This is to avoid operators having to get their vessels serviced and repaired far beyond the Thames Estuary at the East Coast or even in the near continent.
- 9.15.4 Water transport is recognised as one of the most sustainable modes for **freight**, particularly for low-value, non-time-critical bulk movements. Water transport already reduces the number of lorry movements on London's roads and their associated negative impacts on Londoners. Greater use of water transport has the ability to remove further lorries from London's roads. The Mayor will promote positive action to achieve this, including consolidation and the use of compulsory purchase powers where necessary, to bring inactive sites into use or to optimise the use of under-utilised sites. Appropriate access to the highway network and relevant freight-handling infrastructure such as jetties should also be protected.
- 9.15.5 Many of London's river freight **wharves** are located in areas of high demand and high value for other land uses. A network of wharves is protected from redevelopment by Safeguarding Directions. The Mayor will regularly review wharf safeguarding to ensure the changing need for waterborne freight is addressed.

- 9.15.6 The **redevelopment of safeguarded wharves** should only be accepted if a wharf is no longer viable or capable of being made viable for waterborne freight-handling uses. The only exception to this would be for a strategic proposal of essential benefit for London, which cannot be planned for and delivered on any other site in Greater London.
- 9.15.7 Factors to be considered in **assessing the viability of a safeguarded wharf** under part E of this policy include:
- its size, shape, navigational access, road access, rail access (where possible), planning history, environmental impact and surrounding land use context
 - its geographical location, in terms of proximity and connections to existing and potential market areas
 - the existing and potential contribution it can make towards reducing road-based freight movements
 - existing and potential relationships between the wharf and other freight-handling sites or land uses
 - the location and availability of capacity at comparable alternative wharves, having regard to current and projected wharf capacity and market demands.
- 9.15.8 Appropriate **temporary uses on vacant safeguarded wharves** can ensure that investment in those wharves is maintained and negative perceptions are minimised. Temporary uses must maintain the existing freight-handling infrastructure to a specified standard and be limited by a temporary permission with a specific end date. Priority should be given to uses which require a waterside location. Temporary uses should not be permitted where a permanent freight-handling use is available.
- 9.15.9 Many wharves are in Opportunity Areas and/or are increasingly surrounded by different land uses that do not have an industrial or freight purpose. In line with the **Agent of Change principle**, new development next to or opposite wharves should utilise the site layout, building orientation, uses and materials to design out potential conflicts. Proposals for neighbouring development sites must ensure that appropriate highway access to wharves for commercial vehicles is maintained.
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Policy SI16 Waterways – use and enjoyment

- A Development Plans should protect and enhance waterway infrastructure to enable water-dependent uses.
- B Development proposals that increase the provision of water sport centres and associated new infrastructure will be supported if a deficit in provision has been identified locally and if the infrastructure does not negatively impact on navigation.
- C Development proposals for cultural, educational and community facilities and events should be supported and promoted, but should take into consideration the protection and other uses of the waterways.
- D New mooring facilities should be:
 - 1) supported as part of development proposals, but should be off-line from main navigation routes, in basins or docks, unless there are no negative impacts on navigation
 - 2) managed in a way that respects the character of the waterways.
- E Major development schemes adjacent to waterways should consider the provision of new moorings.
- F Existing access points to waterways (including slipways and historic steps) and alongside waterways (including paths) should be protected and enhanced.
- G Development proposals along waterways should explore opportunities for new, extended, improved and inclusive access infrastructure.
- H Development proposals should improve and expand the Thames Path and the towpaths and provide better linkages to the transport network. This will require collaboration with relevant partners including the London boroughs, the PLA and the Canal and River Trust, the Environment Agency and Natural England, as well as landowner, developer and community representatives. These paths will be public and not private spaces.

