

GLA RIIO-2 Sector Specific Methodology Consultation Response

MAYOR OF LONDON

This document presents the Greater London Authority's response to Ofgem's RIIO-2 Sector Specific Methodology consultation.

The first section of this document provides a summary response to RIIO-2 cross-sectoral proposals for the Gas and Electricity Distribution sectors. The second section of the document provides responses to questions that are specific to the GD2 sector specific methodology.

The GLA plans to respond separately to the RIIO-2 ED2 consultation in Q2 / 3 2020.

The GLA will also provide detailed responses to company business plans for Distribution Network Operators that provide services in the Greater London area.

Contents

| | |
|--|-----------|
| CONTENTS | 3 |
| SUMMARY | 4 |
| RECOMMENDATIONS | 5 |
| PLANNING AND DELIVERING LONDON'S GROWTH | 7 |
| GD2 SECTOR SPECIFIC METHODOLOGY | 26 |
| ANNEX A: CASE STUDIES | 33 |
| ANNEX B: HIGHWAY AUTHORITY POWERS | 41 |
| REFERENCES | 43 |

Summary

London is growing.

- London's projected growth far exceeds that of other cities across the UK.
- In the London Plan and the Mayor's strategies, the Mayor has set out his plans and policies for 'Good Growth' - sustainable growth that works for everyone, using London's strengths to overcome its weaknesses.
- For London to continue growing sustainably, significant investment in infrastructure and new development is required. This is leading to intensive construction activity across the Capital.

London faces a coordination challenge.

- London's growth occurs in the context of fragmented development and infrastructure industries, in which works promoters operate in corporate or institutional silos.
- Because of this siloed approach, opportunities for providers to efficiently plan and build infrastructure and development are missed.
- The Mayor is working with stakeholders, including boroughs and his functional bodies, to limit the extent of this disruption.

However, it is the GLA's view that promoting Good Growth may also require further regulatory intervention.

Most importantly, promoting Good Growth may require the regulators (Ofwat, Ofgem, and Ofcom) to consider the wider impacts of the distribution networks' operations on Londoners, as opposed to narrowly focusing on the experiences of 'consumers'.

Recommendations

1. Planning and Delivering London's Growth

To tackle the coordination challenge, the GLA recommends that Ofgem:

1. Makes use of the GLA's growth projections in business plan assessments for RIIO-2.
2. Ensures that the regulatory price control review can be adequately flexible to accommodate investment ahead of need, in cases where the reopener mechanism is required (see *GD2 Sector Specific Methodology*).
3. Identifies how the RIIO-2 regulatory framework can encourage utilities distribution network operators to undertake collaborative street works and collaborative connections-led works.
4. Identifies how utilities distribution networks can be incentivised to collect and share data on their forward investment plans, and their existing underground assets.
5. Accounts for the Mayor's policies on smart, integrated energy systems when regulating the Distribution Network Operators.

2. GD2 Sector Specific Methodology

The GLA welcomes Ofgem's increased emphasis on whole system approaches and wider public good outputs. However, the GLA recommends that Ofgem go further with these proposals, by:

6. Considering a fourth output category for RIIO-2, 'Operating in the interests of wider society'.
7. Setting out a requirement for company business plans to provide supplementary evidence to demonstrate how companies will pursue cross-sectoral coordination opportunities, and
8. Meaningfully considering this evidence in the business plan incentive.

The GLA welcomes Ofgem's increased focus on anticipatory investment, including the proposal for changes to the re-opener mechanism.

The GLA recommends that the re-opener mechanism:

9. Makes use of governance arrangements that are developed locally, at the development site scale, and which are based around existing governance arrangements;
10. Be triggered in a flexible manner, based on local needs; and
11. Involve the GLA in decision making of relevance to the Greater London area.

The GLA also recommends that Ofgem:

12. Clarifies what it regards as 'highly' anticipatory investment, and what would be considered 'business as usual' anticipatory investment.

1. Planning and Delivering London's Growth

The GLA

- 1.1 As London's strategic regional authority, the GLA possesses powers over transport, policing, economic development, and fire and emergency planning.
- 1.2 The Greater London Authority (GLA) is the strategic authority for London and supports the Mayor and the London Assembly in delivering their respective responsibilities and functions. The GLA's five functional bodies are its principal delivery arms: The Mayor's Office for Policing and Crime (MOPAC), overseeing the work of the Metropolitan Police Service (MPS); the London Fire Commissioner (LFC); Transport for London (TfL); the London Legacy Development Corporation (LLDC) and the Old Oak and Park Royal Development Corporation (OPDC) (GLA, 2019).
- 1.3 In addition, The Mayor of London will take on responsibility for the Adult Education Budget from the government in 2019/20, subject to meeting the readiness conditions set by the Secretary of State for Education.
- 1.4 In accordance with the GLA Act (1999), and subsequent GLA Act (2007), the GLA is concerned with three strategic priorities, with regards to its statutory function as a regional planning authority, including:
 - Promoting economic development and wealth creation in Greater London;
 - Promoting social development in Greater London; and
 - Promoting the improvement of the environment in Greater London.
- 1.5 Under the legislation establishing the Greater London Authority (GLA), the Mayor is required to publish a Spatial Development Strategy (SDS), known as the London Plan, and keep it under review. As the overall strategic plan for London, it sets out an integrated economic, environmental, transport and social framework for the development of London over the next 20-25 years.
- 1.6 The Draft New London Plan was published in December 2017. The document is currently undergoing formal Examination in Public, to be concluded in 2019.

- 1.7 The London Plan is the core mechanism through which the Mayor sets out how he will exercise his powers over spatial planning in London. The plan is therefore a fundamental component in carrying out the GLA's statutory duty to plan for London's Growth.
- 1.8 **Alongside his statutory responsibilities, the Mayor also exercises significant convening power in the Greater London area.**
- 1.9 Of relevance to this consultation, the Mayor convenes his Infrastructure High Level Group, made up of CEO-Level appointees from each of London's Distribution Network Operators (Gas, Water, Sewerage, Electricity, Telecoms and Digital), various layers of government, and the regulators. Through this group, the Mayor seeks to:
1. Influence London's infrastructure providers to ensure that planned investment in infrastructure aligns with the GLA's plans for growth across the Capital;
 2. Ensure that infrastructure is built in a way that limits the impacts of construction on Londoners and London Businesses; and
 3. Understand and act barriers, arising from policy, regulation and legislation, to the GLA undertaking its statutory duties to plan for growth and proposing new arrangements.
- 1.10 At an operational level, this convening role is carried out on behalf of the Mayor by Transport for London (TfL), Mayoral Development Corporations, and relevant directorates of the GLA, working in partnership with boroughs. In this way, the GLA convenes parties to identify:
- How and when a specific area of London can accommodate new development;
 - What infrastructure is required to accommodate that growth;
 - The funding required to pay for this infrastructure, where the market is unable to finance this infrastructure;
 - Where funding is required, helping to develop a business case for public investment in infrastructure; and
 - How this growth can be undertaken in a way that limits disruption to Londoners and London Businesses.
- 1.11 As we explain in this consultation response, the GLA is seeking to improve every aspect of this process.

The Challenge of London's Growth

1.12 By 2041, the GLA forecasts that London's population will reach 10.8 million people (GLA, 2017a). This represents an annual increase of some 70,000 people, placing significant pressure on infrastructure, land use and the environment. In recent years London has therefore seen an acceleration of construction activities in terms of housing (GLA, 2018b)

1.13 To meet the demands of growth, significant investment in infrastructure and new development is required.

- The recent Draft London Plan (released December 2017) highlighted the need for some 65,000 additional homes per annum, alongside new space for commercial, retail and industrial activities. These forecasts are underpinned by comprehensive analyses of both the demand for housing and other uses and the land available for development and redevelopment¹. Key to unlocking the capacity for this additional development is infrastructure.
- The Mayor's Transport Strategy (released March 2018) highlighted that population growth will generate about 6 million additional trips each day by 2041, placing significant pressure on existing transport networks, and requiring investment in new schemes such as Crossrail 2 and the Bakerloo Line Extension, as well as upgrades to road, bus and cycle networks.
- Across the key sectors of energy, water and waste, the Mayor's Environment Strategy (released May 2018) commits to making for London to become a zero-carbon and zero-waste city by 2050, requiring new investment in energy infrastructure (including at local level) and retrofit of existing developments.
- At the strategic level, the GLA has identified some 138 infrastructure projects across sectors such as transport, energy, water and waste as being integral to supporting intensification of London's growth areas. These projects sit alongside more general investments required to maintain existing networks and support development of smaller sites (GLA, 2017b).

1.14 Effective coordination of land use and infrastructure planning is essential in ensuring faster realisation of development for housing and jobs.

1.15 To achieve the annual housing target of 65,000 homes each year, the overall average rate of delivery will need to approximately double compared to current completion rates (see table 1). Achieving such a step change in delivery will require a departure from the status quo; and

¹ These analyses are presented in the GLA's [Strategic Housing Land Availability Assessment](#), and the [Strategic Housing Market Assessment](#).

