

MAYOR OF LONDON

LONDON INFRASTRUCTURE 2050



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PAYING FOR LONDON'S INFRASTRUCTURE

Infrastructure is a big part of what makes London. But from initial planning through to completion, major projects can take decades, and determining how to pay for them is often one of the biggest challenges.

Two related elements have to be resolved before a project can start. Funding refers to the streams ultimately require to pay for a project in its entirety. Financing refers to the cash needed upfront, including any borrowing that will be repaid from the project's funding.

FUNDING

Working out how to fund an infrastructure project is generally the harder question to answer. Several options exist, but numerous factors often need to be balanced.

TAXATION

Like other parts of the country, London generates tax revenues. But the city only keeps around six percent of its revenue, with the rest passed to central government for redistribution.

Grant funding from central government, or deals that allow more of certain types of tax revenue to be retained for a limited period of time, currently need to be negotiated with government on a project-by-project basis – a process that can take a long time, and add to the uncertainty over a project.

We think that devolving more fiscal powers to London would be a very good thing for the city as it would allow for improved local decision making and prioritisation of future infrastructure. Nevertheless, even allowing for some fiscal devolution, we will continue to analyse the positive impact of London on national taxation, notwithstanding devolution, and ask for a proportionate contribution.

FINANCING

Financing comprises different tools such as debt and equity. Provided that a stable funding stream can be identified, financing has never been easier or more cost-effective due to the appetite among institutional investors to take on long-term investments offering a secure income stream.

EQUITY

For certain projects, the cost of financing a project can be covered by the private sector, or a combination of the public and private sectors. By setting up separate entities to hold specific assets, ownership, together with the costs of building the infrastructure, can be passed on to the private sector.

DEBT

Central government, the Greater London Authority (GLA) and Transport for London (TfL) can all borrow money on the capital markets to pay the upfront cost of a project. With more fiscal powers, the GLA would be able to raise more of this debt itself.

USER PAYMENTS

Familiar to anyone who uses the Tube or pays bills at home, user payments are one of the main ways in which certain types of infrastructure projects can be funded. But with household budgets always tight, the need to keep user payments reasonable is ever present.

THIRD PARTY CONTRIBUTIONS

The contributions which property developers are required to make, sharing some of the benefits of a development with the community, are one form of third party funding. But, while important, there are often limits to the scale at which this option can work. Sponsorship as with the Santander Cycles bike-sharing scheme is another example.

OTHER OPTIONS

If London is not granted more fiscal powers over how its taxes are spent, other forms of funding might need to be explored. Could Londoners be asked to contribute directly to the funding of a project?

In a recent survey* opinions were split on how this could be achieved. But around 60% of Londoners were willing to pay more to have the infrastructure they want.

- I would pay a small amount more in tax to pay for more infrastructure
- In the event of a tax cut by government, I would be willing to give up part of the cut if the money were ring-fenced for infrastructure
- I would pay as I use them (for example a toll on a new road or new bridge, or a higher fare on new public transport)
- I don't think we should undertake any more infrastructure projects if the Government cannot fund it from existing taxes
- Don't know

*July Telephone Poll of Londoners.

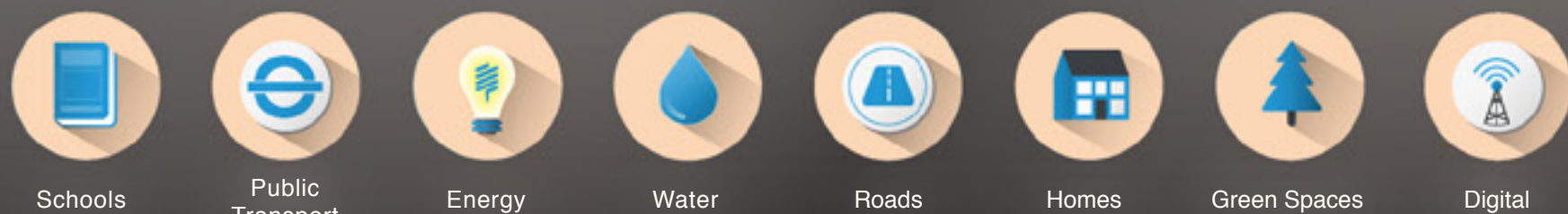
SAVINGS AND EFFICIENCIES

In some areas, investment today can lead to cost savings in the future – such as retrofitting buildings for more energy efficiency. But future savings can be sometimes hard to quantify – and by definition the savings will often not be seen until after initial investment is made.

OTHER CHARGES OR FEES

The congestion charge raises some money for Transport for London – but there are limits to the amount these charges can raise.

What types of infrastructure are we trying to pay for?



HOW WOULD YOU PAY FOR A NEW INFRASTRUCTURE PROJECT, SUCH AS CROSSRAIL 2?

✉ Email us your suggestions to infrastructureplan@london.gov.uk

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INNOVATING TO USE INFRASTRUCTURE IN SMARTER WAYS

Infrastructure is not just about physical assets and facilities, it is also about how such things are used. By thinking creatively, London's infrastructure can be put to use in a way that maximises the benefits it provides whilst keeping costs down.

USING DATA TO GET MORE FROM INFRASTRUCTURE

OPENING UP INFRASTRUCTURE DATA

As with Transport for London data, opening up infrastructure data creates possibilities for the development of apps and tools that could help millions of Londoners every day. **What will be the next Citymapper?**

COORDINATING INFRASTRUCTURE DELIVERY WITH DATA

Data sharing can make the delivery of infrastructure more efficient. Wouldn't it be better if utility companies could coordinate when they needed to dig up roads, or if infrastructure providers could share information on skills gaps they were likely to face? **How can infrastructure providers better share information?**

USING DATA TO BETTER MANAGE INFRASTRUCTURE

Sensors offer the potential to check the condition of infrastructure more cheaply and with less disruption. They could also be used to keep track of the location and quality of infrastructure assets, making it easier to model the impact of new developments.

REIMAGINING REDUNDANT INFRASTRUCTURE

THINKING CREATIVELY ABOUT UNDERUTILISED INFRASTRUCTURE

There will always be times where infrastructure is no longer required, or becomes underutilised. Rather than just assuming that it offers no further benefit, the London of the future will question whether new, creative uses can be made of redundant infrastructure to help meet the other needs of a growing city.

