

LONDON 2050 BIGGER AND BETTER



3 SECTION 1
6 JANUARY 2015

6 SECTION 2
LONDON IS A WORLD-CLASS CITY

9 SECTION 3
**BY 2050 OUR POPULATION WILL EXCEED
11 MILLION PEOPLE**

11 SECTION 4
**THE GREATEST CITY ON EARTH TO 2050
AND BEYOND**

19 SECTION 5
**THE BENEFITS OF INVESTING
IN INFRASTRUCTURE**

22 SECTION 6
**OUR WORK FOCUSES ON THE FOUR MAIN
CHALLENGES**

24 SECTION 7
**CHALLENGE 1
WHAT INFRASTRUCTURE WILL WE NEED?**

33 SECTION 8
**CHALLENGE 2
WHERE WILL IT GO?**

38 SECTION 9
**CHALLENGE 3
HOW WILL WE DELIVER IT?**

40 SECTION 10
**CHALLENGE 4
HOW WILL WE PAY FOR IT?**

43 SECTION 11
NEXT STEPS

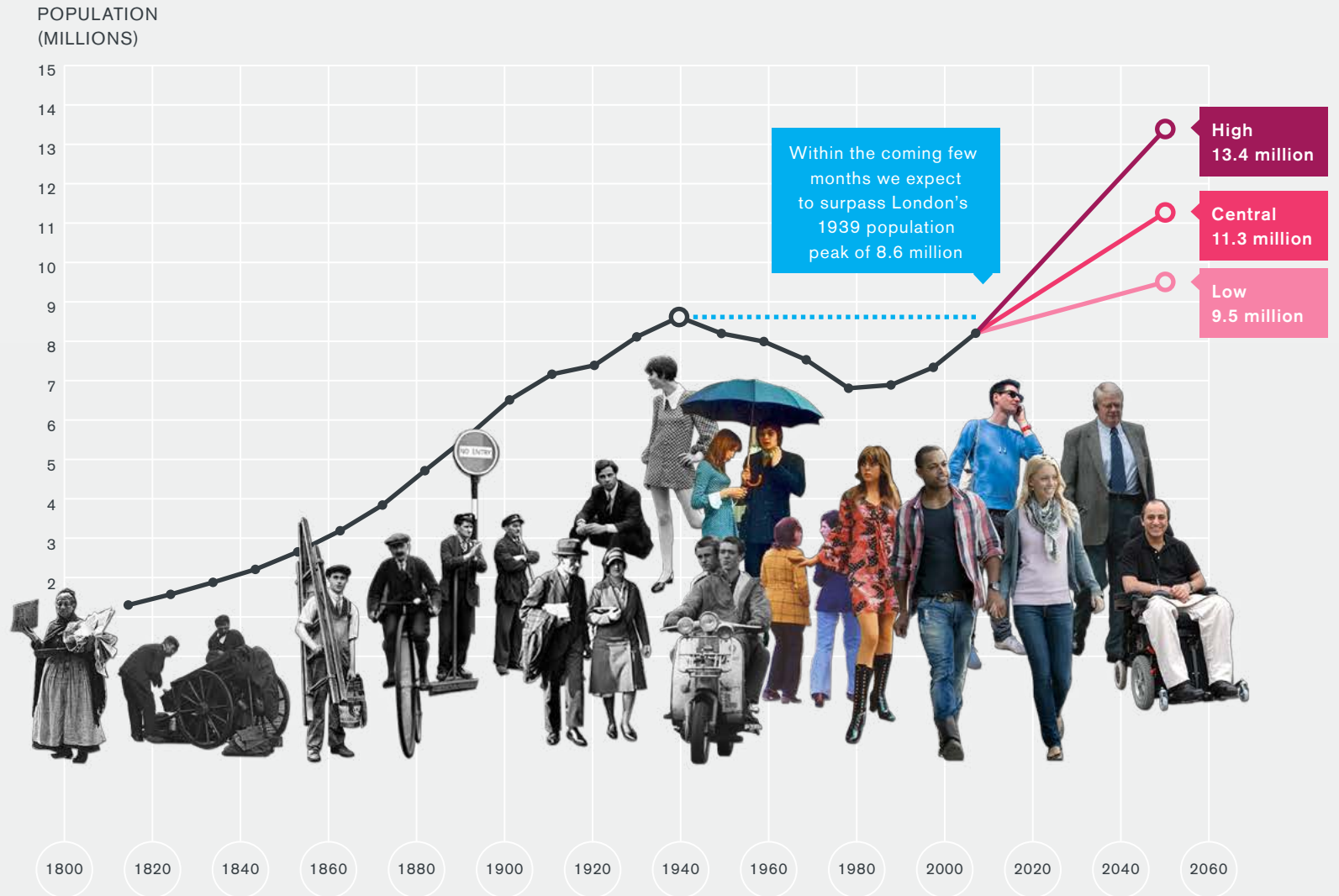


6 JANUARY 2015



According to projections, Tuesday 6 January next year is when London's population will start to be bigger than ever.

We will reach... and exceed... a population of 8.6 million people, the same as the last peak in 1939.



Projections show growth to 11.3 million inhabitants by 2050

An overall increase of 37% from 2011 to 2050

Source: GLA Intelligence Unit

And as we go on getting bigger, we need to plan for a better future too... and that includes creating new infrastructure.



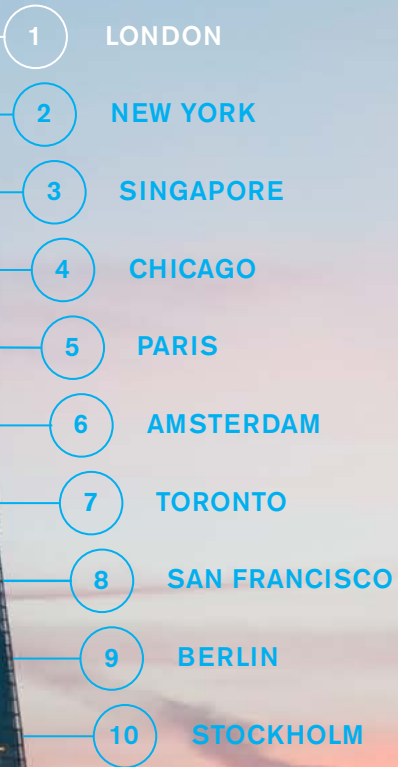
LONDON IS A WORLD-CLASS CITY



It's no wonder people want to be here.

London tops the competitiveness league tables. With our mix of businesses, institutions, universities and general high quality of life, we are a magnet for talent, investment and visitors.

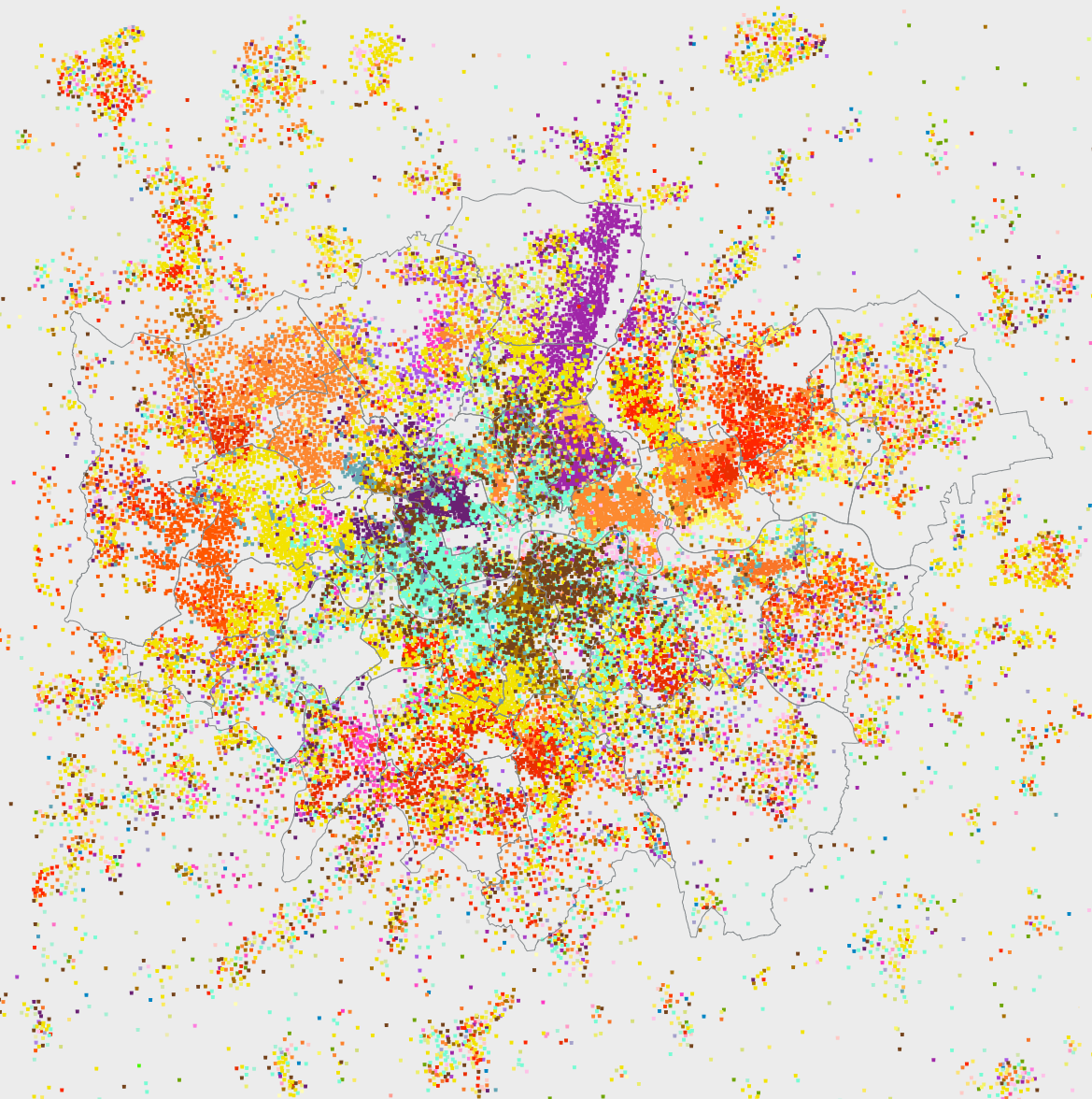
CITY COMPETITIVENESS RANKINGS



Source: Site Selection magazine
and IBM Global Business
Services 2013

Contributing to our great strength is our long history of welcoming talent from around the world and the fact that we embrace our diversity.