- 9.16.1 New development should utilise the waterways for transport purposes where possible, but also for active water-based leisure, and for informal waterside recreation or access. In order to make the maximum use of London's waterways a range of supporting infrastructure is required including jetties, moorings, slipways, steps and waterside paths and cycleways (piers, wharves and boatyards are addressed in [Policy SI15 Water transport](#)). **Waterways infrastructure** can directly enable water-based recreation and sports including rowing, canoeing and sailing. New water sports centres may bring such activities together, and development proposals should consider the affordability of these activities for Londoners. Waterways infrastructure can also facilitate the enjoyment of wildlife, landscapes, heritage and culture. There could be particular scope for new infrastructure within specific Opportunity Areas.
- 9.16.2 There has been a significant increase in the number of boats on London's waterways (from 2,000 in 2010 to 5,000 in 2016), with a notable increase in central and eastern parts of London's canal network. There is a **deficit of residential, leisure, visitor and commercial moorings** to meet the increase in demand. The Canal and River Trust is producing a London Mooring Strategy which will provide an overview of the number of people living on boats on the canal network. It will identify zones for potential additional moorings. Some community-based projects to create residential moorings may be considered as community-led housing (part A.4 of [Policy H2 Small sites](#)). In addition, a number of creative businesses such as artists' studios and post-production facilities are located on boats.
- 9.16.3 Historic steps and slipways to the Thames foreshore are vital for enabling access for activities and events. The **Thames Path and the towpaths** are particularly important in terms of providing safe access for a large number of Londoners along the waterways, facilitating their enjoyment of the river as well as providing health and wellbeing benefits. Development proposals provide a significant opportunity to improve and expand the Thames Path and the towpaths, and to develop better linkages to the transport network. This requires prioritisation and collaboration between local, strategic and institutional partners. Borough River Strategies and Thames Strategies should support these opportunities.
- 9.16.4 Complementing development proposals for cultural facilities and events, the Mayor's **Cultural Strategy for the River** aims to increase Londoners' engagement with the river, including an increase in night-time use and engagement with under-used areas. It also provides information on the heritage and importance of the River Thames to London.
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- 9.16.5 London's waterways are often an appropriate setting for public art and performance. People generally like to gather by the waterside and opportunities for this should be encouraged. The waterways are also a valuable **educational resource** with organisations promoting water-based educational programmes. This should also be encouraged.

Policy SI17 Protecting London's waterways

- A Development proposals that facilitate river restoration, including opportunities to open culverts, naturalise river channels, protect the foreshore and increase the heritage and habitats value, should be supported if appropriate. Development proposals to impound and constrain waterways should be refused.
 - B Development proposals should support and improve the protection of the distinct open character and heritage of waterways.
 - C Development proposals into the waterways, including permanently moored vessels and development into the waterways should generally only be supported for water-related uses.
 - D Development proposals along London's canal network, docks, other rivers and water space (such as reservoirs, lakes and ponds) should respect their local character and environment and should contribute to their accessibility and active water-related uses. Development Plans should identify opportunities for increasing local distinctiveness.
 - E On-shore power at water transport facilities should be provided at wharves and residential moorings to help reduce air pollution.
- 9.17.1 London's rivers have been significantly altered from their natural state. **River restoration** seeks to enhance their biodiversity, water quality and amenity value. The London Rivers Action Plan¹⁴⁰, and the Catchment Partnerships¹⁴¹ which support the Thames River Basin Management Plan, identify many opportunities for river restoration, as well as showing examples that have been implemented around London.

¹⁴⁰ <http://www.therrc.co.uk/lrap/lplan.pdf>

¹⁴¹ <https://www.thames21.org.uk/catchment-partnerships-in-london/>

- 9.17.2 Generally, permanently-moored vessels and **development into waterways** should only be permitted for water-related uses. However, uses such as bars and restaurants (for example ancillary to a passenger pier), and improved access to or along waterways and related public realm, can add to the diversity, vibrancy and regeneration of waterways, in particular in basins or docks. The specific siting of such facilities requires careful consideration so that navigation, hydrology, biodiversity and the character and use of waterways are not compromised.
- 9.17.3 **Pollution** from vessels should be minimised in terms of emissions from vessels and related land-side infrastructure. A baseline is being established jointly with key stakeholders including Transport for London and the PLA, along with appropriate measures and investment to minimise impact. This includes the requirement in this policy to provide on-shore power at wharves and moorings.
- 9.17.4 Development proposal should protect and promote the vitality, attractiveness and historical interest of London's **remaining dock areas**.
-