We are looking for ideas from Londoners... **how can redundant infrastructure in your neighbourhood be brought back into service?**



CREATING INFRASTRUCTURE THAT SERVES MORE THAN ONE PURPOSE

SOLVING TWO PROBLEMS AT ONCE

When new infrastructure is being built, wouldn't it make sense to solve two problems at once? Road tunnels that act as floodways during heavy storms, and schools with green roofs that act as both an educational resource and sustainable drainage, are just two such possibilities. Multifunctional infrastructure allows us to use our most precious asset – land – more efficiently.

USING LESS INFRASTRUCTURE BY BEING SMARTER

SPREADING THE LOAD

By encouraging users to travel at different times, peaks and troughs in demand could be balanced and the same amount of infrastructure could be used for more journeys. **Could demand for other types of infrastructure be moderated through this kind of an approach?**

SMARTER GROWTH PATTERNS

Changing the way London develops in the future, by encouraging new employment practices or denser living could allow us to better utilise our infrastructure assets.

HELPING LONDONERS USE LESS

Good access to data can help end-consumers understand their usage, and achieve reductions. In a recent survey, more than 70% of people said they would be likely to use energy, water and transport infrastructure less if they were given better information on their use of these services. Tools to deliver this include smart metering, which is being rolled out in the water sector.



OFFERING NEW SERVICES IN FAMILIAR PLACES

With thousands of people passing through them daily, Tube stations with surplus space can be the ideal place to offer click-and-collect services, reducing the need for people to travel. **How else could existing infrastructure be used for more than one purpose?**

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THE LONDON INFRASTRUCTURE MAPPING APPLICATION

Without a good picture of the infrastructure landscape that exists in the capital, integrated delivery is always going to be a challenge. The London Infrastructure Mapping Application aims to meet this need, by bringing together for the first time information from a range of sources that will support the planning, delivery and coordination of infrastructure across the capital.

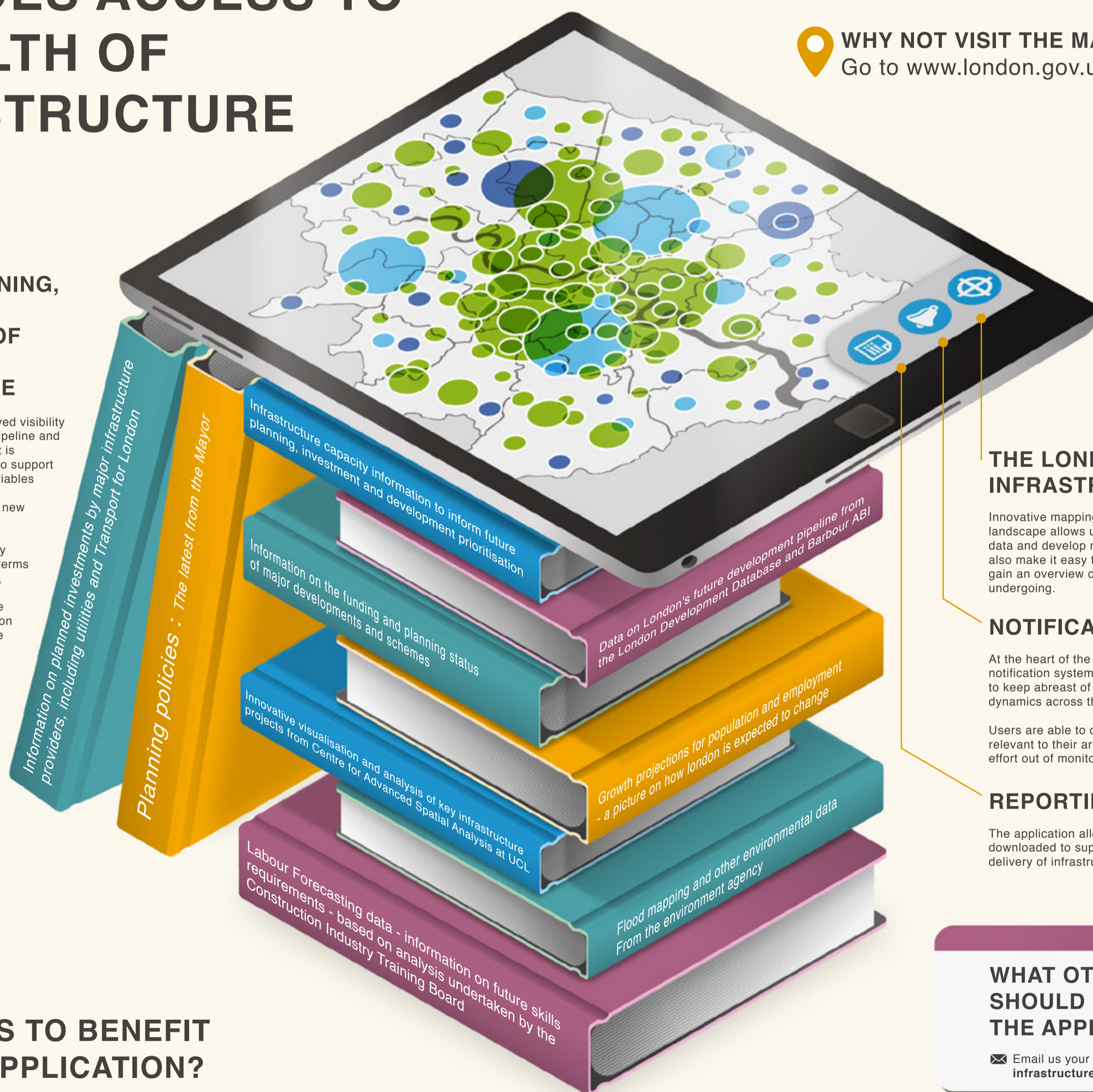
THE APPLICATION PROVIDES ACCESS TO A WEALTH OF INFRASTRUCTURE DATA

SUPPORTING IMPROVED PLANNING, DELIVERY AND COORDINATION OF LONDON'S INFRASTRUCTURE

The application will provide improved visibility of London's future infrastructure pipeline and information on where development is expected to occur across the city to support investment planning, based on variables such as projected population and employment growth and proposed new transport schemes.