MOST COMMONLY SPOKEN LANGUAGES (EXCLUDING ENGLISH)



- | | | |
|-----------------------------------|-----------------------------------|----------------------|
| ● French | ● Gaelic(Scottish) | ● Thai |
| ● German | ● Gipsy/Traveller | ● Vietnamese |
| ● Portuguese | ● Manx Gaelic | ● Other East Asian |
| ● Spanish | ● Scots | |
| ● Polish | ● Welsh/Cymraeg (In England only) | ● Bengali |
| ● Russian | | ● Gujarati |
| ● Albanian | | ● Hindi |
| ● Bulgarian | ● Arabic | ● Malayalam |
| ● Czech | ● Turkish | ● Marathi |
| ● Danish | ● Hebrew | ● Nepalese |
| ● Dutch | ● Kurdish | ● Pakistani Pahari |
| ● Estonian | ● Pashto | ● Panjabi |
| ● Finnish | ● Persian/Farsi | ● Sinhala |
| ● Greek | ● Other West/Central Asian | ● Tamil |
| ● Hungarian | | ● Telugu |
| ● Italian | ● Afrikaans | ● Urdu |
| ● Latvian | ● Akan | ● Other South Asian |
| ● Lithuanian | ● Amharic | |
| ● Maltese | ● Other Nigerian | ● Carribean Creole |
| ● Romanian | ● Igbo | ● Any American |
| ● Slovak | ● Krio | ● Oceanic/Australian |
| ● Slovenian | ● Lingala | ● Other |
| ● Swedish | ● Luganda | |
| ● Serbian, Croatian or Bosnian | ● Shona | |
| ● Ukrainian | ● Somali | |
| ● Other Eastern European (Non EU) | ● Swahili/Kiswahili | |
| ● Northern European (Non EU) | ● Tigrinya | |
| ● Other European (Non-National) | ● Other West African | |
| ● Other European (EU) | ● Yoruba | |
| | ● Other African | |
| ● Cornish | | |
| ● Gaelic (Irish) | ● Cantonese Chinese | |
| ● Gaelic | ● Mandarin Chinese | |
| (Not otherwise specified) | ● All other Chinese | |
| | ● Japanese | |
| | ● Korean | |
| | ● Malay | |
| | ● Tagalog/Filipino | |

Data is analysed and represented at Output Area level using 2011 Census data.

Produced by Guy Lansley, Department of Geography, UCL.

2011 Census, Office for National Statistics
© Crown copyright 2013

BY 2050 OUR POPULATION WILL EXCEED 11 MILLION PEOPLE

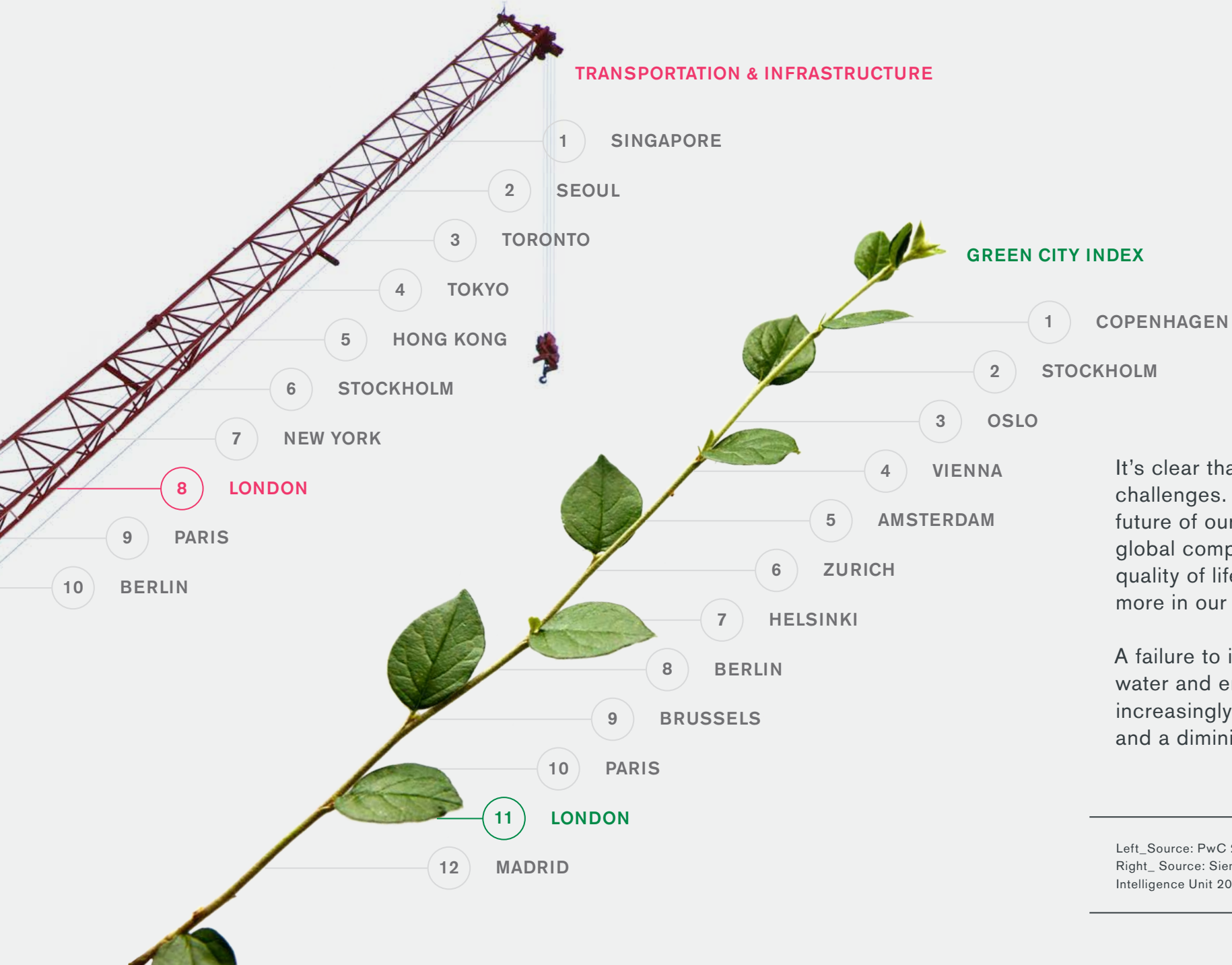


London has already seen considerable investment in its infrastructure this century.



THE GREATEST CITY ON EARTH TO 2050 AND BEYOND





It's clear that we face challenges. To secure the future of our excellent economy, global competitiveness and quality of life, we need to invest more in our infrastructure.

A failure to invest would mean water and energy shortages, increasingly crowded transport, and a diminished quality of life.

Left_ Source: PwC 2012
Right_ Source: Siemens and the Economist Intelligence Unit 2012

Broadband

London's broadband networks offer inconsistent levels of service.

14% of properties do not have access to broadband

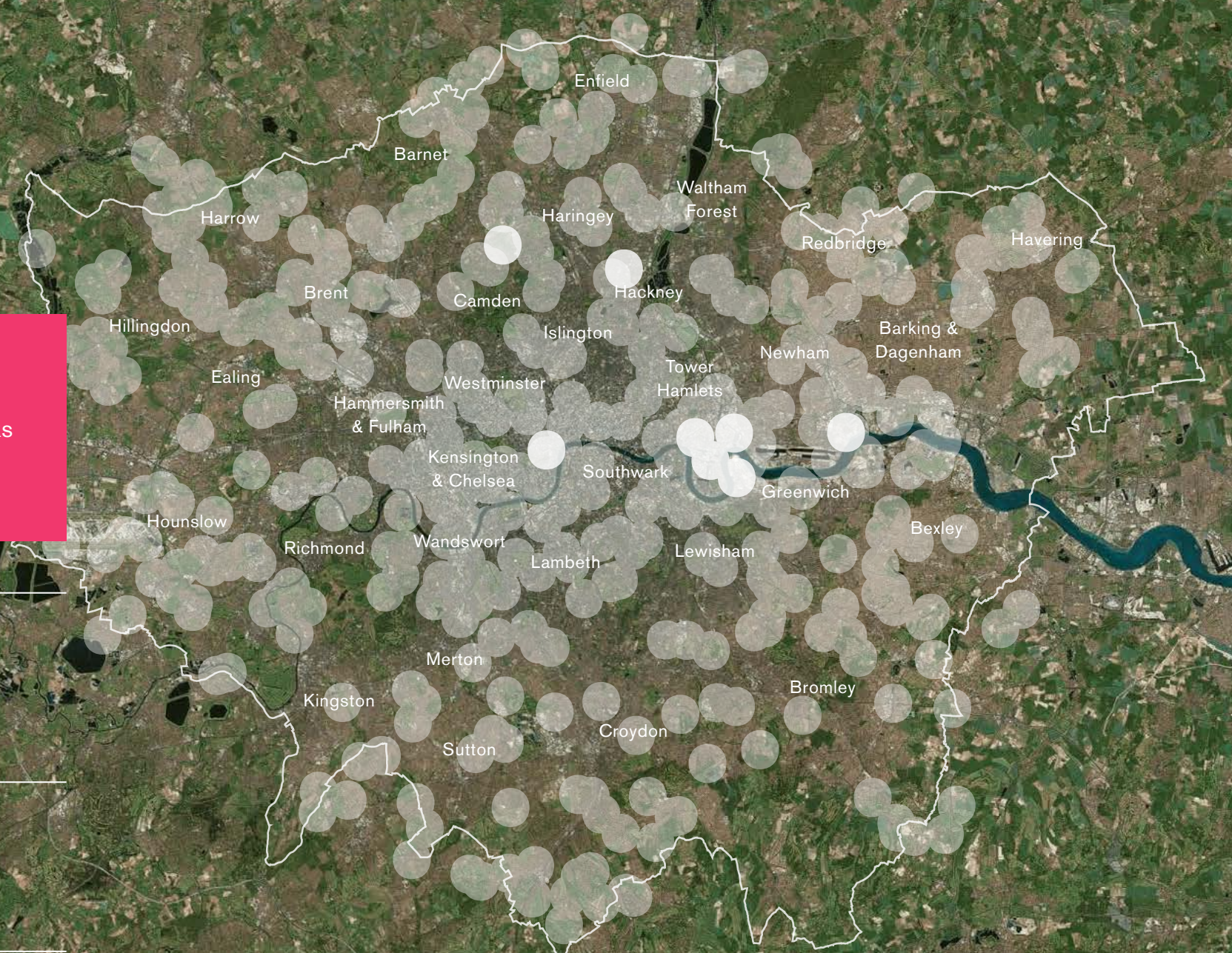
○ Less than 2 Mbps

○ No connection

Source: broadband-notspot.org.uk
(self-reported distribution of slow broadband connections)