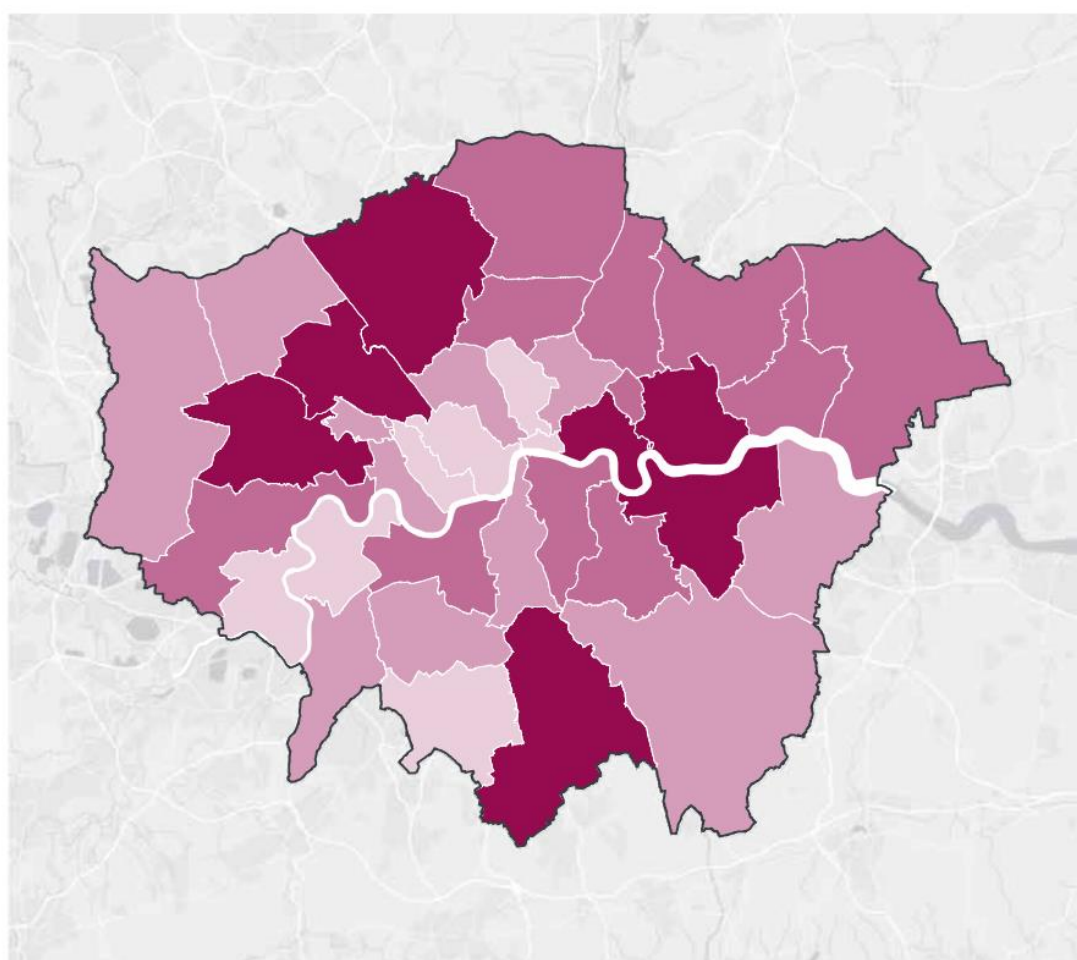
it will be essential to secure increased levels of funding to support the delivery of infrastructure across all sectors.

- 1.16 The Draft London Plan has broken down the annual requirement of 65,000 homes into a ten-year housing target by borough (see Figure 1). These targets, informed by land capacity assessments, give a good indication of the location of London's future growth. Informed by phasing information, as planning applications are permitted, utilities should proactively plan for growth in these areas.
- 1.17 In addition to housing targets, the Draft London Plan identifies a series of key growth corridors where much of London's growth is expected to occur, including Central London, the Elizabeth Line (East/West), Crossrail 2 (North/South), London Trams, Bakerloo Line Extension, Thameslink/HS2 and the Thames Gateway.
- 1.18 Within these corridors sit 47 Opportunity Areas. These are areas of London where we anticipate long-term sustained growth, driven by new transport projects, and public-sector investments in local infrastructure.
- 1.19 The London Plan estimates that 272,000 large residential sites (25+ residential units) will come forward within opportunity areas over the first 10 years of the plan. This number represents 47% of all growth in large sites across London. Almost half of large sites will therefore occur in opportunity areas.
- 1.20 The Mayor works with boroughs in these Opportunity Areas to plan for growth, including in the formation of Local Plans, and through the Opportunity Area Planning Framework.
- 1.21 Often these areas face significant development and infrastructure challenges that require substantial intervention, in the form of planning and coordination in order to realise growth due to their previous land use legacy. The GLA therefore works with utilities providers to understand infrastructure investment requirements in these areas.

Table 1 – Net Housing Supply in London

| | 2008/9 | 9/10 | 10/11 | 11/12 | 12/13 | 13/14 | 14/15 | 15/16 | 16/17 | Average |
|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| Conventional | 29,527 | 25,093 | 19,909 | 23,515 | 23,961 | 26,728 | 30,179 | 35,080 | 41,371 | 28,374 |
| Non-Conventional | 2,764 | 1,561 | 2,021 | 1,290 | 2,932 | 4,416 | 3,976 | 4,448 | 4,526 | 3,104 |
| Vacants back in use | -398 | 2,223 | 4,882 | 5,670 | 2,018 | 1,507 | -120 | 1,070 | -392 | 1,829 |
| Total | 31,893 | 28,877 | 26,812 | 30,475 | 28,911 | 31,905 | 34,035 | 40,598 | 45,505 | 33,223 |

Figure 1 – 10 Year Housing Targets for Net Completions



10 Year Housing Target for Net Completions

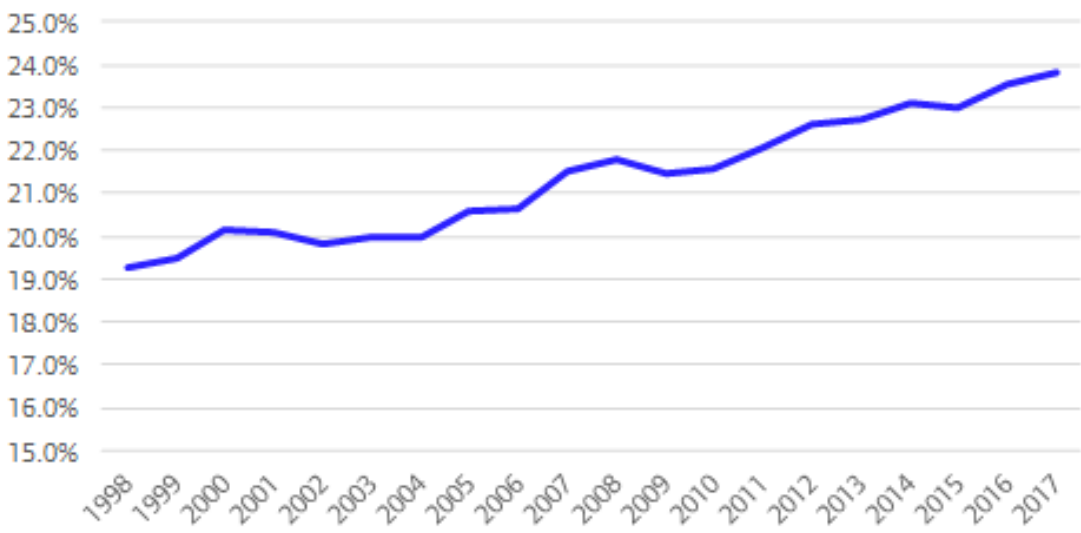
- 25,541 - 38,500
- 16,481 - 25,540
- 10,101 - 16,480
- 1,460 - 10,100

- 1.22 Historically, London has had a mixed track record of effectively delivering growth in Opportunity Areas.
- 1.23 This is due to a number of barriers external from market conditions, such as uneven approaches to governance, land ownership, planning, funding, regulation and local engagement. Reactive investment decisions by utilities (in response to growth) also slows down the process of delivering housing and other forms of development.
- 1.24 Areas that have particularly worked well – such as Kings Cross-St Pancras - benefited from a single land owner. Conversely, sites which involve multiple landowners are much more complex to deliver, increasing the need for intervention by the Mayor or borough (see case study 1).
- 1.25 The Draft London Plan (Policy SD1 Opportunity Areas) states that the Mayor will provide support and leadership to ensure Opportunity Areas deliver their growth potential. Support may take the form of supporting planning, developing funding packages and aligning stakeholders.
- 1.26 There are examples of where the Mayor has and is offering this type of support. For example, through his Mayoral Development Corporations, such as the Old Oak and Park Royal Development Corporation (see case study 3).
- 1.27 However, the fragmented nature of London's Infrastructure Providers limits the impact of this convening role.
- 1.28 Across the UK, infrastructure providers tend to operate in corporate or institutional silos, with little communication between works promoters.
- 1.29 In London, a total of seven monopoly and duopoly network operators own and manage the utility distribution networks. In the electricity and water sectors there are increasingly a range of independent distribution networks and connection providers, with a minority share of overall asset ownership.
- 1.30 When planning, operating and managing the networks, each of these organisations interfaces with a complex web of stakeholders in the public and private sectors. They are also host to large and intricate corporate structures, with complex internal organisational silos (Hussain, et.al 2016; Hussain, et.al, 2015; Scottish Government, 2014).
- 1.31 Because of this siloed approach, collaboration is the exception rather than the rule. The following sections of this document provide case study information and further supporting evidence to explain the impacts of this lack of coordination on London and Londoners.