By allowing stakeholders to identify where potential overlaps occur in terms of their future schemes and works, users will be able to determine options for delivering infrastructure jointly, reducing costs and disruption to Londoners, and speeding up the delivery of infrastructure throughout the capital.

WHO STANDS TO BENEFIT FROM THE APPLICATION?



WHY NOT VISIT THE MAP?
Go to www.london.gov.uk/infrastructure

THE LONDON INFRASTRUCTURE MAP

Innovative mapping of London's infrastructure landscape allows users to overlay different types of data and develop new insights. Graphs and charts also make it easy to explore an issue in detail, or gain an overview of the changes which London is undergoing.

NOTIFICATIONS

At the heart of the database will be a notification system to enable registered users to keep abreast of changing development dynamics across the city.

Users are able to opt in to receive notifications relevant to their area of interest, taking the effort out of monitoring.

REPORTING FEATURES

The application allows for certain datasets to be downloaded to support improved planning and delivery of infrastructure.

WHAT OTHER DATA SHOULD BE ADDED TO THE APPLICATION?

✉ Email us your suggestions to infrastructureplan@london.gov.uk



UTILITY AND OTHER INFRASTRUCTURE PROVIDERS

By providing a comprehensive evidence base on projected growth and employment, as well information on London's development pipeline, utilities will be better equipped to develop informed business plans that meet the needs of London, and deliver infrastructure in a more joined-up, coordinated way.



DEVELOPERS

Improved insight and certainty of the future infrastructure pipeline will support investment decisions of developers unlocking new sites for development more quickly, and providing opportunities for improved coordination of larger scale developments.



LONDON BOROUGHS

Providing more information on where infrastructure investment is planned helps boroughs formulate cohesive local development plans and approve projects in an informed manner.



TRAINING PROVIDERS AND COLLEGES

Improved visibility of the future development pipeline will ensure that skills providers are more responsive to future industry requirements in terms of training programmes, reducing the potential for skills deficits and improving productivity.



INVESTORS

Highlighting opportunities for investment helps match projects in need of finance to potential backers.

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ATTITUDES TO A GROWING LONDON

As London's population grows, so will the need for housing and other amenities. But where will development go in the future, and how do Londoners feel about it?

THE CHALLENGE:



The number of people who live and work in London is on the rise.



In February 2015, the capital reached its highest population ever – 8.6 million people – and is set to grow to 10 million by 2030.



Such significant growth means that large amounts of development will be needed for the foreseeable future, including in areas such as affordable housing and transport.

SO WHAT DO LONDONERS THINK OF GROWTH, AND WHAT ARE THEIR CONCERNS?

MOST LONDONERS FEEL POSITIVE ABOUT GROWTH*

Close to two thirds of Londoners – 63% – think the growth of the capital is a positive.

- 26% strongly believe growth is positive
- 37% tend to believe growth is positive
- 22% tend to believe growth is negative
- 11% strongly believe growth is negative

There is some variation between groups, however. While a majority in every age group favour growth, among young Londoners those in favour considerably outnumber those not in favour of growth.

LONDONERS HAVE DIFFERENT CONCERNS ABOUT GROWTH

Housing affordability, the availability of health services, and the capacity of public transport top the list of concerns which Londoners have about growth, with other issues such as the availability of green spaces somewhat less of a concern.

- Housing affordability: 67%
- Health services and waiting times: 58%
- Public transport capacity: 44%
- Enough jobs being created: 31%
- Road congestion: 24%
- Pressure on green space: 20%
- The character of London's environment: 11%
- High rise developments: 9%

Most Londoners - around **six in every ten** - think that future development will meet their needs in areas such as education, health and transport, however.



IF DEVELOPMENT IS TO HAPPEN, LONDONERS WANT IT TO BE DONE ON BROWNFIELD SITES*

Asked where new development should go, brownfield sites were the most popular option, chosen by 43% of Londoners.

New satellite towns in the south-east, with good links to London, were the second most popular option, selected by 27% of Londoners.

Developing less well-used parts of the greenbelt surrounding London, and creating extra developments in existing town centres, were the least popular options.

The upcoming review of the London Plan will strategically consider the spatial distribution of London's anticipated growth further.

- 43%: Brownfield sites
- 27%: New satellite towns in the south-east
- 16%: Greenbelt sites
- 10%: Existing town centres

WHAT SHOULD BE THE PRIORITIES FOR THE NEXT LONDON PLAN?

✉ Email us your suggestions to infrastructureplan@london.gov.uk

*Telephone survey run with 1,000 adult Londoners in March 2015. More opinion research will follow. Where results do not sum to 100%, this may be due to multiple responses, computer rounding or the exclusion of don't knows/not stated.

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UNLOCKING HOUSING GROWTH THROUGH TRANSPORT INFRASTRUCTURE

The transportation of people, goods and services around cities is what makes them such successful places. A good transport network can also help ease the pressure on London's housing market – with a positive effect on the city's competitiveness.

BETTER TRANSPORT CONNECTIONS PLAY A VITAL ROLE IN BOOSTING HOUSING DELIVERY



ENCOURAGES DENSER, MORE SUSTAINABLE DEVELOPMENT

By improving access to areas with lower land values, better transport links can make denser development more viable, boosting overall supply and reducing pressure on prices. This is also more sustainable and means less pressure is placed on other infrastructure such as roads.



OPENS UP NEW AREAS TO DEVELOPMENT

Stronger transport links can make a site more attractive to developers, increasing the number of housing units supplied. We often refer to this as "unlocking" sites for development.



MAKES EXISTING AREAS MORE ATTRACTIVE

Helping people get to work more quickly increases the attractiveness of an area for workers, opening it up to new groups of Londoners.



IMPROVES THE ECONOMIC BENEFITS WHICH NEW HOUSING BRINGS

Quicker 'effective distances' between areas of housing and areas of employment increase the impact on labour supply which a new development brings. Lower income workers are particularly sensitive to travel cost and time.