© 2014 Microsoft Corporation
Earthstar Geographics SIO

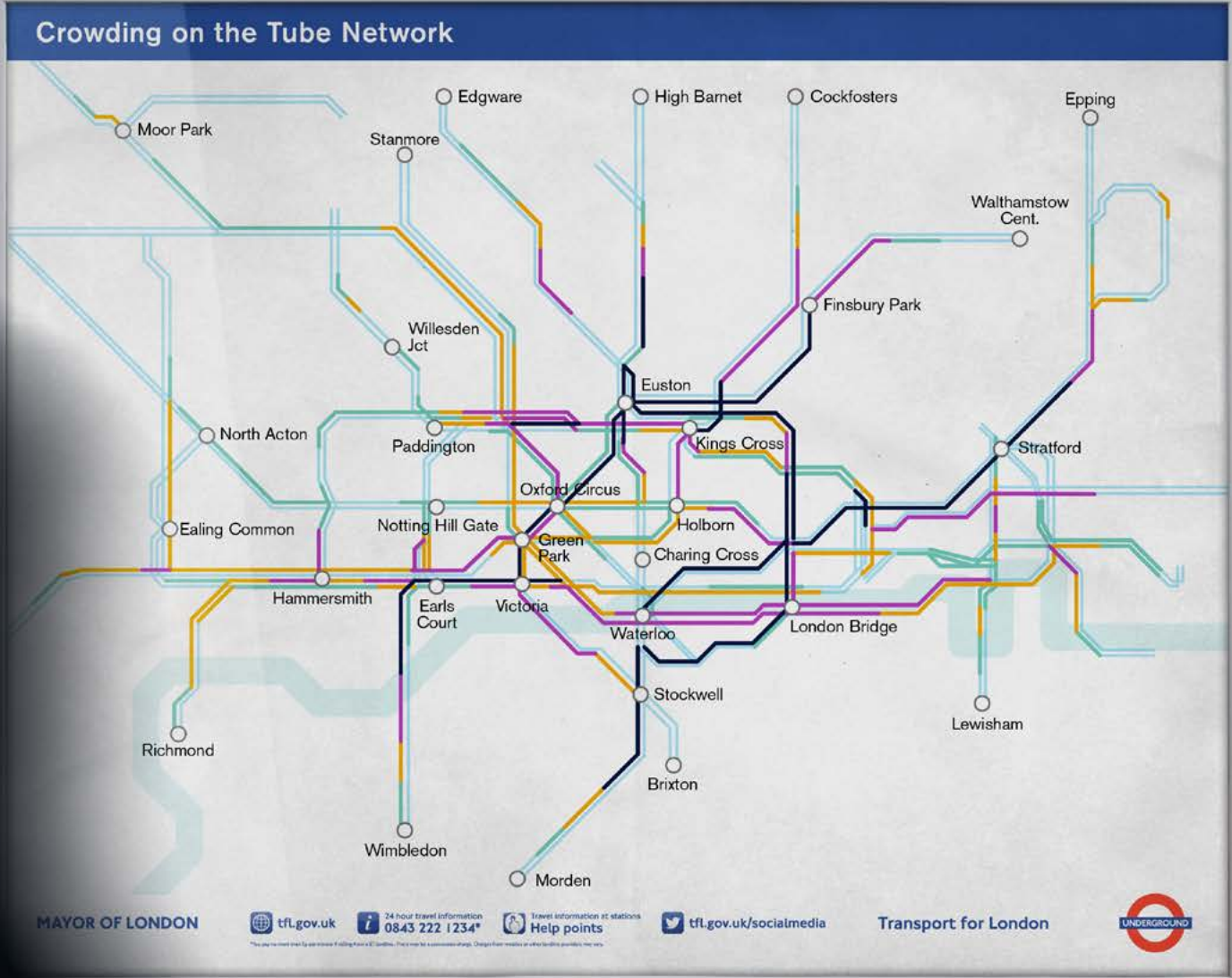
© Nokia



Housing

Like many cities, we are finding it a challenge to keep up with the ever-increasing housing demand.

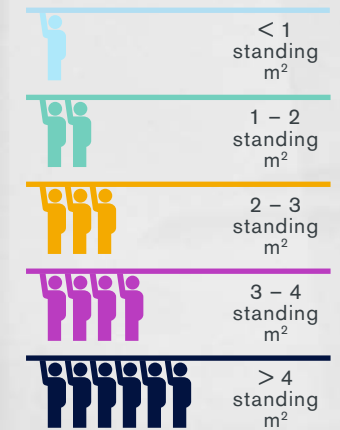


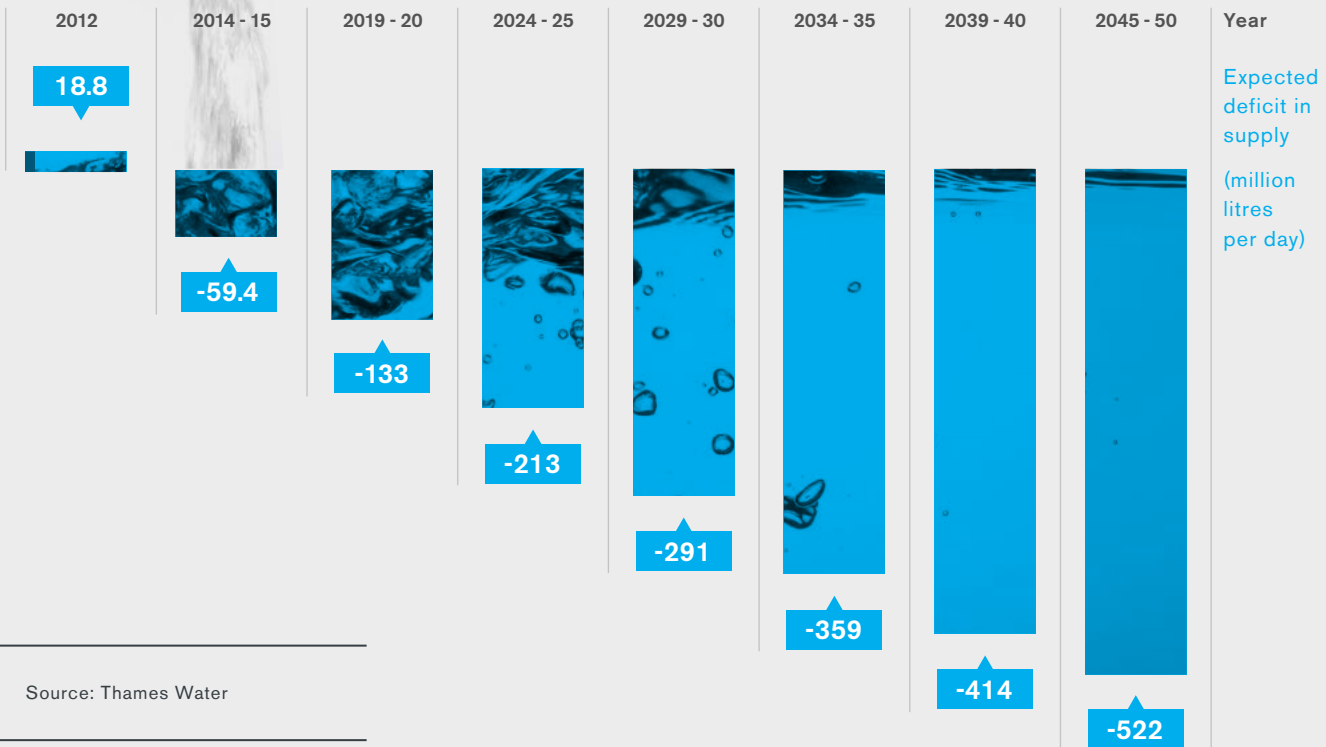


Transport

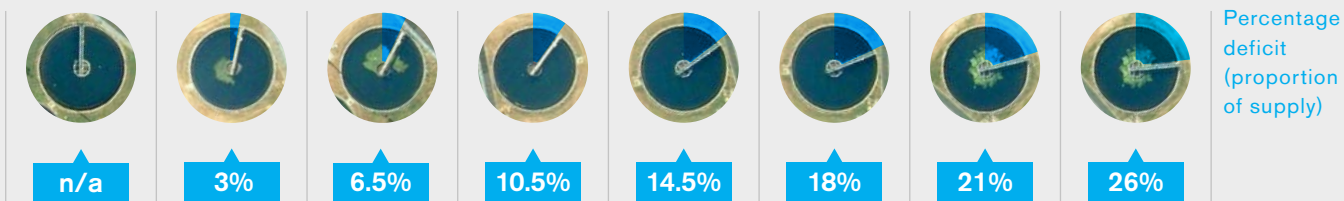
Despite investment, forecasts show that the public transport network will become increasingly crowded and that more spending will be needed.

Our competitors are getting ahead in airport capacity.





Source: Thames Water



Water supply

The demand for water will increase as our population grows, but, at the same time, our water supply is expected to decrease as our climate changes. And to improve our rivers, we will extract less water.

Without action, this will create a potential deficit of over half a billion litres a day by 2050.



Flood defence

About 16 per cent of London is built on the protected flood plains of our rivers.

Within this area lies an even greater proportion of our critical infrastructure. Flood risk will increase as our climate changes, flood defences age and as we build more on the floodplains.

To improve and maintain a high standard of flood protection, we need to invest in the next generation of flood defences.

SURFACE WATER FLOODING 2014 ASSESSMENT
(assesses flooding scenarios as a result of rainfall in any given year)

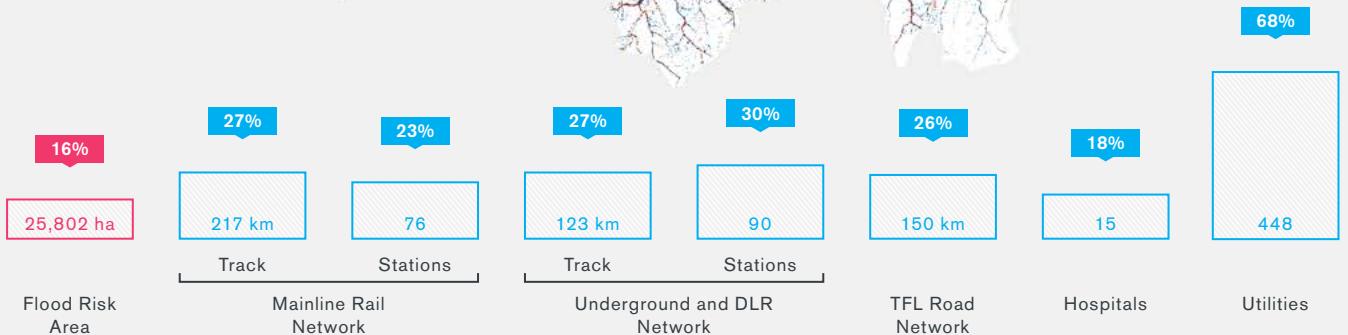
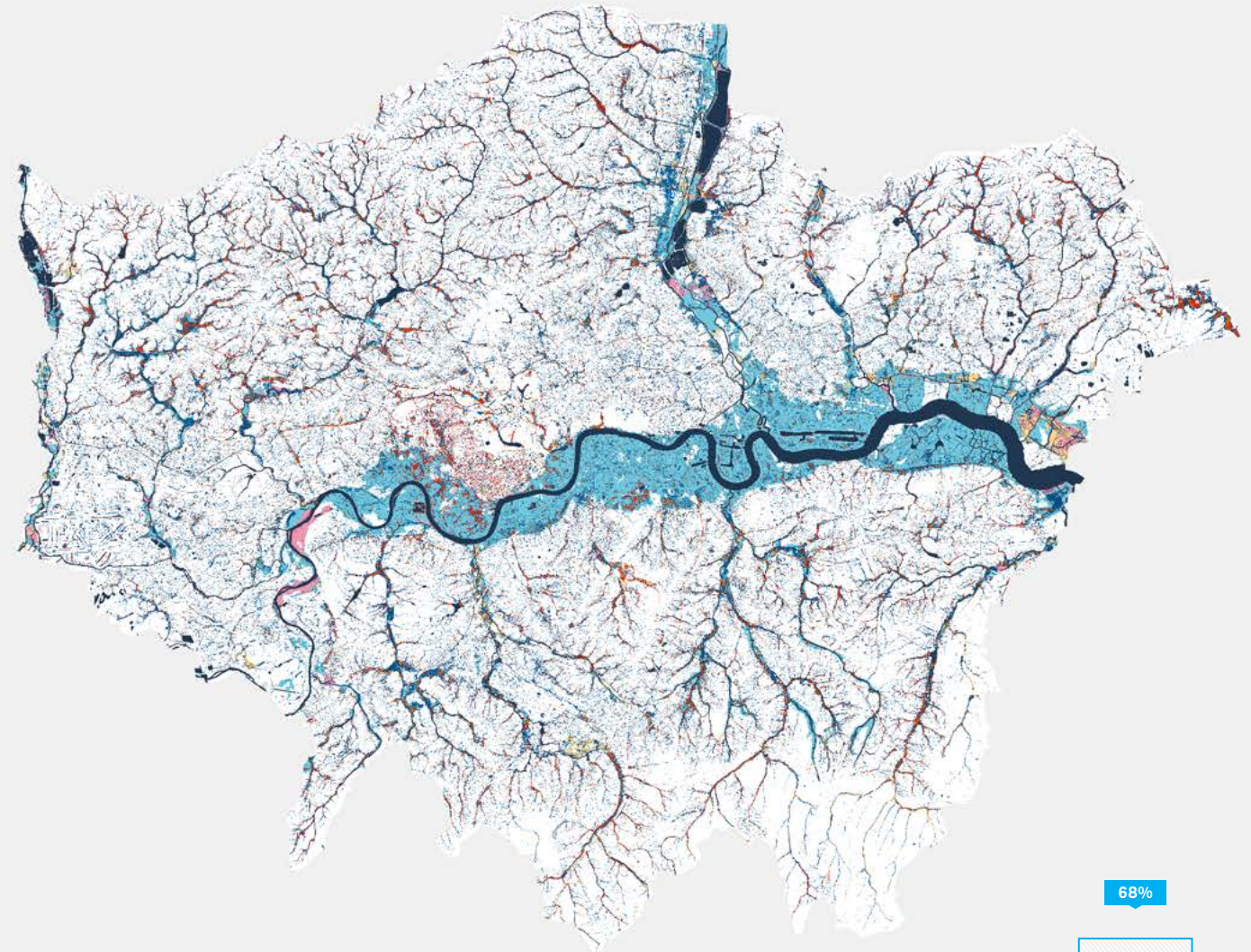
- 1 in 1000
- 1 in 100
- 1 in 30