Planning for Growth and Investing in the Interest of Londoners

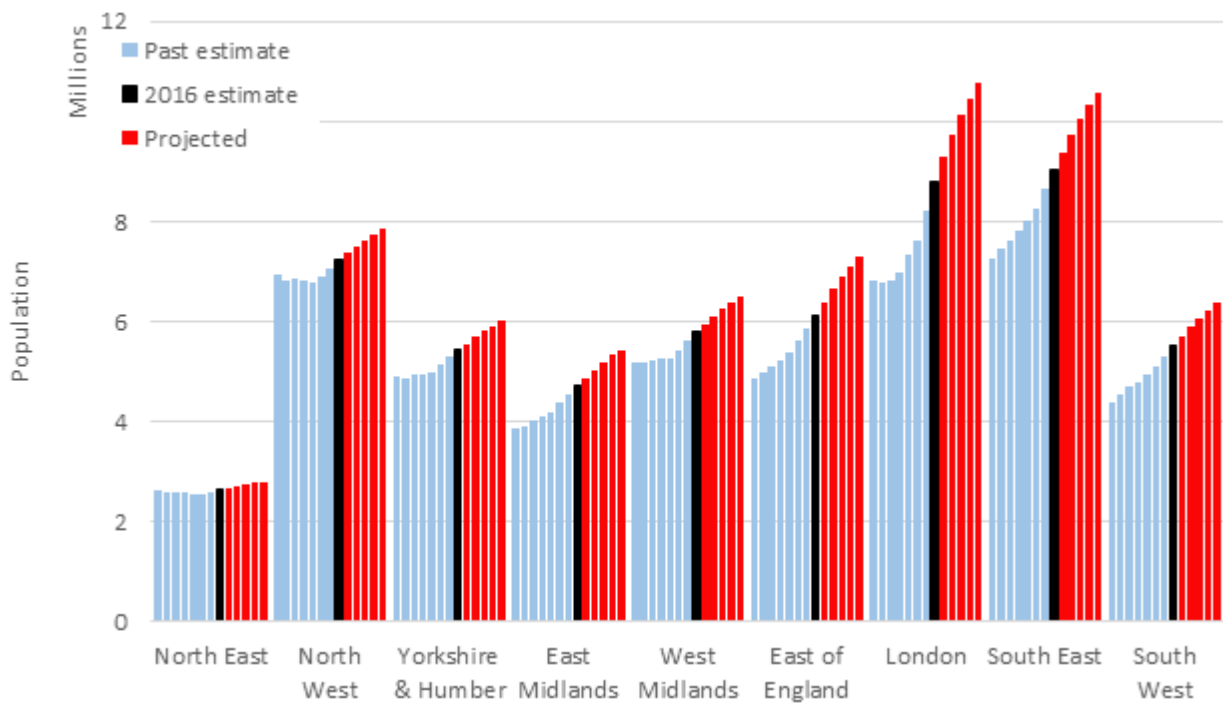
- 1.32 As mentioned above, the speed and scale of development in London's Opportunity Areas far exceeds that seen in other parts of London and the UK. London's share of UK GVA has increased over the past decade, reaching 24% in 2017 (see figures 2 and 3).
- 1.33 The scale of anticipated growth in London's population and housing stock presents challenges in ensuring this growth is supported by effectively planned infrastructure. Understanding the distribution, timing, and nature of future change in the capital is a complex task that necessitates specialist analysis and modelling.
- 1.34 The capability of the GLA to undertake such work is well established, with planning activities across the city already supported by teams of experts working across several specialist teams within the GLA and TfL.
- 1.35 **Company business plans, and the benchmarking undertaken by Ofgem to assess these plans, need to have regard to the GLA's growth projections.**
- 1.36 The GLA recommends that the projections it produces are used consistently by all utilities' companies and their regulators to inform both individual business plans and industry regulation, as they:
- Are consistent with the full range of Mayoral strategies, which provide the basis for planning and policy within the City, including infrastructure investment;
 - Are updated regularly (typically annually) to reflect up-to-date expert analysis of demographic and economic trends;
 - Incorporate the London Strategic Housing Land Availability Assessment, the most detailed available land use study for London, allowing for realistic projections of future population at fine spatial level;
 - Can be readily adapted to reflect a range of scenarios for use in stress-testing and sensitivity analysis, e.g. variant assumptions about future housing development, economic growth, or migration trends.
 - Apply a more sophisticated methodology at the London and regional level, bringing a greater understanding of the local context and incorporating a range of data not available to other bodies.

Figure 2 – London’s Share of UK GVA 1998 - 2017



Source: Office for National Statistics

Figure 3 - Estimated and Projected Population, England Regions, 1981 - 2041



Source: Office for National Statistics

- 1.37 Because of the intensive growth that occurs in London's Opportunity Areas, there is often a requirement for significant connections-led reinforcement to the utilities distribution networks, that can necessitate investment ahead of need.
- 1.38 The pace and scale of this development activity often leads to applications for multiple competing connections requests. The cumulative impact of these new connections requests can necessitate significant capital investment to reinforce local distribution networks. The capital outlay is often most significant in the electricity distribution networks. The impact of this cumulative and reactive reinforcement is significant (see case study 2).
- 1.39 In response to this, the GLA works with boroughs, government and the private sector to coordinate between multiple development sites and identify integrated funding solutions for utilities reinforcement (see case study 3).
- 1.40 However, such approaches to infrastructure planning and programming are uneven across London and the UK.
- 1.41 There is currently no formal requirement for developers, boroughs and/or infrastructure providers to produce integrated strategies for infrastructure. This means that there is rarely a master planned approach to reinforcement of utilities networks and installation of new infrastructure, such as SuDS, heat networks or digital infrastructure in opportunity areas.
- 1.42 When undertaken, master planning approaches have varied by area, dependent on levels of knowledge, resourcing and governance arrangements. Undermining approaches is the fact that key input information is often poorly communicated – a lack of data, and information on phasing and development attributes being key concerns.
- 1.43 This is also the case for major civil engineering projects. Opportunities to plan proactively for requirements across major projects are done in an ad-hoc way. This means that we miss the opportunity to facilitate reinforcement that can serve the needs of multiple customers, and unlock greater value from development sites.
- 1.44 The GLA is promoting a more consistent approach to infrastructure planning and the governance of developments in London's opportunity areas.
- 1.45 In the case of the Isle of Dogs (see case study 5), the GLA is working with the borough and London's utilities to develop a dynamic development phasing study to provide greater certainty about the pipeline of new development in the area, and the capacity of existing networks. This will be combined with a delivery plan for the area to ensure trigger points are understood and investment in infrastructure materialises ahead of need.

- 1.46 This approach will allow utilities to build their business plans around a more accurate projection of growth in the Island, creating potential opportunities for investment ahead of need.

The GLA therefore recommends that Ofgem:

- 1. Make use of the GLA's growth projections in business plan assessments for RIIO-2.**
- 2. Ensure that the regulatory price control review can be adequately flexible to accommodate investment ahead of need, in cases where the reopener mechanism is required (see *GD2 Sector Specific Methodology*).**

Managing Disruption caused by Growth, and Promoting Efficient Connections

- 1.47 Growth of the scale proposed for London has led to a significant increase in construction-related activity, particularly in London's Opportunity Areas. This activity has a range of impacts, particularly on local communities, but also on London's economy and environment.
- 1.48 These impacts are often most acutely felt on London's road network, as a result of street works and roadworks. Ensuring an efficient road network is essential for London's productivity.
- 1.49 Currently, there are huge economic costs associated with congestion caused by street works and roadworks. Reducing this disruption is therefore a priority for the Mayor and TfL.
- A 2018 study, published by INRIX, found that drivers in London lost 227 hours in congestion on average in 2017. By comparison, drivers in Greater Manchester lost just 156 hours on average due to congestion, and those in Glasgow lost just 99 on average. London was the only UK city in the top 10 most congested cities worldwide, ranking sixth overall.
 - The TLRN comprises 580 kilometres (or 5%) of London's road network. However, it carries over 30% of London's traffic and, because of the greater proportion of freight and business traffic, represents an estimated 40% of the gross value added (GVA) of road traffic movement across London.
 - In 2009/2010, there were 48,247 sets of roadworks and street works undertaken on the TLRN, which accounted for 42% of the serious and severe disruption on the network. Roadworks and street works therefore account for a significantly greater proportion of overall delay on London's busiest and most economically important roads than they do on the network as a whole. The cost of roadworks disruption on the TLRN alone is at least £300 million per annum (TfL, 2018).
 - A report prepared for TfL estimated that in 2016 the annual London-wide economic cost of congestion is £6.7 billion, and approximately 15% of congestion is caused by roadworks (TfL, 2017). These figures could be reduced if utilities and other instigators of works collaborated with each other, reducing the time that roads need to be closed and the frequency of projects.
 - The Department for Transport estimated that the social cost of congestion related to street works and road works is around £4.3bn per annum across the UK. The wider social costs of utility works are estimated to be around £5.5bn per annum across the UK, due to pollution and accidents, less reliable journeys, and reduced resident satisfaction (LGA, 2017).