HOW LONDON CAN USE PUBLIC TRANSPORT IMPROVEMENTS TO BOOST HOUSING AVAILABILITY

Develop more publicly owned land around transport nodes.

Encourage densification in areas with good public transport connections.

Provide major new infrastructure such as Crossrail 2 or Bakerloo Line extension.

Tackle specific transport constraints at key sites in brownfield areas and elsewhere.

73%

The percentage of residential developments built since 2000 within 800m of a rail or Tube station.

90%

The percentage of office developments built since 2000 within 500m of a rail or Tube station.

CROSSRAIL 2

If approved, Crossrail 2 will provide a new connection between South and North London, offering the infrastructure needed to support 200,000 new homes and 200,000 new jobs.

A13 TUNNEL

Plans to tunnel a 1.3km stretch of the A13 between Lodge Ave flyover and Goresbrook interchange in East London will act as a catalyst for regeneration.

The scheme is expected to support the development of more than 30,000 new homes, by improving transport links and making the surrounding area more attractive for developers.

GOSPEL OAK TO BARKING OVERGROUND EXTENSION

A proposed extension of this Overground line to the Barking Riverside development would enable the delivery of up to 10,800 new homes, many of them affordable.

The plan would also improve transport connections for the area by creating an interchange at Barking with the existing Fenchurch Street rail line and the District and Hammersmith & City Underground lines.

CROSSRAIL

The impact of Crossrail's arrival in 2018 can already be seen, with more than two fifths of planning applications within a kilometre of a Crossrail station citing the new railway as a justification for the development proceeding – equating to around 53 million square feet of residential, commercial and retail space.

NORTHERN LINE EXTENSION

An extension to the Northern Line at Vauxhall Nine Elms Battersea will provide the infrastructure to support 18,000 new homes and 25,000 new jobs.

HOW CAN WE BETTER CAPTURE THE VALUE GENERATED BY TRANSPORT IMPROVEMENTS?

Email us your suggestions to infrastructureplan@london.gov.uk

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LONDON AND THE CIRCULAR ECONOMY

The Greater London Authority and the London Waste and Recycling Board are taking action to help London accelerate its transition to a circular economy, away from the linear economy that dominates today. A move to a circular economy can both help London reduce its environmental impact as a city, and provide financial opportunities for businesses, Londoners and public organisations.

LONDON PLANS TO BE AT THE FOREFRONT OF INTERNATIONAL EFFORTS TO MOVE TOWARDS A CIRCULAR ECONOMY

In the London Infrastructure Plan 2050 the Mayor of London set out his ambition for the capital to become a world leader in the development of a circular economy.

The London Waste and Recycling Board is currently developing a route map to accelerate London's transition to a more circular economy.

WHAT DOES A CIRCULAR ECONOMY LOOK LIKE?

BUILDINGS ARE DESIGNED WITH FLEXIBILITY, RE-USE AND DISASSEMBLY IN MIND

BUILDINGS AND EQUIPMENT ARE ACCESSED AND USED IN INNOVATIVE WAYS

Companies adopt a peer-to-peer approach, sharing buildings and other assets that are not in use around the clock.

Companies lease more products – accessing them as a service, rather than buying them outright.

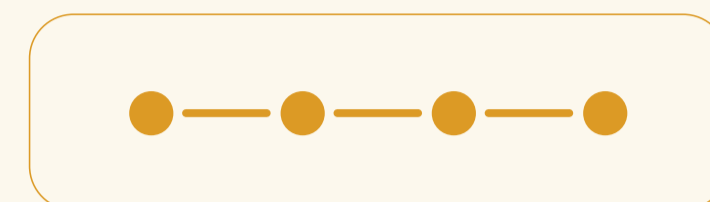
RESOURCES ARE USED EFFICIENTLY AND WASTE IS MINIMISED

Remanufacturing takes over from recycling, with worn out assets returned to service rather than turned into items lower down the value chain.

Companies that produce waste are matched to others that can use that waste as an input to their processes.

HOW CAN WE BETTER ACCELERATE LONDON'S TRANSITION TOWARDS A CIRCULAR ECONOMY?

Email us your suggestions to infrastructureplan@london.gov.uk



THE LINEAR ECONOMY

The economy is primarily linear in form at the moment. In a linear economy, products, components and materials are made and used then disposed of, with little consideration given as to whether or not this makes the best use of resources.



THE CIRCULAR ECONOMY

A circular economy is one that emphasises efficient use of resources, by keeping products, components and materials at their highest utility and value at all times.

THE CIRCULAR ECONOMY IN PRACTICE

Many infrastructure providers in London are already taking action to move towards circular ways of using resources - showing how principles underpinning the circular economy can be incorporated into day-to-day business.