NaFRA 2014 PROBABILITY BANDS (shows the likelihood of flooding from rivers and the sea in any given year)

- Low
- Medium
- High

2013 REGIONAL FLOOD RISK APPRAISAL
(EA AND DL FLOOD RISK)

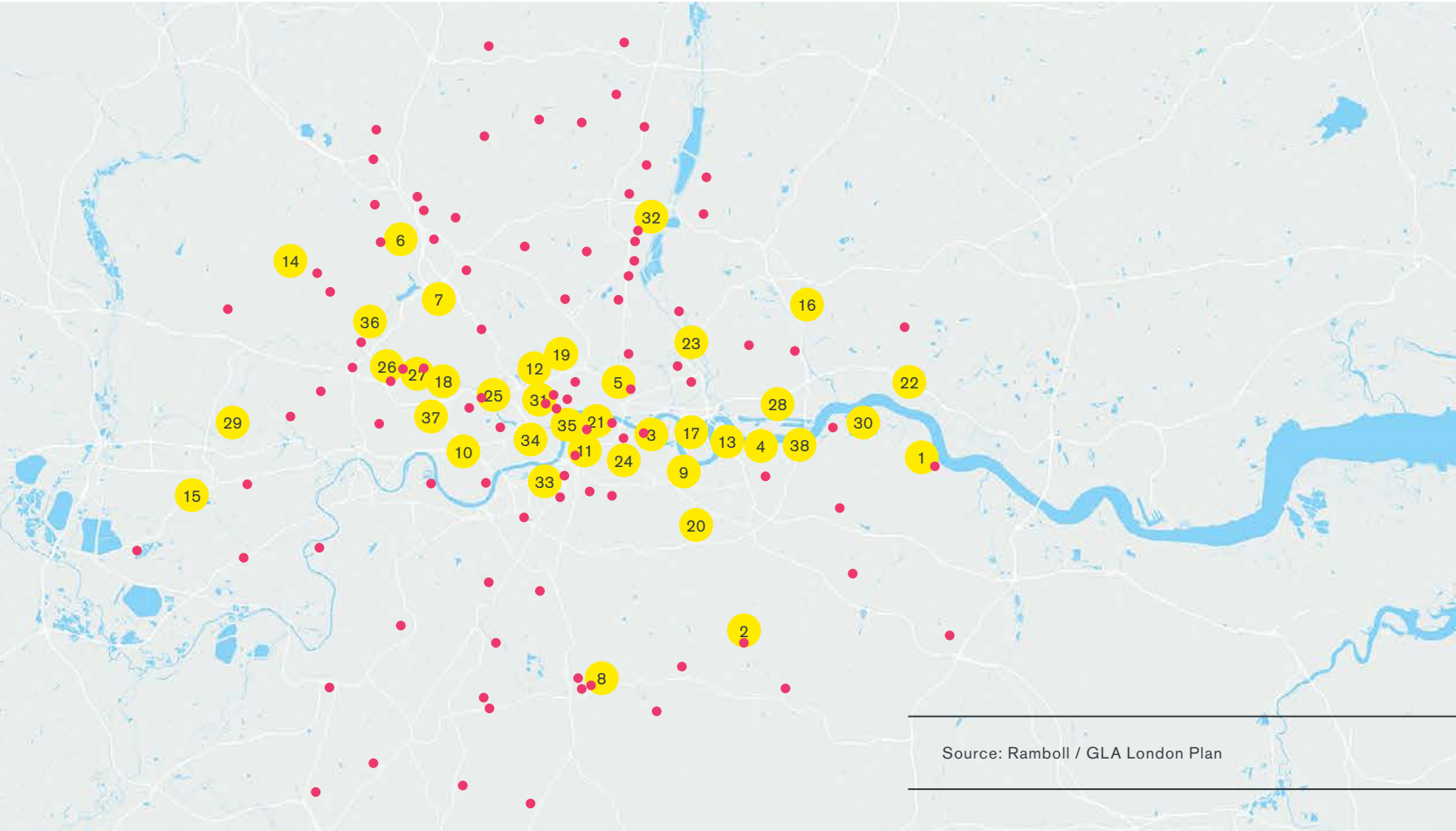
Source: Environment Agency



Energy

The energy demands of the growing city will put increasing pressure on the existing system which is already close to capacity. At the moment, the regulatory system makes it difficult to prepare for that growth.

We want to make London's energy supply secure, affordable and sustainable. With national policy moving towards the electrification of heating and transport, meeting this objective becomes increasingly more expensive.



Source: Ramboll / GLA London Plan

● Opportunity areas

● Electricity substations close to maximum capacity

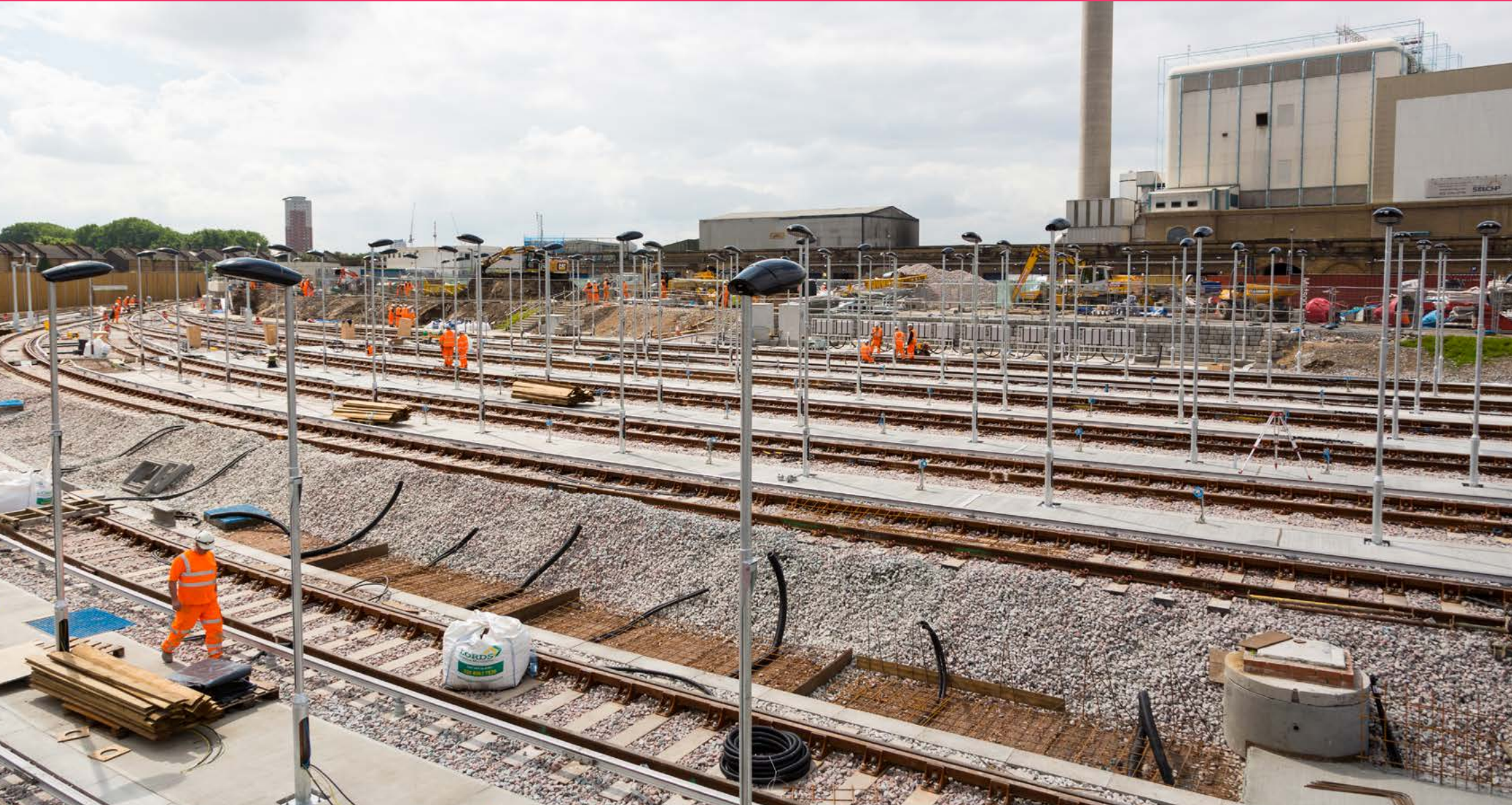
- 1 Bexley Riverside
- 2 Bromley
- 3 Canada Water
- 4 Charlton Riverside
- 5 City Fringe / Tech City
- 6 Colindale / Burnt Oak
- 7 Cricklewood / Brent Cross

- 8 Croydon
- 9 Deptford Creek / Greenwich Riverside
- 10 Earls Court / West Kensington
- 11 Elephant & Castle
- 12 Euston
- 13 Greenwich Peninsula
- 14 Harrow & Wealdstone
- 15 Heathrow
- 16 Ilford
- 17 Isle of Dogs
- 18 Kensal Canalside

- 19 King's Cross - St. Pancras
- 20 Lewisham, Catford & New Cross
- 21 London Bridge, Borough & Bankside
- 22 London Riverside
- 23 Lower Lee Valley (including Stratford)
- 24 Old Kent Road
- 25 Paddington
- 26 Park Royal
- 27 Old Oak Common
- 28 Royal Docks and Beckton Waterfront
- 29 Southall

- 30 Thamesmead & Abbey Wood
- 31 Tottenham Court Road
- 32 Upper Lee Valley
- 33 Vauxhall, Nine Elms & Battersea
- 34 Victoria
- 35 Waterloo
- 36 Wembley
- 37 White City
- 38 Woolwich