- 1.50 Highway authorities possess a range of powers with which to incentivise improved street works delivery. These are highlighted in Annex B.
- 1.51 Current powers available to highway authorities do not alone provide sufficient mitigation of street works related congestion, evidenced by the comparatively high rates of street works related congestion on London's road network.
- 1.52 These mechanisms also rarely lead to the coordination of multi-utility works for connections-led reinforcement, which tends to respond reactively to customer requests.
- 1.53 The GLA is currently working with the developer community to understand perceptions of the process of connecting to the utilities distribution networks.
- 1.54 In 2018 we held a roundtable event with more than 20 senior representatives from large, medium and small property development businesses that operate in London. We have also held several bilateral engagements with individual developers.
- 1.55 Through this engagement we have found that perceptions of utility connections businesses are generally negative. Developers cite multiple specific examples of development projects which have been delayed, at significant cost, by weeks, months or years, as a result of the process of connecting to the utilities distribution networks. Developers perceive that upcoming changes to customer service incentives in the water industry (Ofwat's introduction of CMex and DMex measures of performance) have already had a notable positive impact on the performance of water company connections businesses, with response times and customer engagement improving. However, many developers cite concerns with the performance of the incumbent gas and electricity DNOs.
- 1.56 Developers cite delays in responding to requests for information and quotes, slow response times, and delays to works, as having a substantial impact on their bottom line. In some cases, there is anecdotal evidence that this has led to impacts on public goods, particularly in the form of renegotiations on cross-subsidy contributions to local amenities and affordable housing.
- 1.57 The GLA is undertaking further research to better understand and quantify the impact of this. However, there is some existing evidence that captures the scale of this problem. The GLA issues significant funding to residential property providers for provision of affordable housing. In certain circumstances, for example where a project has been delayed due to unforeseen circumstances, the GLA will issue a waiver on the requirements of this funding in order to issue funds before completion of a project. In 2016, the GLA had to issue waivers for 516 homes across 19 schemes because utilities were not connected – but the situation was worse in 2015, where we had to issue 6,855 waivers across 287 schemes.

- 1.58 This issue is therefore having a material impact on the Mayor's objectives for housing delivery. This is an unacceptable risk to the interests of London and Londoners.
- 1.59 To reduce these costs, there is a need to ensure that infrastructure is delivered in a way that minimises disruption to Londoners and London Businesses. Such approaches could be rolled out in cities across the UK.
- 1.60 Recognising the fact that current powers available to highway authorities and planning authorities do not adequately promote multi-utility works, the GLA is undertaking a range of initiatives to coordinate the activities of utilities distribution networks.
- 1.61 In April 2018 the Mayor's Infrastructure High Level Group endorsed a business case for the GLA to establish additional resources to support infrastructure coordination throughout London, with a focus on high growth areas. The Mayor has since appointed a new Infrastructure and Development Coordination Team (IDCT) at the GLA.
- 1.62 The business case recommended that the GLA develop a portfolio of initiatives and services to enable more coordinated planning and delivery of infrastructure and development and establish a Coordination Team. Funding of £2.9m was awarded from the London's Lane Rental Scheme Surplus Income in August 2018 to fully fund the first two years of the work. After this two-year period, the intention is to secure long-term funding to support coordination on an on-going basis following a process of monitoring and evaluation of outcomes.
- 1.63 Among the projects currently in development, the IDCT will undertake two initiatives aimed at reducing the disruption associated with growth-led reinforcement of the utilities networks. These projects are presented below:
- 1.64 **The London Street Works Collaboration Pilot**
The GLA is currently supporting a pilot project, led by London Borough of Croydon, to undertake street works collaboration in the Croydon Growth Zone. This is where two or more providers undertake works at the same time in the same road space. Sometimes known as 'dig once'.
- 1.65 Based on this successful pilot project (see case study 4), the IDCT will work with other London boroughs and the utilities to promote street works collaboration across London. The IDCT will begin by undertaking several targeted pilot projects, with the aim of monitoring and appraising the benefits of the approach. Benefits will be assessed across all relevant audiences, including the wider public good, boroughs, and utilities.
- 1.66 An analysis of SGN and Thames' investment plan data for the Croydon area suggested that around 15% of all investments for current asset management periods could be identified for

collaborative street works. Further analysis is being undertaken via the GLA's London Infrastructure Mapping Application, which suggests that with a greater pool of utility companies this figure could be higher.

- 1.67 In the case of Croydon, the number of potential collaborative opportunities far outweighs the number of collaborative works undertaken. Epsom Road is the only example to have been pursued in Croydon.
- 1.68 The benefits of collaborative street works are documented in a number of case studies, including the TfL Borough High Street project (see case study 7), and the Staffordshire Connected Roadworks Project (see case study 6).
- 1.69 The GLA has also undertaken a full business case assessment of the costs and benefits of this approach (GLA, 2018a). The business case finds a total NPV for society of quantified benefits of between £40 million and £530 million (2018 market prices) for Low and High benefit assumptions respectively, over a 10-year appraisal period.
- 1.70 Our engagement with stakeholders has consistently suggested that street works collaboration is viewed to be a 'no brainer', and to intuitively deliver benefits to the public, to utilities, and to the public sector. There are now a number of convincing case studies that show that a collaborative approach is likely to yield significant socio-economic and environment benefits.
- 1.71 There are a number of barriers to street works coordination. These include governance barriers, siloed business practices, differences between organisation's ways of working and between organisation's commercial and procurement arrangements. It is also apparent that businesses and Highway Authorities do not currently have the technical capability to share information on their planned investments in a way that would allow for the identification of opportunities for multi-utility works (see *Data Sharing and Innovation*, below).
- 1.72 The Croydon Connect pilot has shown that these barriers are not insurmountable. Through the IDCT the GLA will seek to prove the business case for street works collaboration, including through identifying necessary changes to health and safety regulation, and supporting businesses with creating new processes, systems and commercial arrangements.
- 1.73 **Promoting Efficient Connections in the Croydon Growth Zone**
The GLA is currently supporting a pilot-project, led by Croydon Council, to coordinate connections-led reinforcement of utilities networks in the Croydon Growth Zone.

- 1.74 In the Croydon Growth Zone, there are 20 major developments which are currently consented and will be completed within the next 10 – 15 years. Each of these projects will require 5 utilities connections (gas, water, electricity, sewerage, and telecoms).
- 1.75 If each of these connections is accompanied by a separate street works scheme, this could lead to a total of 100 major street works projects in the growth zone. This would have a major detrimental impact to the local road network, and have a severe impact on resident's perceptions of growth.
- 1.76 The GLA is working with the Croydon Growth Zone to coordinate multi-utility connections-related works for single development sites, and to investigate options for coordinating connections-related works across multiple development sites. In particular, the GLA is investigating options for coordinating reinforcement associated with the Network Rail-led Croydon Area Remodelling Scheme (CARS), which will lead to significant over station development at Croydon East station.
- 1.77 However, the powers at the disposal of Highway Authorities and the GLA may not alone be enough to drive multi-utility works. Additional regulatory intervention may be required, and businesses may need to be empowered to make necessary changes within their organisations, with clear incentives that promote coordination in the public interest.

The GLA therefore recommends that Ofgem:

- 3. Identifies how the RII0-2 regulatory framework can encourage utilities distribution network operators to undertake collaborative street works and collaborative connections-led works.**

Data Sharing and Innovation

- 1.78 Utilities distribution networks do not currently share data efficiently or comprehensively on their existing networks or on their planned investments. There is also inconsistency among the distribution networks in the extent to which this data is collected, stored, processed and utilised in their day to day operations.
- 1.79 Sharing data is a critical step to enable coordination between utilities, resolve safety concerns in the industry, and improve forward planning.
- 1.80 Below are some examples that demonstrate the importance of data sharing for enabling the GLA's duty to plan for and manage London's growth.
- 1.81 **Street Works Collaboration**
The Croydon Connect project (see case study 4) is underpinned by a GIS mapping tool, bringing together data from SGN and Thames Water on forward investment plans and from Croydon Council on road resurfacing, to identify opportunities for joint street works delivery. Without this data it is incredibly difficult to systematically identify opportunities for multi-utility works.
- 1.82 **Understanding existing assets**
One of the biggest maintenance and renewal challenges facing infrastructure operators is understanding where assets are physically located and knowing what condition they are in. This is a particular problem for underground assets. In London, the lack of data on the location of assets underground costs the utilities sector £150m annually due to accidental strikes during excavation (GLA, 2014). This complicates the design and construction process unnecessarily.
- 1.83 Advances in detection technologies, combined with improved data management and collection, has significantly improved the ability of infrastructure operators to locate and better understand underground asset condition. International examples of improving the accuracy of underground asset location data reveal a return on investment as high as £21 for every £1 spent (Zeiss, 2014). The GLA is working with London's utilities providers to improve the quality and collection of underground asset information, however this will require
- 1.84 **Matching Supply with Future Demand**
In Opportunity Areas, the GLA often takes responsibility for identifying capacity constraints in the utility distribution networks. For example, the GLA prepares Integrated Water Management Strategies (IWMS), which set out the capacity of water supply networks and drainage networks in a specific geographic area. The GLA is currently preparing an IWMS for the Isle of Dogs and South Poplar Opportunity Area. In this strategy, it has been necessary

to use Thames Water's data on existing waste water storage capacity to create strategies that can pre-empt potential capacity issues coming to the Isle of Dogs.