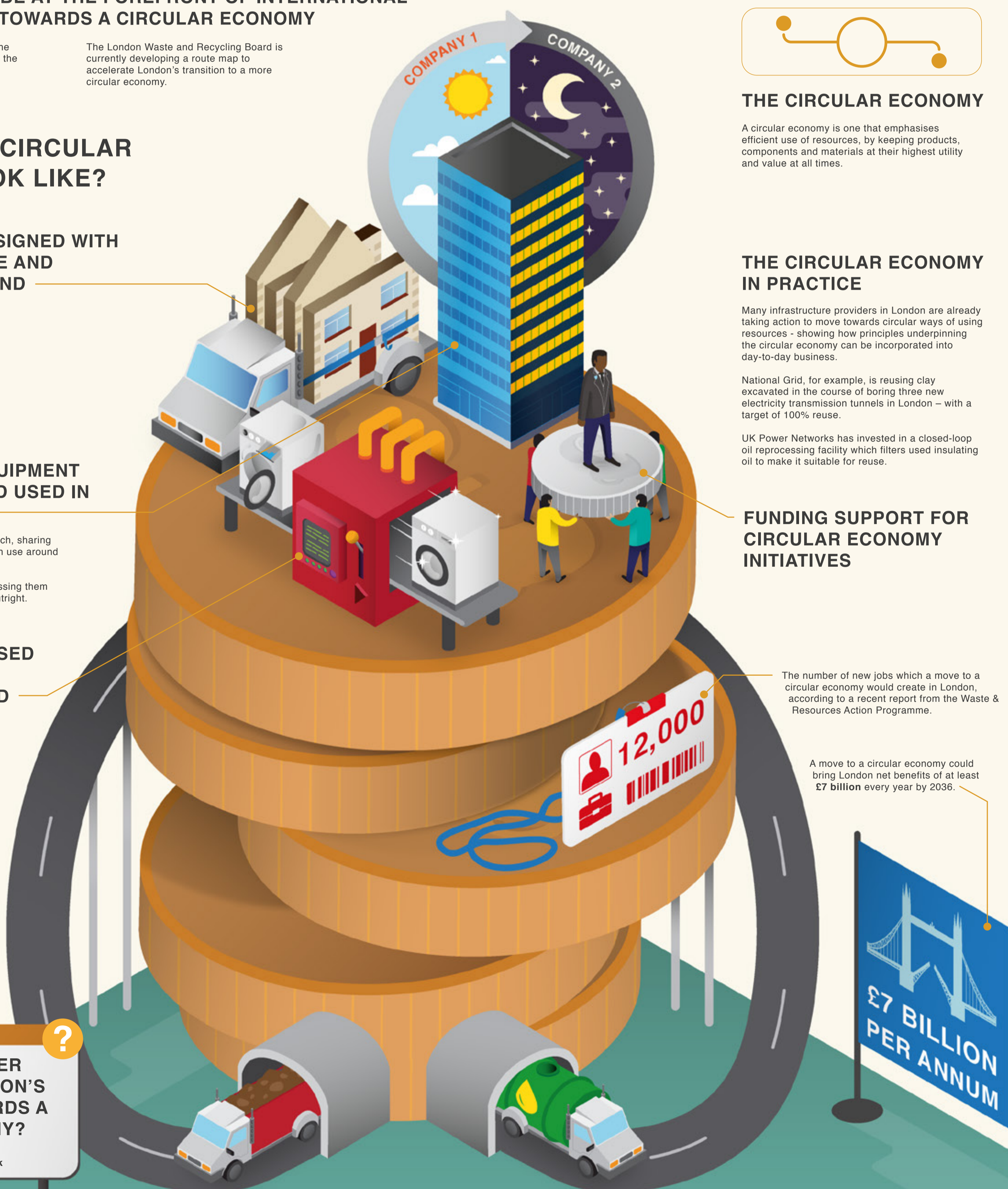
National Grid, for example, is reusing clay excavated in the course of boring three new electricity transmission tunnels in London – with a target of 100% reuse.

UK Power Networks has invested in a closed-loop oil reprocessing facility which filters used insulating oil to make it suitable for reuse.

FUNDING SUPPORT FOR CIRCULAR ECONOMY INITIATIVES

The number of new jobs which a move to a circular economy would create in London, according to a recent report from the Waste & Resources Action Programme.

A move to a circular economy could bring London net benefits of at least **£7 billion** every year by 2036.



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IMPROVING LONDON'S GREEN INFRASTRUCTURE

London is already a green city, but more needs to be done to ensure that green infrastructure supports the capital's economic growth, provides maximum environmental benefit and contributes to the quality of life of all Londoners. By thinking of the trees, green spaces, watercourses and other features that the city has as an asset, we can see green infrastructure as a type of infrastructure in its own right.

WHAT IS GREEN INFRASTRUCTURE?

Green infrastructure is defined as the network of green spaces - and features such as street trees and green roofs - that is planned, designed and managed to deliver a range of economic, social and environmental benefits.

WHY DO WE NEED TO DEVELOP LONDON'S GREEN INFRASTRUCTURE?

Green infrastructure offers several benefits:

IT CAN HELP SHAPE THE CAPITAL'S ECONOMIC GROWTH

The green economy is forecast to undergo major growth in the years to 2050. A focus on green infrastructure can help London share in this growth.

IT CAN HELP CREATE MORE SUSTAINABLE PLACES FOR LONDONERS TO LIVE

Focusing on green infrastructure can help create a greener public realm, with walking and cycling encouraged.

IT CAN HELP ENSURE A GOOD QUALITY OF LIFE FOR ALL LONDONERS, AND BRING HEALTH BENEFITS

A network of green infrastructure means a more attractive environment can be created for all Londoners, with improved air quality.

IT CAN HELP TACKLE CLIMATE CHANGE, AND MITIGATE ITS IMPACT

Sustainable drainage systems, incorporating areas planted with shrubs and trees to soak up excess rainfall, can help prevent flash flooding and the run-off of pollutants into watercourses.

GIVEN IT IS SO VALUABLE, WHY DON'T WE INVEST MORE IN GREEN INFRASTRUCTURE?

While offering numerous benefits, at the minute there are several reasons why green infrastructure is not invested in more:

It is difficult to **monetise** the benefits of green infrastructure. Traditional business case methods are not particularly good at quantifying benefits that cannot be measured in monetary terms, making it hard to establish funding mechanisms.

The **delivery** of green infrastructure is the responsibility of multiple organisations. New approaches to governance, co-ordination and funding are needed.

There is poor **awareness** of the benefits. Too often, green infrastructure is a valuable form of urban infrastructure hidden in plain sight.



CASE STUDY

Green infrastructure as part of the Woodberry Downs redevelopment

Woodberry Downs is an estate regeneration project in Hackney that incorporates a number of green infrastructure features.

When finished, 1,980 homes will have been replaced by 5,500 new ones, with 30% more public open space created in the process.

The rebuilt estate will contain a number of green infrastructure features, including sustainable drainage and green roofs, together with better links with nearby reservoirs and green spaces.

HOW CAN WE IMPROVE LONDON'S GREEN INFRASTRUCTURE?

Develop accounting frameworks that highlight the economic value of green infrastructure.

Ensure that all new development includes green infrastructure such as rain gardens, green roofs or additional trees.

Transform more streets into greener public realms where walking, cycling and play will have priority.

Remove more of London's hidden rivers from pipes and concrete channels to improve flood management and water quality, and create habitats for wildlife.

HOW CAN WE BETTER FUND IMPROVEMENTS TO LONDON'S GREEN INFRASTRUCTURE?