THE BENEFITS OF INVESTING IN INFRASTRUCTURE





A better city to live in:

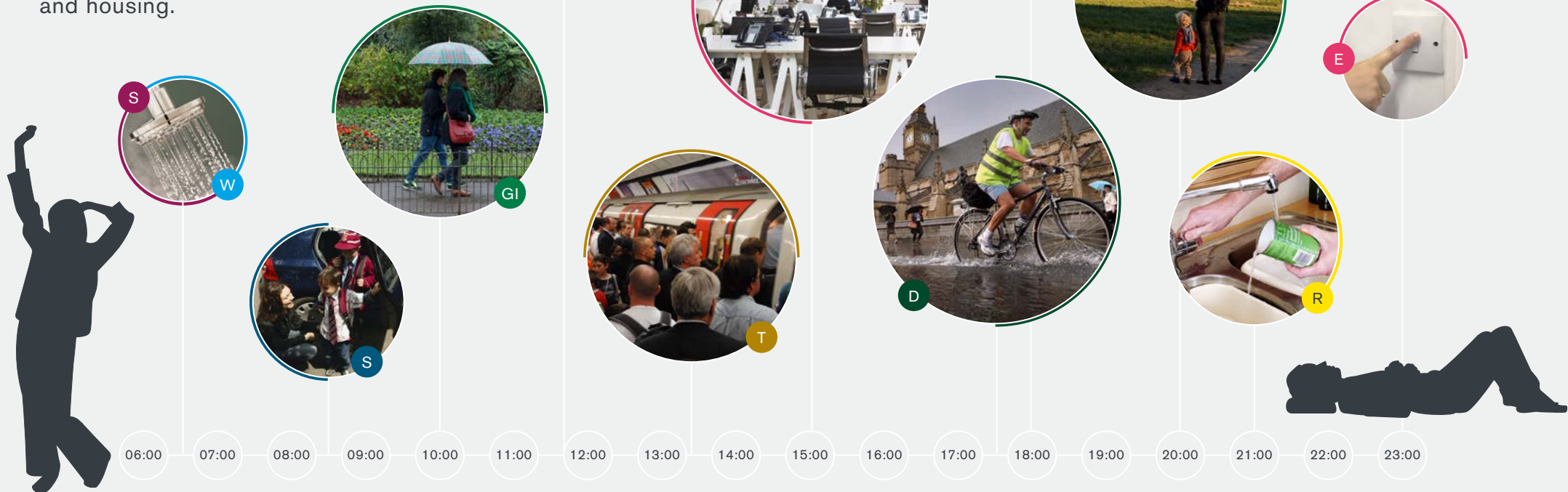
- Less congested, better connections across the transport system, safe and accessible to all
- Being able to connect to the 'internet of things' from every corner of the city
- Housing, schools and great communities for all
- Reusing more materials to save money and the environment
- Sustainable and affordable energy and water
- More and better green space

We have created the London Infrastructure Plan 2050 to help guide the city's long-term growth in ways that will set new high benchmarks for the 21st century.

The plan's scope includes utilities such as clean water and energy along with flood defence; sewerage; drainage; reuse, recycling and waste disposal; green infrastructure; transport; information and communications technology (ICT); schools and housing.

A DAY IN THE LIFE OF A LONDONER

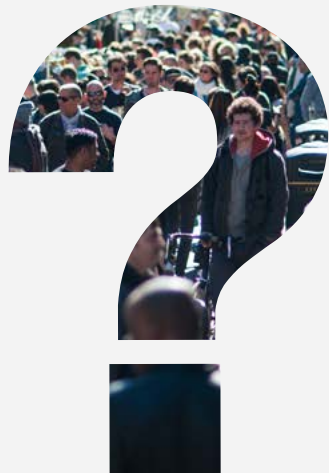
- W Water
- R Recycling
- E Energy
- GI Green Infrastructure
- D Drainage
- T Transport
- I ICT
- S School
- S Sewerage
- H Housing



OUR WORK FOCUSES ON THE FOUR MAIN CHALLENGES



We are consulting with Londoners on the city's future infrastructure demands in terms of:



What infrastructure will we need?

Where will it go?



How will we deliver it?

How will we pay for it?



CHALLENGE 1

WHAT INFRASTRUCTURE WILL WE NEED?



By 2050, across the city
we will need:

An additional
1.5 million
homes



A 20% increase in
energy supply capacity

10% more green cover
in central London
and town centres



A 50% increase
in public transport
capacity



High speed digital
connectivity



Over 600 more
schools and colleges



Around 40 new
waste facilities



An extra 9000ha
of accessible green space



Thames Tideway
Tunnel (sewer)

Housing

We can unlock the creation of new homes and communities through investing in infrastructure.

Barking Riverside is just one example: 11,000 new homes and 5 new schools will be made possible by the extension of the Overground.

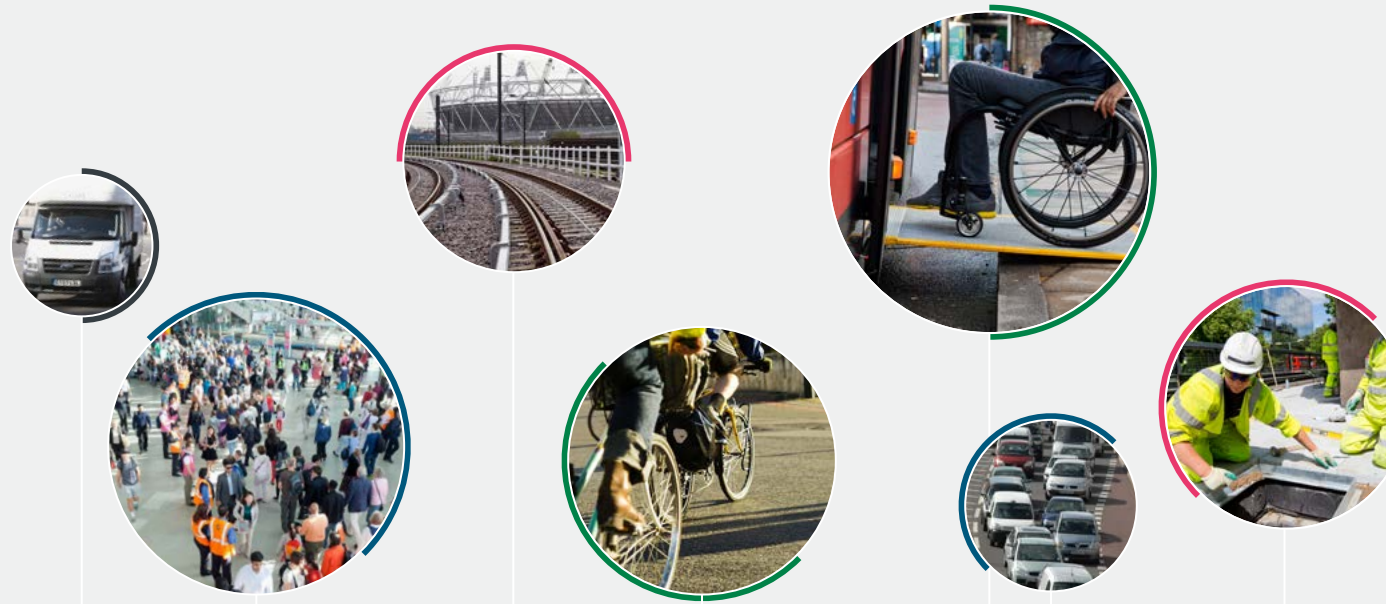


Transport

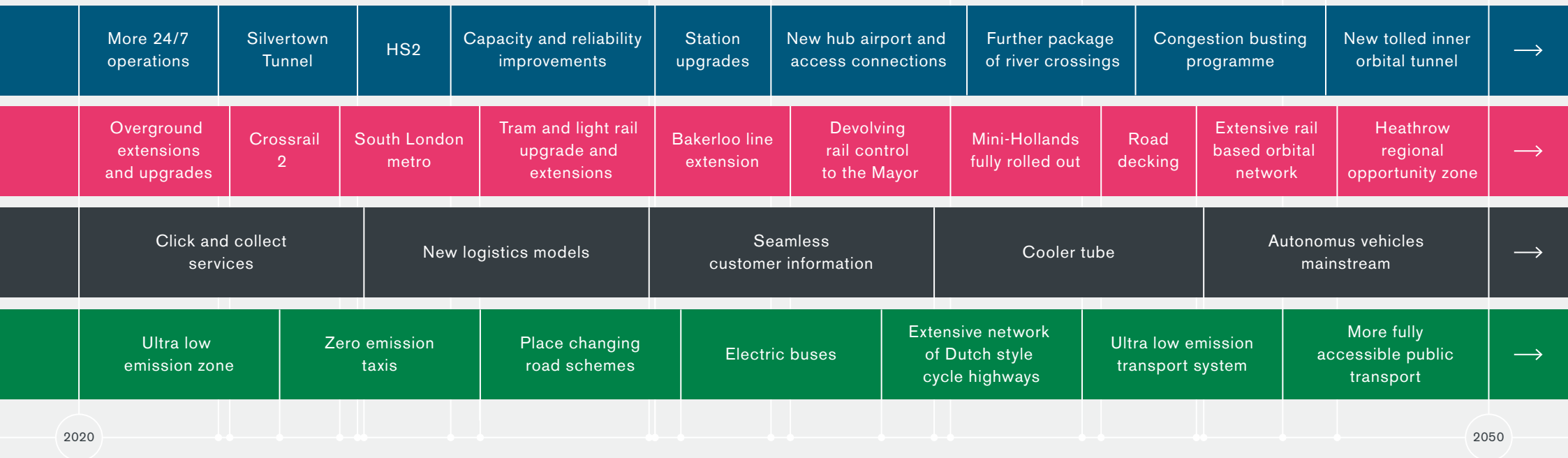
We will need to build on recent investment to ensure London has a world class transport system that allows it to maintain its position as a leading global city while meeting the challenges associated with its growth.

POTENTIAL INFRASTRUCTURE FOR SUPPORTING LONDON'S GROWTH

- Supporting the economy
- Expanding housing
- Improving our environment
- Innovating transport



Source: Transport for London



Energy

National policy is leading to electrification of heating and transport.

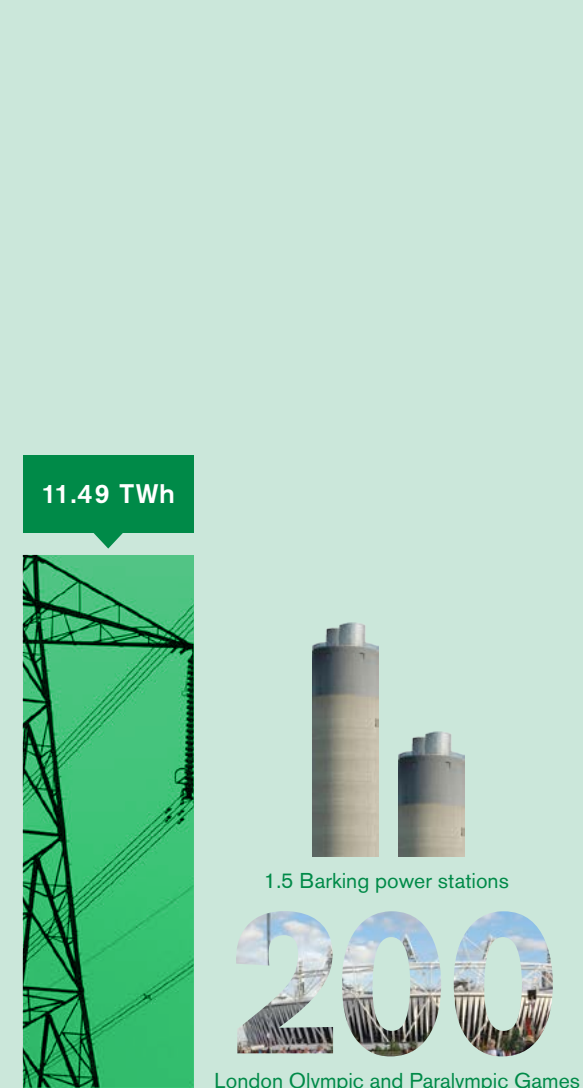
Facilitating and encouraging local energy production will reduce energy costs and make us more resilient and efficient. Scenario 2 shows that a higher proportion of locally generated energy would save us the equivalent of one Barking Power Station – or the energy demands of 200 London Olympic and Paralympic Games.