- 1.85 The same approach could be applied to the electricity and gas networks, mapping pressures and loads in the network to identify current supply and comparing this to planned growth in an area.
- 1.86 **Efficient Connections**
Better information on existing network capacity, and on planned investments, could result in improved design outcomes for utilities connections.
- 1.87 For example, a planning authority may choose to encourage five utilities providers (water, sewerage, gas, electricity, digital) to undertake connection related works at the same time, to reduce associated street works and to speed up delivery. Or, in cases where multiple developments occur in close proximity, a planning authority may choose to encourage all of the utilities to connect to multiple customers at the same time.
- 1.88 This type of approach could be facilitated by having better data on existing capacity in the utilities networks, and better data on forward investment plans of the utilities.
- 1.89 Despite there being a clear need for better sharing of data between utilities providers, the statutory undertakers have not yet met this need with investment.
- 1.90 The GLA's work to bring together future investment, context, and capacity data from the water, gas, electricity, and transport sectors on the London Infrastructure Mapping Application has revealed several barriers to effective data sharing. These include:
- Concerns about privacy and access to the data;
 - Difficulty ensuring data accuracy; costs of processing and preparing data for sharing;
 - The lack of up-to-date systems for storing and sharing data;
 - Challenges around regularly updating the data; and
 - The multiple parties that require consultation within utilities to prepare and release the data.
- 1.91 Effective data sharing will be essential to facilitate upcoming projects of importance to industry, central government, and the GLA – like bringing together a digital map of London's existing underground assets; and further evaluating capacity constraints that could result from planned development.

The GLA therefore recommends that Ofgem:

- 4. Identifies how utilities distribution networks can be incentivised to collect and share data on their forward investment plans, and their existing underground assets?**

Smart, Integrated Energy Systems

- 1.92 The Mayor has set the aim for London to be a zero-emission city with clean transport and clean energy.
- 1.93 This will be delivered by developing clean and smart integrated energy systems, utilising local and renewable energy resources.
- 1.94 Distribution Network Operators must operate in ways that:
- Reduce carbon emissions and the cost of decarbonisation by accelerating the commercialisation of innovative clean energy technologies and processes into the 2020s;
 - Ensure that the social, environmental and economic value of a smart, integrated energy systems as set out in the London Environment Strategy is maximised at local levels;
 - Support new ownership models, addressing barriers to local value creation, work up the need and potential of new partnerships, engage decision makers and the wider public to back the distributed, decarbonised and digital energy transition; and
 - Exchange ideas as well as building relationships and action across local actors, including the Electricity System Operator (ESO) and Distribution Network Operators (DNO), and support energy trading between other parties who have energy assets to sell and flexibility services to buy across the electricity system, e.g. energy suppliers, aggregators, domestic customers, electric vehicle owners and community energy groups.
- 1.95 Operating in this way will bring benefits to the Mayor's smart energy systems programme, which is already underway. This programme identifies that local value and decarbonisation is emerging, but more needs to be done to support, enable and back smart, integrated energy systems and the zero-carbon outcome these systems can deliver.

The GLA therefore recommends that Ofgem:

5. Accounts for the Mayor's policies on smart, integrated energy systems when regulating the Distribution Network Operators.

2. GD2 Sector Specific Methodology

Managing the Network in the Interests of Wider Society

- 2.1 **CSQ2. Do you agree with our proposed three new output categories?**
And
CSQ3. Are there any other outcomes currently not captured within the three output categories which we should consider including?
- 2.2 The GLA welcomes Ofgem's decision to simplify the output categories for RIIO-2. The proposed outputs cover a number of the GLA's key policy priorities.
- 2.3 However, we believe that greater consideration and emphasis should be given to a fourth output category, 'Operating in the Interests of Wider Society'. The need for this fourth output category is outlined in the following sections, presented above:
- *The Challenge of London's Growth*
 - *Planning for Growth and Investing in the Interest of Londoners*
 - *Managing Disruption caused by Growth, and Promoting Efficient Connections*
- 2.4 This fourth output category would help to capture outputs that may involve the DNOs and TNOs looking beyond the energy system, and to the wider impacts of their operations. For example, by specifying outputs based on the impact of street works on congestion in cities, or by specifying outputs that account for the wider benefits of successful anticipatory investment.
- 2.5 The GLA is willing to commit resource to support Ofgem with assessing the merits of this approach.

The GLA therefore recommends that Ofgem:

- 6. Considers a fourth output category for RIIO-2, 'Operating in the interests of wider society'.**

Ensuring whole system solutions

- 2.6 **CSQ8. Do you feel we have defined the problem [coordination across the whole energy system] correctly?**
and
CSQ9. What views do you have on our proposed approach to adopt a narrow focus [ESO, GSO and four network sectors] for whole systems in the RIIO-2 price control?
- 2.7 The GLA is encouraged by Ofgem's recommendations around whole system solutions. It is our belief that this type of approach could strengthen devolved decision making, better integrate the whole energy system, and promote coordinated approaches to design and construction of assets.
- 2.8 However, the GLA believes that company business plans should set out how DNOs will promote whole system solutions, not only in the interests of consumers, but also to the wider public in their area of operation.
- 2.9 We recognise the benefit of narrowly applying the whole system approach to the energy system. This approach allows for more immediate and practical solutions to be developed, within the business plan period.
- 2.10 However, there is a risk that this approach will miss opportunities for coordination between different sectors. For example, where there might be opportunities for the DNO to work with boroughs to undertake street works at the same time as planned road works (see *Smart, Integrated Energy Systems* above). This is a priority for the GLA in supporting utilities DNOs (water, energy, waste, digital) to plan upfront and on an integrated basis.

The GLA therefore recommends that Ofgem:

- 7. Sets out a requirement for company business plans to provide supplementary evidence to demonstrate how companies will minimise operating, maintenance and capital costs, by pursuing cross-sectoral coordination opportunities, and**
- 8. Meaningfully considers this evidence in the business plan incentive.**

- 2.11 **CSQ10. Where might there be benefits through adopting a broader scope for some mechanisms? Please provide evidence.**
- 2.12 Please refer to the following sections, above:
- *Planning for Growth and Investing in the Interest of Londoners*
 - *Managing Disruption caused by Growth, and Promoting Efficient Connections*
- 2.13 **CSQ11. Do you have reasons and evidence to support or reject any of the possible mechanisms outlined in this chapter? Do you have views on how they should be designed to protect the interests of consumers?**
- 2.14 Utility provider capital investment plans are informed by growth projections and serviceability measures, customer consultations, asset health, risk and performance data.
- 2.15 Levels of investment and operating costs are agreed through negotiations with Regulators at the beginning of the price-control period and set out in the provider's business plan. Providers typically borrow against income from future user charges to fund the upfront costs of investment.
- 2.16 The current regulatory framework requires Utilities to invest in areas where there is certainty of need, to promote cost efficient capital programmes. It is therefore common place for long term investment plans to not fully reflect the demands growth is likely to place on infrastructure due to perceived stranding risk.
- 2.17 Strategic projects requiring longer term investment have been successfully approved by Regulators in their business plans but the evidence threshold is high with Regulators taking a conservative view on projected demand.
- 2.18 Investment ahead of demand will be required to ensure the utilities have sufficient capacity to unlock land for housing development, and meet additional demand, while also maintaining a resilient service to their existing customers. It is the GLA's view that more work is required between planning authorities, providers and regulators to ensure the regulatory regime supports timely investment.
- 2.19 The current regulatory framework does not incentivise anticipatory investment and sets a high evidence bar. This minimal risk appetite drives conservative investment plans, which could ironically drive up costs in the long term as reactive incremental reinforcement could lead to higher TOTEX. Efficiencies of scale afforded by strategic investment and avoided duplication of work could result in lower costs of delivering capacity.

- 2.20 Additionally, the existing business plan assessment framework does not account for wider impacts: Deteriorating air quality and economic productivity caused by congestion related to street works, environmental impact of duplicated works, or loss of economic growth from projects that do not go ahead because of cost and time delays.
- 2.21 The lack of flexibility within price control periods can therefore lead to suboptimal capital investment solutions being selected due to fixed outcomes and budgets. While providers can change cohorts of projects within the price control period, there is less flexibility at the programme or portfolio level.
- 2.22 Integrated infrastructure projects are not generally factored into business plans, as data matching risk with future investment need are not sufficiently developed or shared between organisations. This can result in over-engineered solutions that do not harness efficiencies derived from upfront planning (see *Smart, Integrated Energy Systems* above). Furthermore, there are no specific regulatory instruments to limit the wider impacts of fragmented incremental capital investment programmes.
- 2.23 The ability for utilities to accommodate the demands placed on them by major development projects is limited. Utilities are not considered to be statutory consultees in the planning process and so there is a lack of consistency in the early engagement in the pre-application phase of major developments. This is the optimal period to understand the extent to which utility assets are impacted, and to optimise mitigating measures, which could include collaborative opportunities or reworked design solutions.
- 2.24 The timescales involved in long term planning should afford the opportunity for the sector to develop governance and innovate the legal and commercial arrangements necessary to unlock the full potential of joint procurement and delivery of infrastructure.
- 2.25 However, these opportunities are often missed, due to the fragmented nature of infrastructure planning and delivery. The GLA is therefore strongly supportive of Ofgem's proposals for a 're-opener' mechanism, to support investments that were not supported or considered through the Business Planning process.