Email us your suggestions to infrastructureplan@london.gov.uk

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THE CHALLENGE PRESENTED BY WATER

Water is a vital resource for any city, and frequently one that is taken for granted. As London's population grows, greater stress will be put on both the city's supply of water and on its wastewater system – requiring creative new approaches, along with new infrastructure. The quality of London's watercourses, and the risk of flooding, meanwhile, also need to be managed.

WHAT ACTIONS ARE UNDERWAY?

London's four water companies are working to ensure we use water wisely, e.g. reducing leakage from water mains, installing 900,000 smart water meters and improving the water efficiency of homes and businesses.

Thames Water, the Greater London Authority and the Environment Agency are looking at the long-term water supply options for London, and are assessing their resilience to challenges such as population growth, climate change and energy prices.

Thames Water and Affinity Water are mapping the capacity of their water mains and are identifying areas where investment is required to improve the water supply capacity to support growth.

The Mayor is working with Ofwat and HM Treasury to ensure that water infrastructure in complex sites can be planned and funded.

The Mayor, Environment Agency and London Boroughs have identified the flood risk hotspots in the capital.

Thames Water has modelled the capacity of its sewer system to manage future challenges, and identified areas where flooding from the sewers is likely to become unacceptable in the future.

The Mayor, Thames Water, Environment Agency and London Councils have published a draft 'London Sustainable Drainage Action Plan' to create a step change in how rainwater is managed.

The Thames Regional Flood and Coastal Committee, the Environment Agency and the Mayor are developing a 25-year flood risk management and investment plan.

Thames Water is working with property owners to reduce the number of misconnections.

The Thames Tideway Tunnel is being built to prevent 39m tonnes of diluted but untreated sewage being released into the Thames every year.

HOW INNOVATION CAN HELP IN ALL AREAS OF WATER MANAGEMENT

Using the water we have more wisely will help improve water security during droughts. It can also postpone investment in major new water infrastructure, and reduce the amount of energy used in treating and pumping water, helping to keep water bills lower.

Capturing and using some of 690 millimetres of rain that falls on London every year for non-potable uses (e.g. flushing toilets) will reduce the demand for treated water and help reduce the strain on the drainage system.

Creating a system of green infrastructure to capture and delay rainwater rather than letting it run straight into drains will help to clean water before it gets to the rivers, aiding efforts to improve water quality.

LONDON'S INTERRELATED WATER CHALLENGES

WATER SECURITY

Our growing population will mean the demand for water in the city will increase. Climate change is expected to create drier summers, so there will be less water when we need it. In addition, many of our key development sites do not have sufficient water mains capacity – we therefore need to secure more water and invest in more pipes to get it to people and businesses.



WATER QUALITY

London's bodies of water provide high-value locations for development, amenity and transport, but not one of the capital's 47 waterways or bodies of water are at a 'good' standard as defined by the EU Water Framework Directive.

FLOOD RISK

London is at risk of flooding from the sea, its rivers, heavy rainfall and from sewers and groundwater. While reasonably well-protected from flooding from the sea, other flood sources pose a greater risk. This risk increases as our system of flood defences ages, our climate changes and we develop in areas that are more vulnerable to flooding.

1/3

Over 600 million litres of water a day, nearly a 1/3 of all water put into supply – is lost in leakage.

16%

The percentage of London built on the former flood plains of the capital's river.

1 IN 20

An estimated 1 in 20 properties have a misconnection, where untreated sewage flows into a drain rather than a sewer, and then into a river. In some areas this is as high as 1 in 4.



WHAT OTHER INNOVATIONS WOULD HELP LONDON BETTER MANAGE IT'S WATER?

✉ Email us your suggestions to infrastructureplan@london.gov.uk

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LONDON'S ENERGY INFRASTRUCTURE

The supply of energy to homes and businesses is crucial to the functioning of our city, daily activities and economy.

Population and economic growth in London is likely to lead to an increase in energy demand. This will mean more pressure on the supply of energy to the capital. Depending on the scale of additional supply required, this investment could be significant.

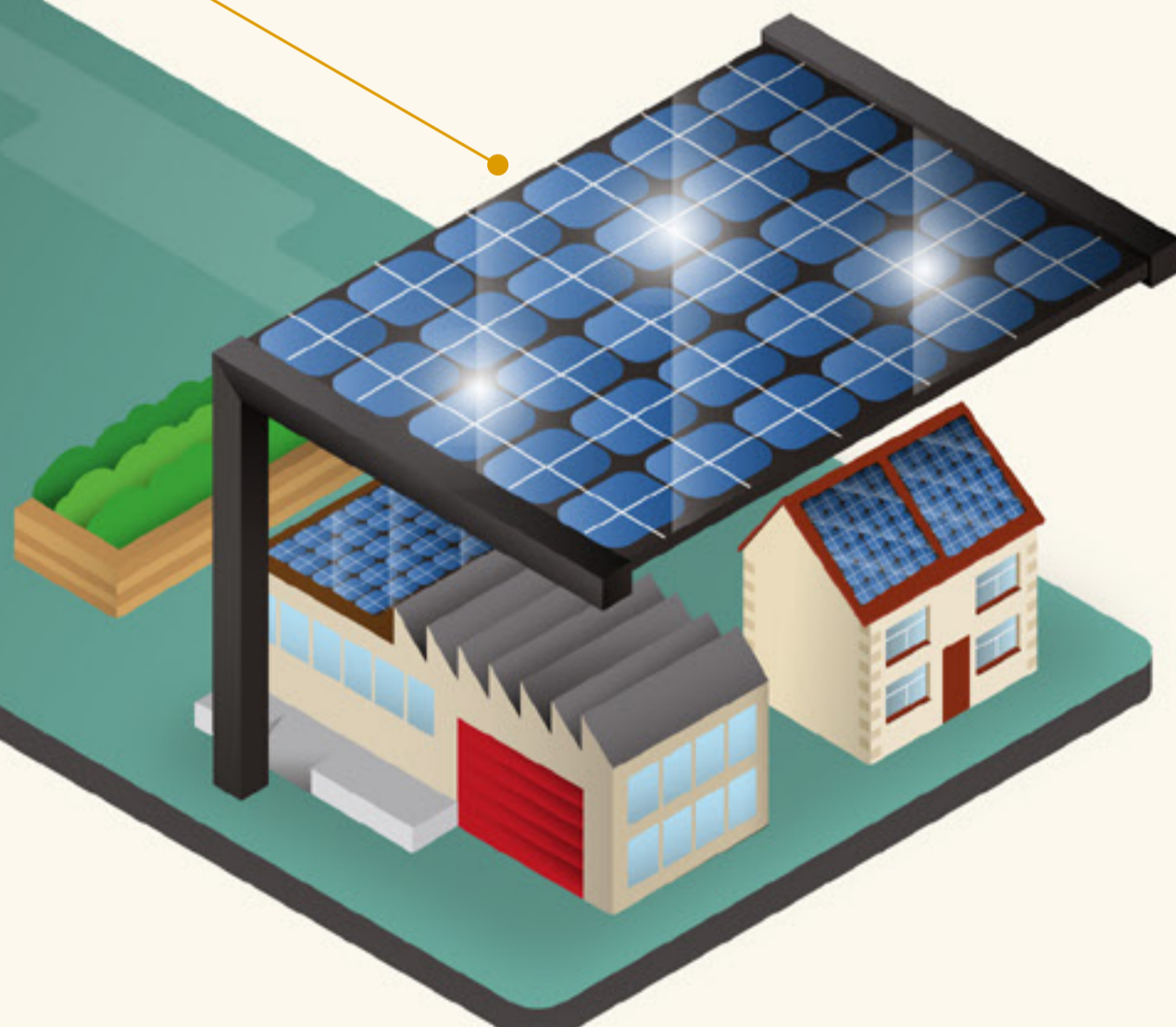
In order to minimise the scale of investment, and also ensure security of supply and reduce carbon emissions we need to:

RETROFIT HOMES, WORKPLACES AND PUBLIC BUILDINGS TO REDUCE ENERGY USE

London has some of the oldest and most energy inefficient building stock in Europe and it is expected that 80% of these buildings will still be standing in 2050. There is a need to retrofit this building stock through insulation to reduce levels of energy consumption.

Over 113,000 homes and 450 public sector buildings have been retrofitted as part of a Greater London Authority programme, reducing emissions and saving Londoners money in the process, with more projects in the pipeline.

Smart technologies can be used to better manage the flow and use of existing energy supply, reducing the need for further investment.



ENSURE SECURITY OF SUPPLY

One way in ensuring London has the energy it needs is by generating energy locally.

Becoming more self-reliant for energy involves action on local energy generation, heat storage and electricity demand-side management. To ensure that the costs of London's energy infrastructure are minimised, an approach that utilises local, flexible and resilient energy supplies will be required.

25% The proportion of energy supplied by local sources which the capital is aiming to hit by 2025.

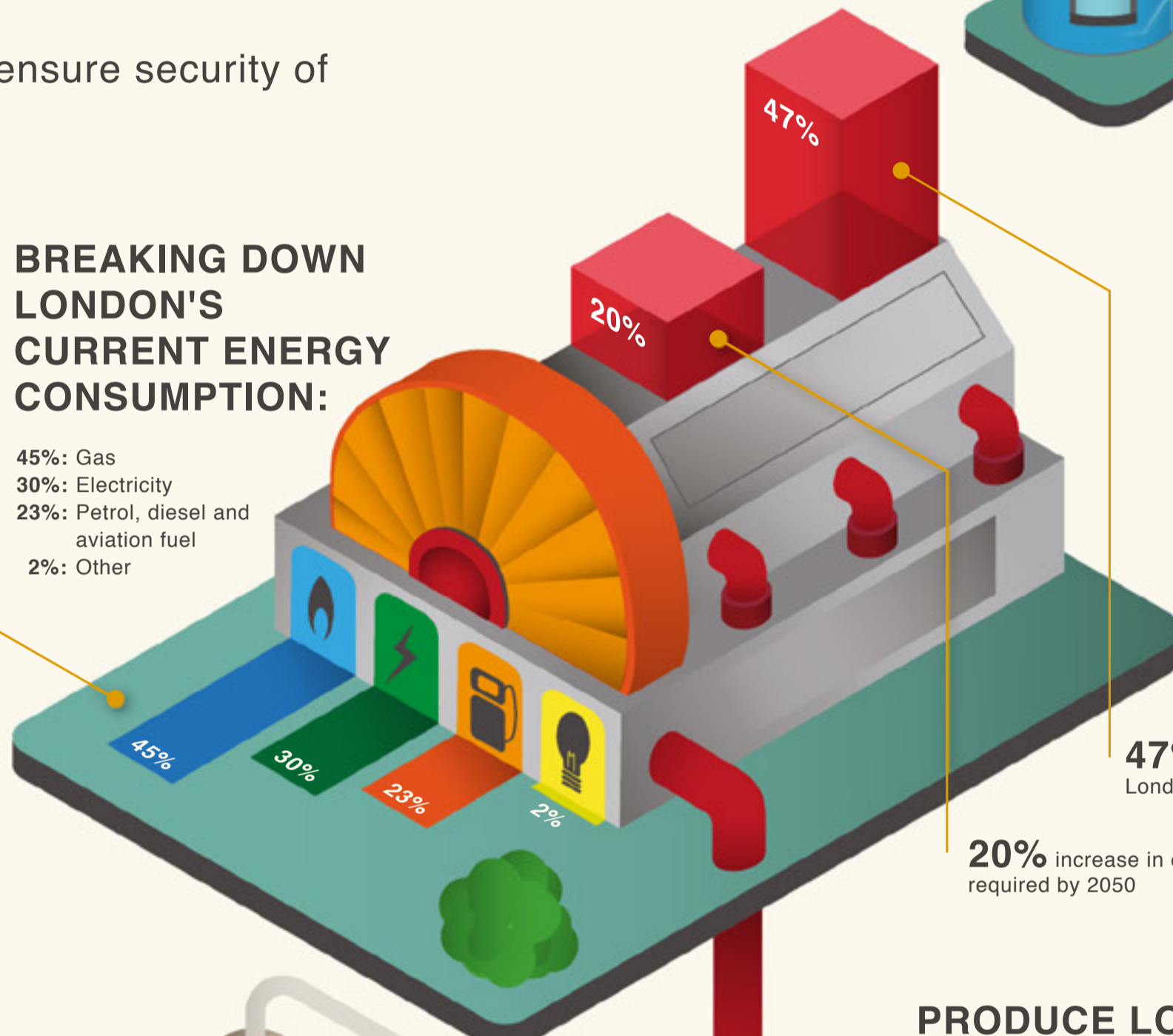
In 2013, London also became the first authority in the country to apply for a 'Licence Lite' junior electricity licence from Ofgem, an important step in helping open up the electricity market to smaller suppliers.