SCENARIO 1



local energy generation, remainder from National Grid | 8%

SCENARIO 2



54% | local energy generation, remainder from National Grid

Source: Arup

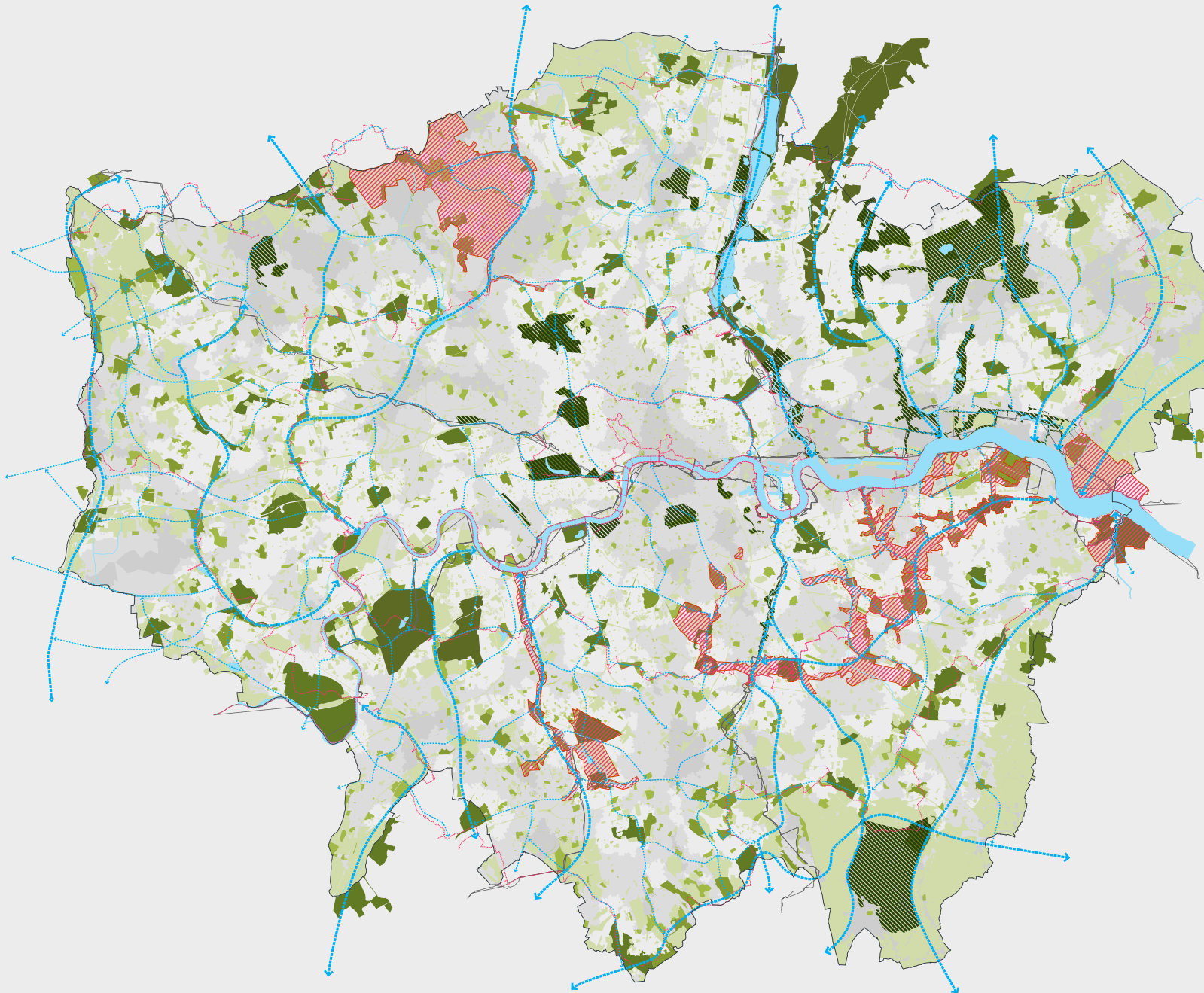
Green infrastructure

We can enhance and expand the All London Green Grid, so that by 2050 we will have a network of green infrastructure providing flood protection, shade, biodiversity, space for cycling, walking and recreation, and a more attractive environment.

THE ALL LONDON GREEN GRID
FRAMEWORK PLAN

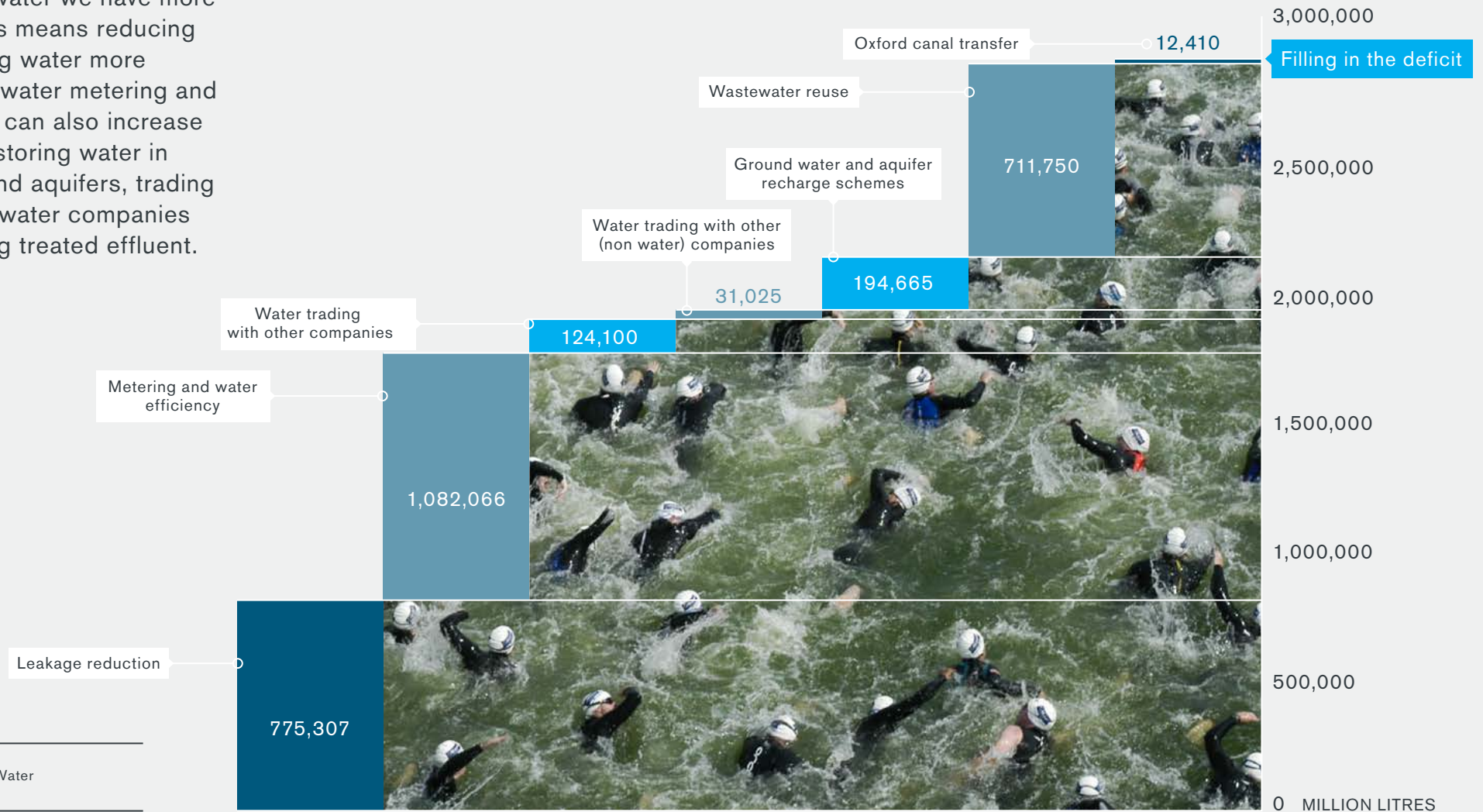
- Strategic corridors
- Strategic links
- ▨ Metropolitan park opportunities
- ▨ Regional park opportunities
- Regional parks
- Metropolitan parks
- District parks
- Local parks & open spaces
- Other/private spaces
- Strategic walking routes
- Strategic cycling routes

Source: Greater London Authority



Water supply

Proposed measures to balance supply and demand include using the water we have more wisely. This means reducing leaks, using water more efficiently, water metering and tariffs. We can also increase supply by storing water in underground aquifers, trading with other water companies and reusing treated effluent.



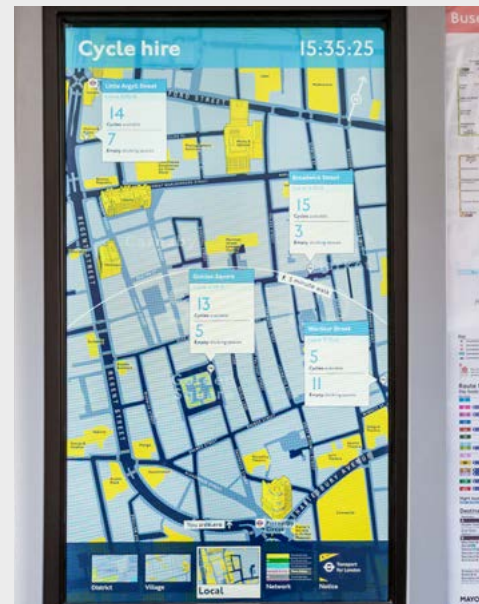
Source: Thames Water

Digital connectivity

It is vital for London’s economy to have high speed connectivity, from mobile and fixed devices, with 99-100 per cent coverage.

London to be the first capital in the world to deploy 5G.

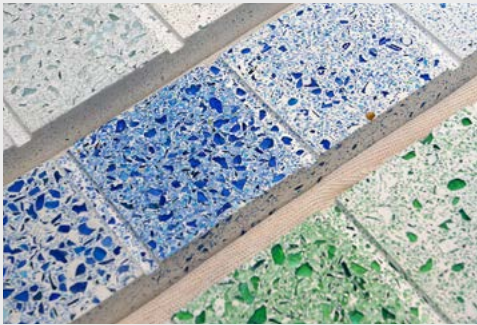
Infrastructure is needed to support ICT, e.g. datacentres. Open data platforms will enable new ideas. And an approach that embraces new technology and innovation.