The GLA recommends that the re-opener mechanism:

- 9. Makes use of governance arrangements that are developed locally, at the development site scale, and which are based around existing governance arrangements;**
- 10. Be triggered in a flexible manner, based on local needs; and**
- 11. Involve the GLA in decision making of relevance to the Greater London area.**

2.26 Governance arrangements for the re-opener could be organised via existing Area Boards. The GLA possesses significant expertise in the establishment and running of these types of Area Boards, including via the Mayoral Development Corporations. As set out in this consultation response, the GLA would welcome the opportunity to work with Ofgem on setting out the most appropriate governance arrangements for the reopener mechanism.

2.27 The GLA recognises that a flexible approach to triggering the re-opener could lead to administrative burden. We would welcome an opportunity to discuss the details of this, and how a process undertaken at the strategic planning authority level, could help to alleviate this administrative burden.

2.28 **CSQ16. Are there any additional framework-level whole system barriers or unlocked benefits, and if so, any price control mechanisms to address these?**

2.29 In addition to the proposals set out in RIIO-2, further work is required between planning authorities, providers and regulators to overcome some of the unintended consequences of regulation that constrain coordination and collaboration.

2.30 There could be a role for the regulators to work with the GLA to understand the following, and to promote price control mechanisms to address these:

- Balancing stranding risk against the wider socio-economic benefit of providing enabling infrastructure to support sustainable development, by factoring in wider impacts into the regulatory framework;
- Consider mechanisms by which anticipatory investment could be better accommodated in the price review framework. Examples of such mechanisms already exist in the energy sector. Applications for funding can be considered part way through the price review period to fund investment that was not anticipated for projects over £25m or load-related investment (with 20% cost difference than originally planned);
- Promoting the establishment of Area Boards to consider a wider cost benefit assessment of anticipatory investment, including via the reopener mechanism; and
- Working with the GLA and others to ensure that energy utilities are recognised as statutory consultees for major infrastructure projects and major development projects, so that DNOs and TNOs gain early insights into the extent to which their assets are impacted and bound the extents of mitigating solutions.

Managing the risk of asset stranding

2.31 **CSQ40. Do you have any views on our direction of travel with regard to anticipatory investment?**

2.32 We welcome Ofgem's focus on anticipatory investment in the RIIO-2 framework.

2.33 The proposal for a framework for assessing the costs and benefits of highly anticipatory investment is welcomed. The GLA has undertaken cost benefit analysis of investment ahead of need, under the DevCo scenario, and found that in most circumstances investment ahead of need produces a positive NPV to society.

2.34 However, in most cases the application of DevCo would be considered to be a 'heavy handed' solution to promoting anticipatory investment. This is because, outside of the regulated utility sector, the level of risk associated with a project of this type could in many cases be considered acceptable. This is particularly the case where the public sector has invested significant funding to increasing the viability of a development site, for example through direct investments in utility distribution infrastructure, or to associated enabling infrastructure. In these cases, it may be feasible for the utility company to make an anticipatory investment, without the support of a DevCo or other similar public-sector interventions.

2.35 It is therefore crucial for Ofgem to set out what it regards as 'highly' anticipatory investment, and what would be considered 'business as usual' anticipatory investment. The GLA would be willing to work with Ofgem to define this.

2.36 With regards to Ofgem's 'higher hurdles' proposal, the GLA welcomes Ofgem's focus on protecting consumer bills. However, it is important that these 'hurdles' are conceived in a way that does not place an unfair administrative burden on the utilities when producing a business case for a particular investment. It is also important for Ofgem to note that these administrative costs may in fact fall to the public sector, and therefore the taxpayer, where a DNO chooses not to undertake this necessary analysis. This could also result in an over-emphasis on the public sector intervening to forward fund necessary investments, particularly if the bar has been set too high for utilities.

The GLA therefore recommends that Ofgem:

12. Clarifies what it regards as 'highly' anticipatory investment, and what would be considered 'business as usual' anticipatory investment.

Annex A: Case Studies

Case Study 1: Vauxhall Nine Elms Battersea

The Vauxhall Nine Elms Battersea (VNEB) area is identified as an Opportunity Area (OA) in the current London Plan (2010). The OA comprises 195 hectares of land on the South Bank of the River Thames. It encompasses Albert Embankment, Vauxhall Cross, Nine Elms including New Covent Garden Market and Battersea Power Station. Its western boundary is largely formed by Queenstown Road and Silverthorne Road.

Development and infrastructure investment in VNEB is large in scale, and is delivered in a complex setting. In the 2012 Opportunity Area Planning Framework, capacity for c.16,000 homes, and 20,000 – 25,000 new jobs were identified. The northern part of the OA is located in the London Borough of Lambeth, with the Southern part located in the London Borough of Wandsworth. The borough boundary bisects the OA to the west of Vauxhall Cross, creating complex governance challenges.

Prior to investment, the site was primarily made up of large areas of brownfield land, and possessed very limited pedestrian access and public transport provision. It was therefore identified that the extension of the Northern Line (announced in 2010), from Kennington to Battersea Power station, as well as transport interchange facilities at Vauxhall, were required. The announcement of the scheme accelerated development activity in the area. The Thames Tideway Tunnel project, also underway in the vicinity, makes use of the riverbank near to Battersea Power Station for tunnelling and logistics transfer. Combined, these major works add further complexity to the delivery of the OA.

In recognition of the huge scale and complexity of planned development and infrastructure at VNEB, the boroughs, TfL, and the GLA identified a need for a local 'partnership' to support coordination of providers works, and associated activities. The Nine Elms Partnership, a joint initiative between Lambeth and Wandsworth Councils, was therefore established in 2010.

Coordination efforts undertaken at VNEB have ensured that delivery of works for infrastructure projects have been achieved within a compressed timeline, particularly following commencement of works on the Northern Line Extension, which concluded in December 2017. In particular, the use of a construction logistics plan, and a Construction Charter, are said to have positively impacted on social and commercial objectives. For example, Wandsworth Council reported fewer breaches of air pollution limits around the Nine Elms area in 2017 than in 2016, which may relate to construction logistics improvements.

In general, further evaluation of the OA closer to completion of works is required to fully understand the impacts of existing coordination efforts at VNEB. However, stakeholders operating in the area feel positive about the work of The Partnership and TfL.

Partly due to the size and complexity of the VNEB development, but also because of the pace of development and relative paucity of pre-existing governance arrangements, coordination failures have occurred throughout the lifecycle of development. Most notably, the October 2010 Development Infrastructure Funding Study, identified significant constraints on electricity supply, and drainage capacity. There is common agreement that because this was not followed up with a utilities masterplan, these constraints were not considered sufficiently in the individual plans of

infrastructure and development providers, and providers did not coordinate to agree a common solution to the constraints, for example, allocating land for a new substation.

Discussions regarding electricity reinforcement are ongoing. Failure to deliver reinforcement has led to construction delays (including the Battersea Power Station development), and commercial implications for developers and others. The failure to invest ahead of need in utilities infrastructure has also necessitated costly retrofitting of electricity and drainage infrastructure.

Case Study 2: Royal Docks

The Royal Docks and Beckton Riverside area was designated an opportunity area in the current London Plan (2010). A working draft Opportunity Area Planning Framework was published in March 2016, and will be updated following publication of the new London Plan (2018 / 19). The draft identifies capacity for 25,500 homes and 60,000 new jobs.

Royal Docks is an example of an existing coordination effort, in which utilities supply constraints have led to productive 'lessons learnt' with regards to governance, funding and regulatory issues.

In 2017 The Mayor of London and Mayor of Newham established a joint Royal Docks Delivery Team to guide development, attract investment and drive a programme of investment to ensure the potential of the Royal Docks and Enterprise Zone is fully realised. From a governance perspective, the Royal Docks team is overseen by the Royal Docks EZ Programme Board, made up of senior GLA, Newham & LEAP members & officers

The area is characterised by large areas of brownfield land, bisected by sizeable waterways. Prior to investment in the DLR and waterway crossings, the site was characterised by very limited pedestrian permeability. Investments in new infrastructure have improved accessibility to key sites, but further investment is needed. The site will benefit from planned major infrastructure projects (Crossrail, and new crossings over the Thames including the Silvertown Tunnel), enabling several planned major developments.

Insufficient electricity capacity for the proposed level of development has been identified by UK Power Networks (UKPN) and as a result the network will need reinforcement to meet this demand. A further study is to be completed to identify any further capacity constraints for other utilities.

Energy supply constraints have led to a request from the DNO (UKPN) for individual developers to make significant contributions to reinforcement investments, including a new primary substation. These requests have in many cases been disproportionately large in scale relative to the developer's investments, due to the nature of regulations governing DNO's connections charges (Second Comer Regime).

Developers have also been asked to accommodate new infrastructure on their own sites, taking up significant development areas. This uncoordinated approach to utilities investment is common across large Opportunity Area development sites. The Royal Docks provides helpful examples of potential coordination services, in that the GLA and Newham are working in partnership with providers to identify coordinated solutions to utilities supply constraints. The site also provides important examples of where barriers to coordination exist.

The capacity of the electricity network has not yet delayed delivery. However, it is causing concern among the developers within the area. This in turn is leading to concern that investment decisions

may have to be delayed until the capacity is guaranteed. The lead in time for the interventions required is measured in years, and delays therefore would have a significant impact on timing of delivery.

As the GLA has a vested interest in the area, due to the group's land holdings, it has taken an active role in addressing the concerns brought to us by our development partners. In the absence of this specific interest, developers would be left to address the situation alongside the borough without a specific resource available to broker coordination between the various providers or developers.