MOVING TOWARDS LOCAL ENERGY GENERATION HAS POTENTIAL TO RESULT IN OTHER ECONOMIC AND ENVIRONMENTAL BENEFITS



BREAKING DOWN LONDON'S CURRENT ENERGY CONSUMPTION:

45%: Gas
30%: Electricity
23%: Petrol, diesel and aviation fuel
2%: Other



LONDON'S ELECTRICITY USAGE IN 2015

60%: Non-domestic
35%: Domestic
5%: Transport

As more of London's transport becomes electrically powered and our homes become electrically heated it is likely that in the future a larger share of electricity will be consumed by the domestic and transport sectors.

47% of energy consumed in London is for space or water heating

20% increase in energy supply required by 2050

PRODUCE LOW CARBON ENERGY

Energy supply in the future will need to be met through cleaner sources, in order to meet EU obligations and also ensure environmental sustainability.

London is committed to world-leading targets for the decarbonisation of its economy.

60% The reduction in carbon dioxide (CO₂) emissions which London is committed to by 2025, against a 1990 baseline.

London has already successfully decoupled CO₂ emissions from economic and population growth, with emissions going down while economic output and population have grown.

28% The per capita decrease in emissions achieved between 1990 and 2013. **18%** The increase in London's gross value added output over the same period.

82,000 m² of solar photovoltaic panels, a combined heat and power plant able to produce more than 20MW of electricity and a similar amount of heat, are planned for London.

HOW CAN WE ENSURE THAT LOW COST, SECURE, LOW CARBON ENERGY SUPPLY FOR LONDON IS ACHIEVED?

✉ Email us your suggestions to infrastructureplan@london.gov.uk

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DEVELOPING DIGITAL CONNECTIVITY

An internet connection is now considered the fourth utility, with new services moving online and companies increasingly reliant on the web for business. In order to remain the world's most competitive city, and an attractive place to live, we all need to work to ensure the availability of affordable high-speed internet for every resident and business.

WHAT IS SUPERFAST BROADBAND?

Superfast broadband is defined by Ofcom as connections capable of download speeds of 30Mbps or more.

Broadband connections have traditionally been delivered via copper telephone networks. This technology can usually offer speeds of up to 16Mbps but this is affected by the number of users sharing a connection and distance from the nearest exchange.

Superfast speeds of 30Mbps or more are typically delivered via fibre connections – where copper cable infrastructure between the local exchange and the street cabinet is replaced by fibre optic cable. Over recent years, fibre connectivity coverage has been increased.

AT HOME AND AT WORK, PEOPLE ARE USING DATA-HEAVY SERVICES

Consider a scenario where four people are trying to carry out the following activities simultaneously:

3Mbps

The connection speed required to watch a HD programme on the BBC iPlayer

3Mbps

The connection speed needed for online gaming

8Mbps

The connection speed required to take part in a group video call, on Skype for example

5Mbps

The connection speed required to watch a HD film on Netflix

16Mbps

The typical maximum speed that traditional broadband can offer.

30Mbps

The minimum speed of a 'superfast' broadband connection.

BETTER CONNECTIVITY CAN OFFER SEVERAL ADVANTAGES TO BUSINESSES:

- Higher efficiency and productivity
- Less downtime
- Access to cloud computing services and high quality video conferencing
- Opportunities to grow and access new markets
- Future-proofing, to allow businesses to prepare for challenges of the future

Business connectivity needs are often met by dedicated 'leased line' connections that offer symmetric upload and download speeds and high reliability – but these can be prohibitively expensive for smaller businesses.

TWO MAIN CHALLENGES NEED TO BE OVERCOME:



SOME AREAS OF LONDON HAVE POOR CONNECTIVITY

There are an estimated **6,500** properties in areas with no or very poor access to digital connectivity, where connections run at 2Mbps or less.

These areas remain poorly connected a result of a combination of factors; including structural barriers such as legacy infrastructure, and the lack of a commercial business case to provide services in less densely populated areas. There is also a lack of awareness of the alternatives to fibre as a means to deliver superfast connectivity. Wireless technologies, for instance, can deliver superfast speeds.

The government recently announced the introduction of a universal service obligation that gives users to legal right to connections capable of 10Mbps or more by 2020.



TAKE-UP OF SUPERFAST BROADBAND IS CURRENTLY LOW

At present, only **1 IN 4** connections in London are superfast fibre broadband connections. The poor take up is due to both a lack of awareness of the benefits of faster connectivity, and the fact that not everyone needs a superfast connection at present. Higher cost is also a factor. However, this is expected to change.

Research indicates that moving from basic broadband to superfast broadband could boost London's economy by around **£4BN BY 2024**.

ENSURING THAT LONDONERS HAVE ACCESS TO FAST, AFFORDABLE CONNECTIVITY



Demand for superfast services is being stimulated, including through a digital skills programme.



A Building Connectivity Rating Scheme has been established for London.



Public Sector property that can host wireless infrastructure can be identified.



High-speed connections, and areas with no or very poor access to digital connectivity are being mapped, with users being able to report poor connectivity.

WHAT OTHER TOOLS COULD LONDON EMPLOY TO ENSURE THE CITY HAS ACCESS TO HIGH SPEED CONNECTIVITY?



Email us your suggestions to infrastructureplan@london.gov.uk

MAYOR OF LONDON



GREATER LONDON AUTHORITY
The Queens Walk
London SE1 2AA
020 7983 4000

www.london.gov.uk/infrastructure
infrastructureplan@london.gov.uk

Designed by **Infogr8**