Bottom right_clusters of activity in minicab journeys across London by Edward Manley

Reuse and recycle

We need to create facilities that enable us to reuse and recycle our materials.



CHALLENGE 2 – WHERE WILL IT GO?



London, and the wider South East, could accommodate the capital's growth in many different ways.

These 3D images illustrate a number of paths London's future might take, showing the resulting differences in population density.

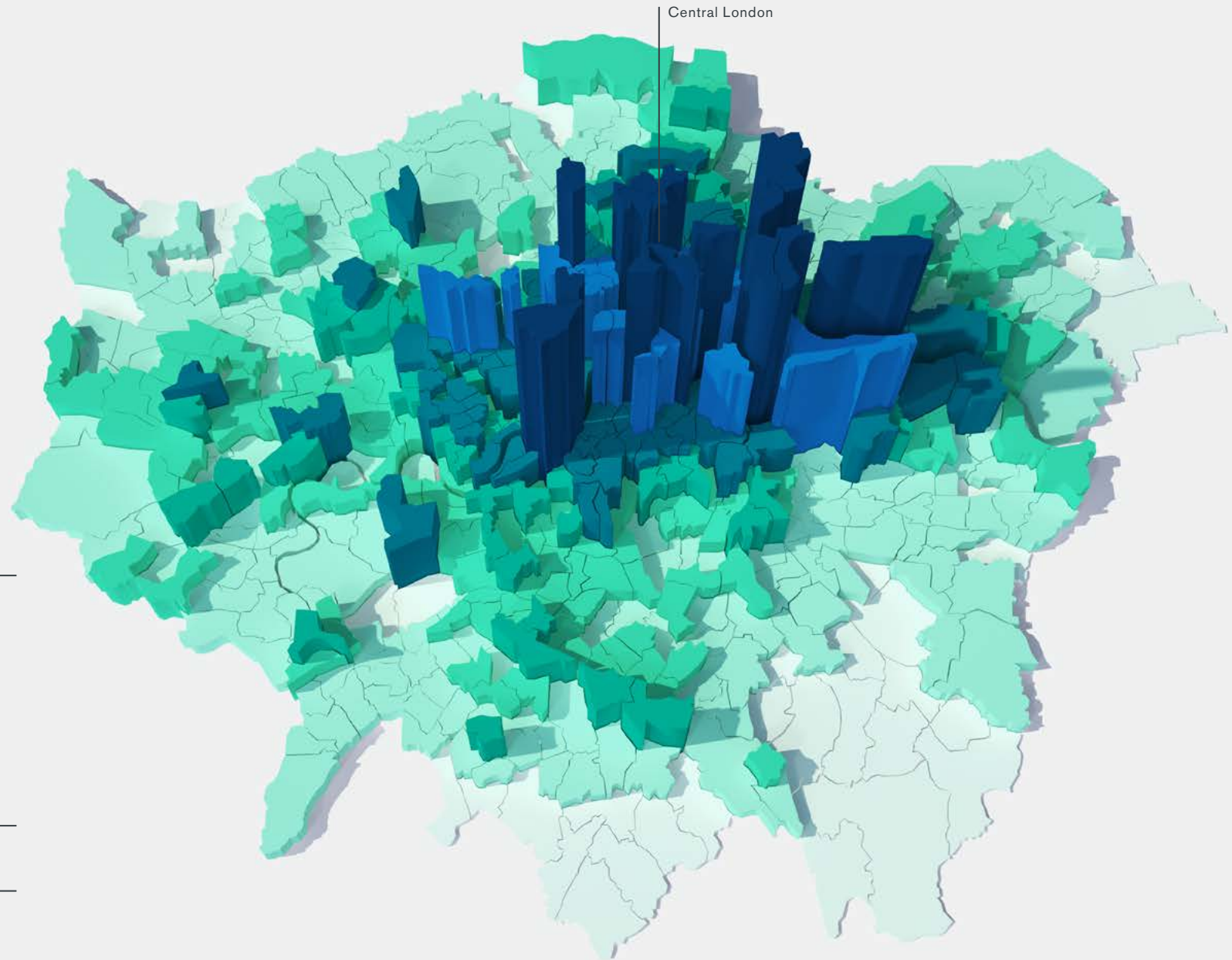
Path 1: Assuming current policies continue*.



Source: Transport for London

*These are in the London Plan which includes matrices of permitted development densities.

Path 2: Increasing densities in locations with good public transport access.

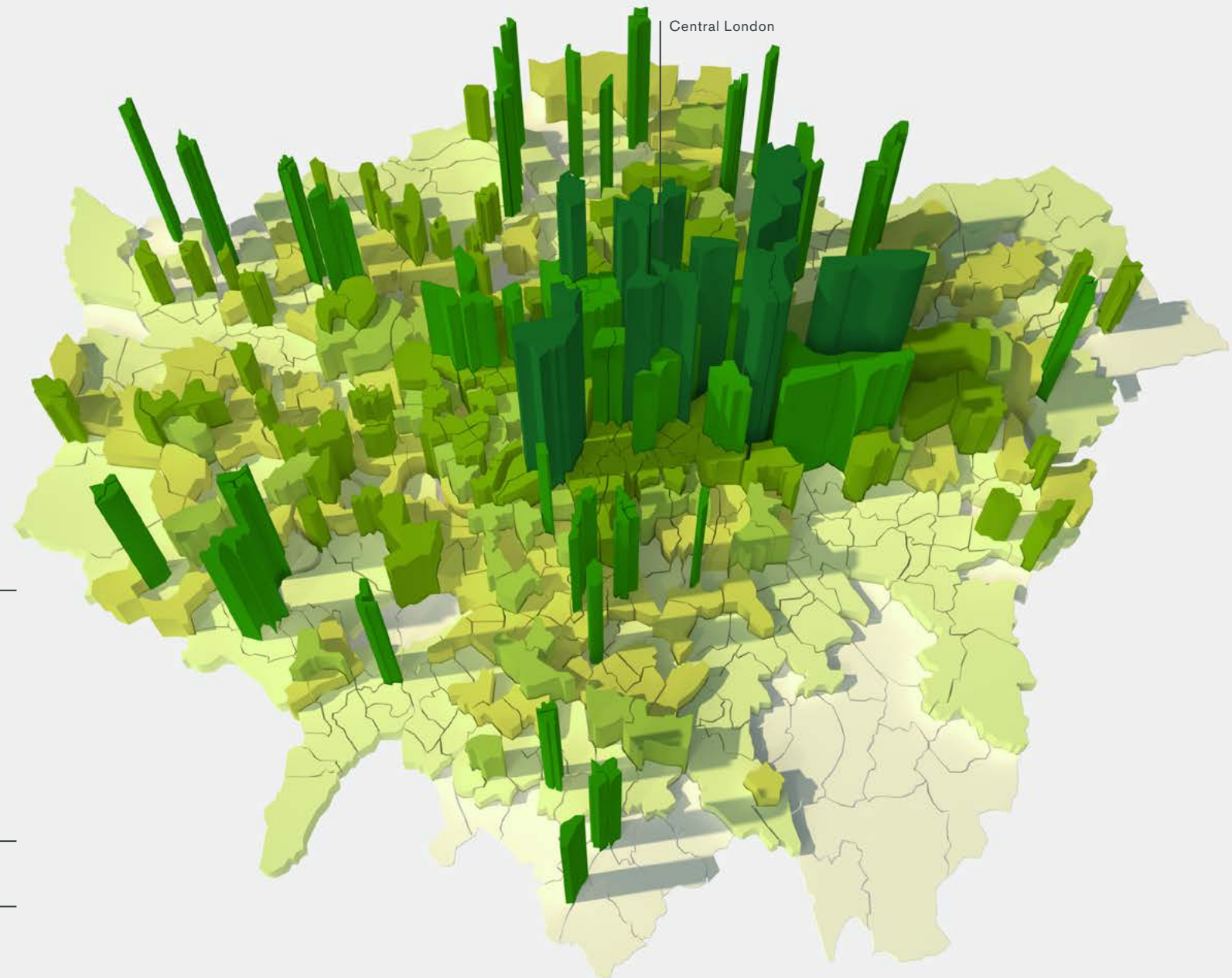


Person per hectare of residential land

- 1000 to 2000
- 650 to 1000
- 300 to 650
- 225 to 300
- 150 to 225
- 75 to 150
- 1 to 75

Source: Transport for London

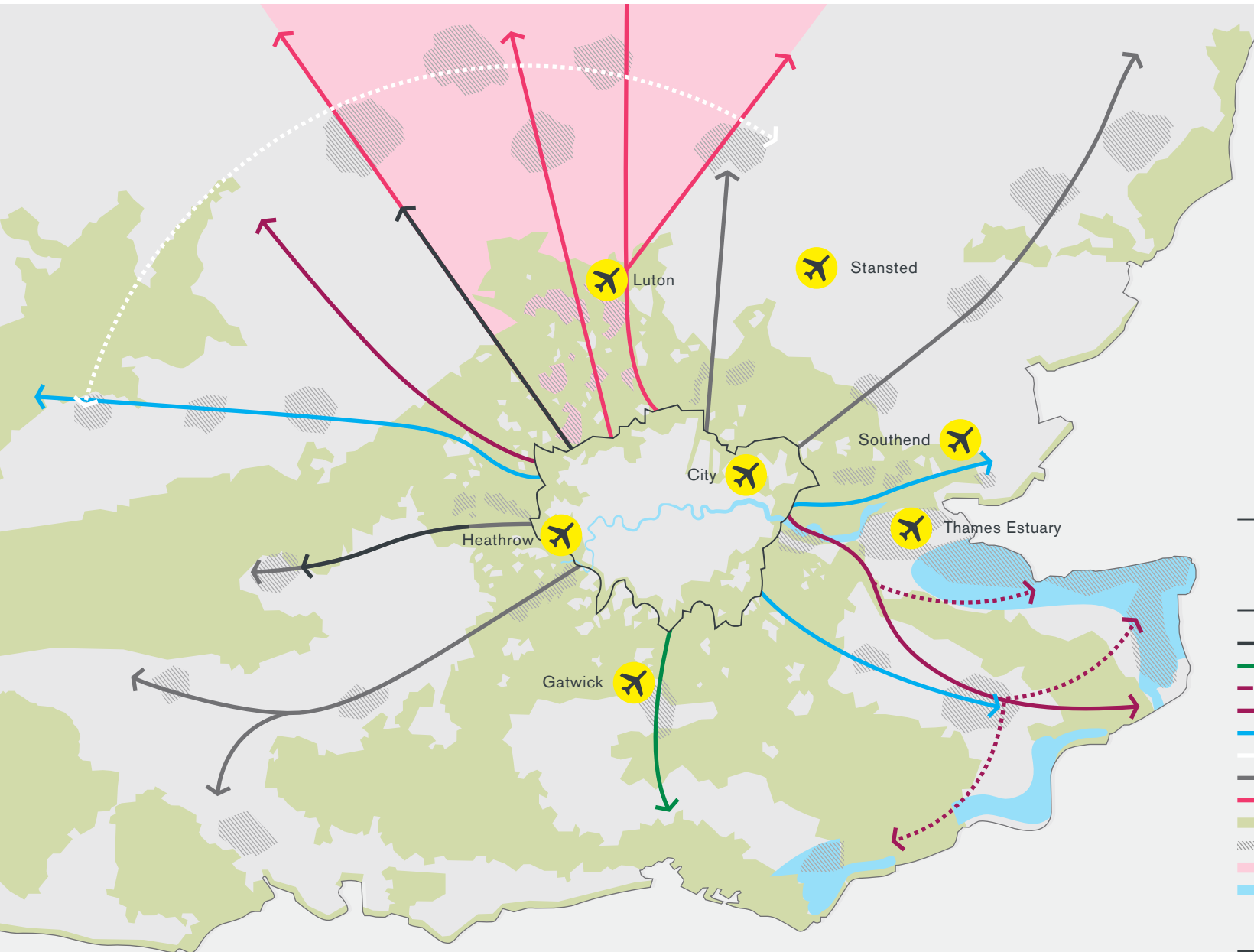
Path 3: Increasing densities at town centres.