Discussions started with the DNO indicating that there was no further capacity within the area available. However, through the intervention of the GLA and provision of additional development information, an additional capacity of circa 59 MVA has been identified and the requirement for investment delayed (but not removed).

This highlights how a co-ordinated approach to engaging with utility providers is likely to be more fruitful than those undertaken by individual developers. This approach would ideally also allow utility providers to have more confidence in making allowances for strategic investments within their business plans. In turn, if included in the discussion and process, the regulators should have more confidence in signing off these planned expenditures ahead of the demand materialising. The benefits of having a dedicated resource to coordinate and facilitate infrastructure delivery is therefore vital to ensuring that matters such as those identified do not halt development.

The Royal Docks team undertakes several coordination roles. Specifically relating to electricity, the following activities have been undertaken by the development team of the GLA, with assistance from external consultants):

- Detailed phasing and mapping of demand in the local area;
- Working with internal GLA experts, Ofgem & UKPN to address the issue;
- Liaising with local developers to gather programme data and provide progress updates on potential identified solutions;
- Seeking out funding to intervene (via Royal Docks & HIF) with potential capital investment in infrastructure; and
- Consideration of potential mechanisms to recoup investments if made.

The business case for intervention in the Royals electricity infrastructure has not yet been carried out and therefore investment has been minimal to date.

The following activities are likely to take place in the future:

- Coordination of local developers and request for capital contributions;
- Delivery of infrastructure required to support development; and
- Ongoing monitoring of development rates.

From an internal GLA resourcing perspective this approach has required significant officer time, operating in an area outside their direct expertise. This is arguably not efficient and increases project risks. A dedicated coordination function, deployed over time across London, would allow for more efficient use of resources and for the deployment of specialist expertise.

Case Study 3: Old Oak and Park Royal Development Corporation

The Old Oak and Park Royal Development Corporation (OPDC) was officially launched by the Mayor of London in April 2015 and is the Local Planning Authority and regeneration agency for London's largest Opportunity Area, Old Oak and Park Royal. Old Oak and Park Royal is a 650-hectare site in West London and sits across the London Boroughs of Brent, Ealing and Hammersmith and Fulham.

Old Oak and Park Royal is the only place in the country where High Speed 2 (HS2) and Crossrail meet and OPDC is tasked to use this opportunity to create a thriving new area in the city. The London Plan identifies capacity for the development of 25,500 new homes and around 55,000 jobs new across the site over the next 20-30 years.

OPDC is currently focussed on the early delivery of new homes and jobs in Old Oak North. To maximise the development opportunity and bring forward new homes at scale and pace, OPDC has been working with AECOM to deliver a spatial masterplan and develop a series of comprehensive infrastructure strategies including electrical power, energy, transport, social and waste. It is envisaged that Old Oak North alone will deliver 5,000 new jobs, 10,000 new homes and two new public parks.

Old Oak North falls within the franchise boundary of UKPN and SSE networks. Working with AECOM as Infrastructure Advisors, OPDC engaged extensively with both UKPN and SSE to understand the "spare" capacity within the existing electrical power networks and their long-term development plans for the area. Through this engagement, it was understood that there is sufficient supply within the existing networks to serve sites coming forward in and around Old Oak North until 2021. However, after 2021 network reinforcement works will be required to facilitate future connections.

OPDC estimate that the electrical demand for sites coming forward from 2022-2033 is circa 29MVA (including energy centre loads and EV charging points) and it is understood that to serve this demand a new connection from a DNO is required.

Lack of electrical power supply is a known impediment to development across London and the UK, as new DNO connections are expensive and likely cost prohibitive for some developers. It was therefore understood by OPDC that without public sector intervention and an investment ahead of need, the shortfall in supply within the existing networks would likely stall development coming forward beyond 2021. This is because network reinforcement will be required by UKPN or SSE and, as electrical capacity and infrastructure is provided in "blocks" usual of 15 or 30MVA, it is likely that future connections would be expensive and cost-prohibitive for some developers.

Continuing to work closely with key stakeholders, OPDC understood that HS2 were commissioning UKPN to deliver a new substation (namely the Atlas Road substation) close to Old Oak North to power tunnel boring machines and the ongoing operation of the Old Oak Common Station. Over an 18-month period, OPDC worked closely with UKPN and HS2 to maximise the power supply available at Atlas Road. As a result of collaborative efforts, UKPN secured Board approval to make opportunistic reinforcement in the network, facilitating an upgrade from 45MVA capacity to 60MVA. OPDC then received a Connection Offer from UKPN for the additional 15MVA capacity, which will ensure sufficient capacity in Old Oak North until 2026.

OPDC understand that HS2's power demand will fall off by 15-20MVA after 2023 following completion of their tunnel boring operations. OPDC are progressing conversations with HS2 and UKPN to ensure this "unused" capacity can be used to serve the development in Old Oak North.

Note if OPDC do not use the UKPN supply at Atlas Road a higher connection fee in the order of £16m would be applied bringing the total cost to circa £30m rather than £18m.

This collaborative working will ultimately save the public purse significant capital costs (circa £10-£12m) and ensures timely and cost-effective connections are available to developers. It also reduces disruption to the built environment and provides an opportunity for the coordinated delivery of electrical infrastructure, meaning that roads will not need to be dug up multiple times.

It is OPDC's intention to procure an IDNO to design, build, own and operate the new electrical infrastructure in Old Oak North and seek to recover early capital investment through a combination of use of system charges and connection charges (second comer).

OPDC have benefitted from the ongoing engagement and support provided by UKPN and their ability to make opportunistic reinforcement at Atlas Road has been commended at the highest levels within the organisation.

Case Study 4: Croydon Connect

The Croydon project is underpinned by a GIS mapping tool, which identifies and flags opportunities for joint street works delivery. The borough then works with an established street works coordination group - involving SGN and Thames Water - to facilitate joint contracting of works.

One opportunity was identified on Epsom Road, an important highway in the centre of the Growth Zone. SGN and Thames Water (eight2o) have agreed to jointly procure street works on Epsom Road, and have completed site investigations and design. The works will also be coordinated with road resurfacing undertaken by the borough.

The project will commence in March 2019, and will run for a total of 16 weeks. Further schemes are being identified. The GLA will undertake a full post-project appraisal, identifying financial and economic benefits of the pilot project.

Collaboration between road resurfacing and utilities reinforcement has allowed the borough to waive parking bay suspension charges, a direct financial incentive to the utility companies. Further smaller savings will accrue related to more efficient traffic management measures.

Tangible Benefits:

- The total programme of works has been reduced from 30 weeks (non-collaborative works) to 16 weeks (collaborative works), leading to 98 days of disruption avoided. This is equal to £678,000 in lost time to road users;
- C. £200,000 in waived parking bay suspension charges to utilities;
- On site efficiencies;
- Borough to undertake roads resurfacing;
- Borough aims to coordinate traffic management; and
- Borough aims to coordinate letter drops.

Intangible benefits:

- Creation of a truly multi-disciplinary and cross-utility team;
- Potential for reduced noise and air pollution associated with congestion; and
- Public perception.

Case Study 5: Isle of Dogs and South Poplar

The Isle of Dogs and South Poplar area was designated an opportunity area in the current London Plan (2010).

The draft Opportunity Area Planning Framework for the Isle of Dogs and South Poplar outlines plans for upwards of 31,000 new homes, two thirds of which have already been permitted.

With this unprecedented level of growth, there is a need to effectively coordinate infrastructure planning and delivery to ensure housing targets are met, and existing service levels are maintained.

This is particularly important because the area is home to a large existing community of residents (c.30,000), and business including those operating within Canary Wharf. Complicating matters is a constrained road network, including just two access points onto the island and ageing infrastructure networks. As such the area is an important example of where the complexity of existing infrastructure and development lead to major coordination challenges.

The GLA is working with LB of Tower Hamlets, utilities providers and developers to prepare an integrated strategy for utilities. This strategy incorporates innovation and sustainable solutions for infrastructure, potentially at lower cost than what would have been designed through a siloed approach.

As a first step, work is underway to improve understanding of the phasing of growth and identify key trigger points for infrastructure investment. The intention is to develop a dynamic model, informed by these integrated solutions. This model will clearly outline timeframes for investment requirements that will translate into a plan for delivery. There is scope for this plan to incorporate best practice approaches to construction, including street works collaboration and construction logistics management, as well as coordinated connection requests.

Ultimately this plan for delivery is likely to make recommendations for anticipatory investment, where in the public interest. It will also make proposals for land assembly for infrastructure, and will provide a framework for distributing Community Infrastructure Levy and section 106 developer contributions.

It is important to note that an integrated plan for delivery is a departure from status quo approaches. Utilities providers are at the heart of this upfront planning approach, and their buy-in is essential to successful implementation.

Case Study 6: Staffordshire Connected Roadworks

The Staffordshire Connected Roadworks project was a £0.65M Innovate UK-funded project aiming to expand implementation of joint street works in Streethay and other areas of Stafford over an 18-month period. The project involved combining maintenance programmes from Staffordshire Highways, utility providers and telecommunications companies. The project aimed to reduce the total cost of the highways network, reducing the impact on the environment and local economy, and minimising disruptions and inconvenience to residents.