Person per hectare of residential land

- 1000 to 2000
- 650 to 1000
- 300 to 650
- 225 to 300
- 150 to 225
- 75 to 150
- 1 to 75

Source: Transport for London



Path 4: We have also considered the impact of some of the projected population growth being accommodated outside London, and linked by improved radial rail.

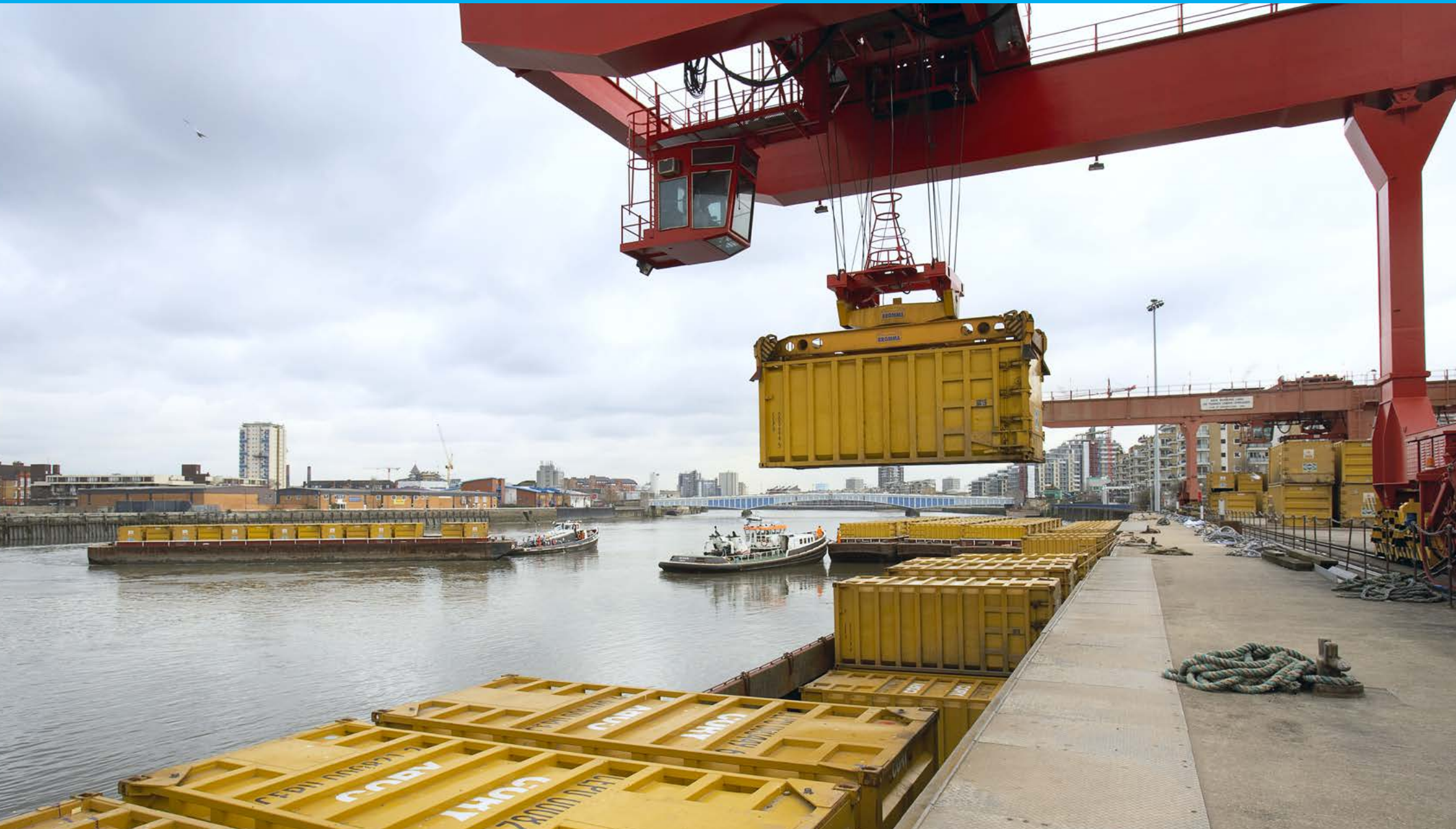
Exporting some of London's growth to other parts of the South East could help regenerate these areas.

HIGH DENSITY RADIAL LINKS TO CENTRAL LONDON

- Potential Crossrail extension
- Brighton Mainline capacity upgrade
- HS2 extension
- HS1 / HS2
- Train lengthening / electrification schemes
- East-West Rail
- Lines relieved by Crossrail / Crossrail 2
- Lines relieved by HS2
- Green Belt / National Park / AONB
- Potential growth areas
- Major growth potential north of London
- Coastal areas with major growth potential but poorly served by current rail system

Source: Transport for London

CHALLENGE 3 – HOW WILL WE DELIVER IT?



Different people and organisations are in charge of delivering infrastructure in London. The regulated utilities are not accountable to the capital's Mayor or Borough Leaders, nor do they have to take account of their plans.

While the regulatory systems try to ensure consumer bills are fair, they do not always respond to London's growth; encourage consumers to reduce demand; or incentivise providers to go for the most sustainable investments.

Delivering infrastructure provides jobs and demands a variety of skills, many of which are in short supply.

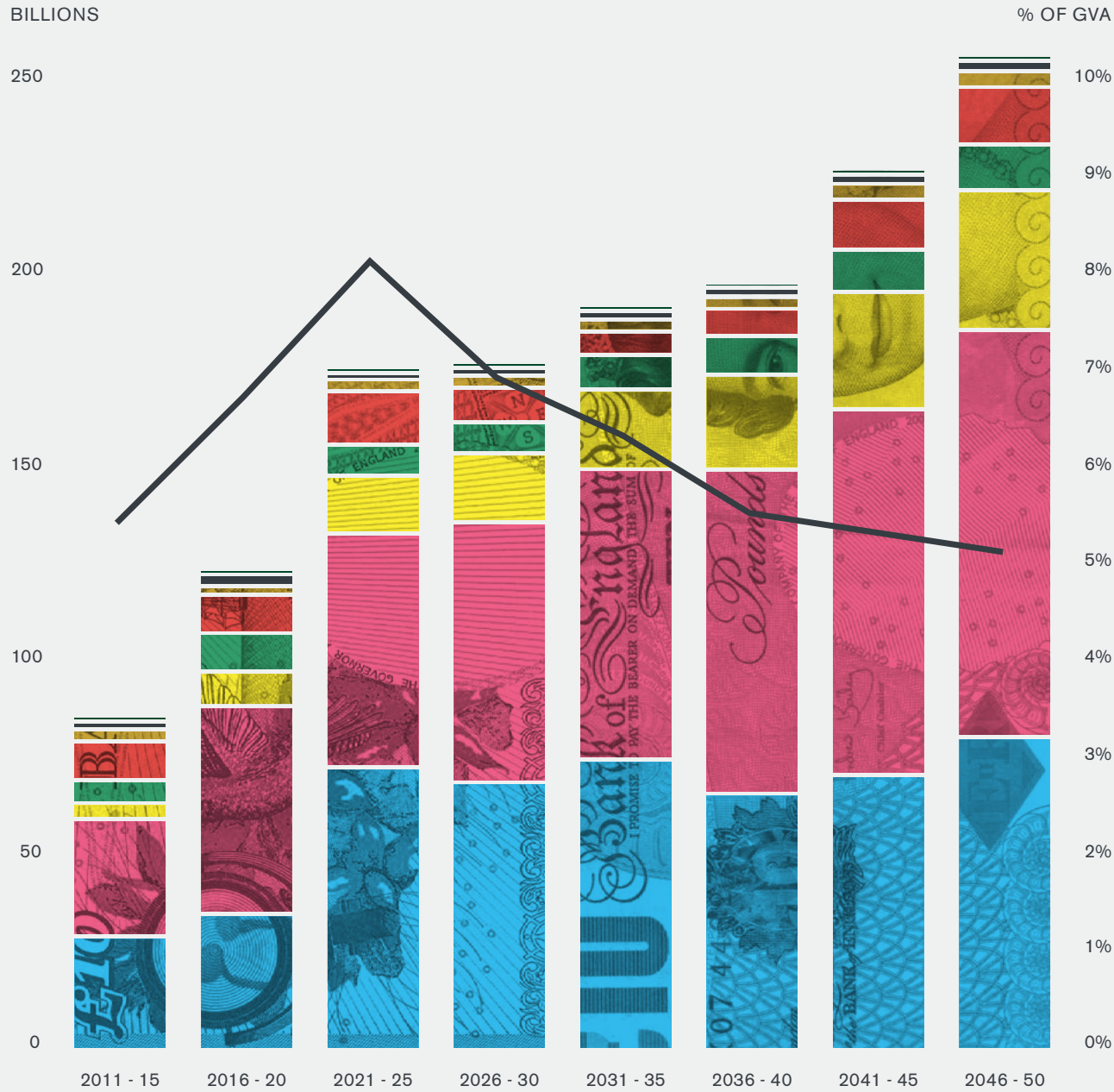
So the Mayor is convening a new infrastructure board with representation from infrastructure providers, regulators, engineers, developers and advisors as well as national, regional and London government.

Together we will lead London's growth.



CHALLENGE 4 – HOW WILL WE PAY FOR IT?





Our best cost estimates to meet all our infrastructure needs would almost double expenditure as a proportion of the economy. Housing and transport make up three quarters of the total costs.

OVERALL CAPITAL EXPENDITURE

Population 2050 of 11.3 million, construction cost inflation of 2% per annum above RPI, policy aspirations are achieved

- Transport
- Housing
- Energy
- Water
- Schools
- Waste
- Digital connectivity
- Green infrastructure

— Capex as % of GVA

Source: Arup

Such a level of investment cannot be sustained doing things in the traditional way.

We need a combination of better coordination and integration, better asset utilisation, more use of data and private capital.

More spending powers for London will be key.



INCOME FROM CENTRAL GOVERNMENT GRANTS

London: 66%
New York: 30.9%
Tokyo: 7.7%

Above_journey segments between two Oyster card 'taps' by Michael Batty.

NEXT STEPS



'Thank you for taking the time to go through this presentation.

I'm proud of what we have achieved, and convinced that London is and can remain the best big city in the world.

The 2050 challenge is to plan for the future when we will be **bigger and better.**'



Boris Johnson, Mayor of London

We'd like to hear from you.
You make London!

Here is what you can do next

This image shows the location of photographs
uploaded to Flickr – red by tourists, blue by
locals, yellow could be by either.

Source: [Eric Fischer](#), Base map © OpenStreetMap,
CC-BY-SA