The project achieved this by:

- Developing an interactive mapping tool, and a central data hub;

- Promoting collaboration between utilities and the local authority;
- Identifying joint street works opportunities, and regulatory barriers to their adoption; and
- Making the evidence-based business case for joint street work.

Staffordshire Highway Authority has been delivering joint roadworks schemes for many years. The Staffordshire Network Hub track the number of days of roadworks avoided by better planning and joint working. There were 35 projects recorded in 2015/16, of which 31 involved joint works. Joint occupation projects resulted in an estimated 366 fewer days of roadworks throughout the year, with six of these projects leading to over 20 days of roadworks saved each.

In addition, Future Cities Catapult cite a number of specific joint street works projects, each of which demonstrate significant value when compared to the status quo.

A scheme to install 3.7km of gas main and resurface 3km of the carriageway on the A449 Wolverhampton Road in Stafford was undertaken collaboratively. This resulted in a 25 weeks individual works estimated duration reduced to a 12 weeks combined duration, resulting in estimated delivered economic benefits of £1.372m, the majority of which were time savings to road users, with additional non monetizable benefits in the political and social benefit areas.

Case Study 7: Borough High Street

The London Bridge, Borough and Bankside area was identified as an Opportunity Area (OA) in the current London Plan (March, 2010). In The Plan, the OA was identified as possessing significant employment capacity (c.25,000), as well as moderate housing capacity (c.1,900). To support major planned investment in the area, including the London Bridge Station and Shard developments, utility providers planned to undertake a major renewals and replacement works starting in 2009.

A substantial proportion of the utilities assets were planned to make use of road space on Borough High Street. Borough High Street is an A-road (A3) spanning from the North to South of the Opportunity Area. The road acts as a surface transport route between Elephant and Castle and London Bridge, supporting large volumes of pedestrian and vehicle traffic. It also acts as a key utilities corridor between the strategic network to the South of the River, and new developments within the Opportunity Area. To limit costly disruption to the A3, it was identified that joint street works were required.

Utility companies voluntarily collaborated, appointing one joint road work contractor to undertake work over a planned nine-month period. The scope of works was wide ranging, including:

- 1,250m Victorian water mains renewal as part of Thames Water's leakage reduction programme;
- 1,670m of gas mains replacement by Southern Gas;
- 200m of new 8-way cable power ducts to the Shard; and
- Utility diversions works by Network Rail as part of London Bridge remodelling.

According to a Streetworks UK (formerly NJUG) report, the joint road works approach resulted in major savings to the public and to utilities providers. During the planned works, TfL completed 16

separate highway maintenance jobs within the boundary of the joint works, and BT also carried out some repair works. As reported by TfL, this voluntary collaboration led to a saving of 384 days of road occupation, where 669 would have been needed had all works been carried out separately and independently. This represents a 57% reduction in social costs incurred. In addition, the utility companies themselves benefited from lower highway management and planning costs, saving 20-50%.

Annex B: Highway Authority Powers

The London Lane Rental Scheme

TfL's Lane Rental Scheme (TLRS) applies to the most traffic-sensitive locations and the most traffic-sensitive times of day. Charges range from £800 to £2,500 per day depending on time period and road type.

The scheme has shifted some roadworks to less traffic sensitive times and encouraged use of innovative traffic management and works techniques. According to TfL's latest monitoring report, the number of street works projects undertaken collaboratively (more than one utility provider and / or highway authority working in the same road space at the same time) has increased by 65% since the Lane Rental Scheme was introduced.

Of note, there has been a significant increase in the number of collaborative works undertaken since TfL began to issue waivers for projects that are undertaken collaboratively (TfL, 2018).

Table 2: Collaborative Working Figures across the Transport for London Road Network

| | P8 2010/11 to P7 2011/12 | P1 to P13 2017/18 | Change | % Change |
|---|--------------------------|-------------------|--------|----------|
| Average number of collaborative work sites per reporting period | 16 | 26 | 10 | 65% |
| Average number of days of disruption avoided per reporting period | 110 | 78 | -32 | -29% |

Section 58 Notices

Section 58 Notices are issued by Highway Authorities to prevent utility companies from digging up a road surface that has recently been reinstated. They can be issued for a period of 3-5 years.

Section 58 is also used by Highway Authorities to avoid repetitive disruption of traffic by works being carried out in the street.

Currently it can only be invoked after the Highway Authority has undertaken substantial road works. These are defined as works that consist of resurfacing, reconstruction, widening or alteration in the level of the part of the street concerned.

The London Permit Scheme

Utility companies are required to apply for a permit before starting road works or street works. The cost of permits ranges from £35 to £240 depending on borough, type (major/minor) and immediacy (standard/immediate).

TfL reported a 21% reduction in the hours of serious and severe disruption caused by works in London up until period 9 of 2011, delivering significant public welfare benefit.

Statutory Coordination Meetings

The New Roads and Street Works Act 1991 (NRSWA,) provides a legislative framework to be followed and several tools that can be employed by both Local Authorities and Utilities to reduce the impact of all works on the highway if implemented correctly.

Among these tools are statutory quarterly coordination meetings, which Local Authorities organise alongside representatives from utilities companies (DfT, 2012). These meetings are intended for detailed discussion of upcoming works, and for identification of potential measures required to adjust traffic management.

It is widely recognised that these meetings rarely function as a forum for coordinating joint delivery of street works and / or road works. It is also widely recognised that these meetings are a weak mechanism for promoting this type of behaviour, and provide little added value to authorities or utilities (Hussain, et.al 2017).

References

Department for Transport., 2012. New Roads and Street Works Act: Code of Practice for the Co-ordination of Street Works and Works for Road Purposes and Related Matters. [ONLINE].

Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/43578/street-works-code-of-practice.pdf. Accessed: 12/03/2019.

Greater London Authority., 2014. GLA Networked Utilities: Summary of Stakeholder Workshop. Arup. London.

Greater London Authority., 2017a. Draft London Plan. [ONLINE] Available at:

<https://www.london.gov.uk/what-we-do/planning/london-plan/new-london-plan/download-draft-london-plan-0>. Accessed: 12/03/2019.

Greater London Authority., 2017b. London's Strategic Infrastructure Requirements. [ONLINE]

Available at:

https://www.london.gov.uk/sites/default/files/london_strategic_infrastructure_requirements_2017_1.pdf Accessed: 12/03/2019.

Greater London Authority., 2018a. Infrastructure and Development Coordination Team Business

Case. [ONLINE]. Available at: https://www.london.gov.uk/sites/default/files/md2386_annex_b.pdf.

Accessed: 12/03/2019.

Greater London Authority., 2018b. London Plan Annual Monitoring Report 2016 / 17. [ONLINE]

Available at: https://www.london.gov.uk/sites/default/files/amr_14_final_20180927.pdf Accessed: 14/03/2019.

Greater London Authority., 2019. The Mayor of London's Capital Spending Plan 2019-20.

[ONLINE]. Available at: [https://www.london.gov.uk/sites/default/files/2019-](https://www.london.gov.uk/sites/default/files/2019-20mayorscapitalspendingplan_v2.pdf)

[20mayorscapitalspendingplan_v2.pdf](https://www.london.gov.uk/sites/default/files/2019-20mayorscapitalspendingplan_v2.pdf) Accessed: 14/03/2019.

Hussain, R. et al, 2015. Stakeholder perspectives of street works management in England. IN: WIT Transactions on The Built Environment, Volume 168, Southampton: Wit Press, pp. 867-878; Sustainable Development, Vol. 2.

Hussain, R. et al, 2016. Street work policy in England, UK: insights from stakeholders. IN:

Infrastructure Assessment Management, Volume 3, Issue 2 [ONLINE]. Available at:

<https://dspace.lboro.ac.uk/dspace-jspui/bitstream/2134/21152/4/jinam.16.00002.pdf>. Accessed: 12/03/2019.

Hussain, R. et al, 2017. Process mapping for road works planning and coordination. Built Environment Project and Asset Management, Vol. 7 Issue: 2, pp.157-172.

Inrix, 2018. 2018 Scorecard. [ONLINE]. Available at: <http://inrix.com/press-releases/scorecard-2018-uk/>. Accessed: 12/03/2019.

Local Government Association, 2017. A country in a jam: tackling congestion in our towns and cities. [ONLINE]. Available at: https://www.local.gov.uk/sites/default/files/documents/5.16%20Congestion_report_v03.pdf. Accessed: 12/03/2019.

Scottish Government, 2014. Expert Commission on Energy Regulation: Main Report. [ONLINE]. Available at: <https://www.gov.scot/binaries/content/documents/govscot/publications/report/2014/07/expert-commission-energy-regulation-main-report/documents/00455402-pdf/00455402-pdf/govscot%3Adocument>. Accessed: 12/03/2019.

Transport for London., 2017. Understanding and Managing Congestion in London. [ONLINE] Available at: <http://content.tfl.gov.uk/understanding-and-managing-congestion-in-london.pdf> Accessed: 12/03/2019.

Transport for London., 2018. TfL Lane Rental Monitoring Report 2017/18. [ONLINE] Available at: <http://content.tfl.gov.uk/lane-rental-monitoring-report-apr-2017-mar-2018.pdf> Accessed: 12/03/2019.

Zeiss, G., 2014. Accelerating World Wide Initiatives to Map Underground Utilities. [ONLINE] Available at: <https://www.linkedin.com/pulse/20140522175912-840956-accelerating-world-wide-initiatives-to-map-underground-utilities> Accessed: 12/03/2019.