

# OLD KENT ROAD

LONDON BOROUGH OF SOUTHWARK

## Old Kent Road Utilities Study: An assessment of existing utilities capacity and the need for reinforcement

June 2016



 @lb\_southwark

 facebook.com/southwarkcouncil

Join our  
**COMMUNITY**  
CONVERSATION

**Fairer future**  
Revitalised neighbourhoods 

**Southwark**  
Council

# Old Kent Road Utilities Study: An assessment of existing utilities capacity and the need for reinforcement

## Contents

Aim of Study	1
Background	1
Objectives	3
Methodology	3
Results	5
Energy	5
• Electricity	5
• Gas	11
• Heat	13
Water resources	15
Digital connectivity	24
Conclusions	28

## Aim of study

The aim of this study was to undertake an assessment of existing utilities provision and capacity (electricity, gas, heat, water/sewerage, telecommunications) and the need for reinforcement of this infrastructure over the next 20 years, taking into account the significant scale of development being planned in the emerging Old Kent Road Opportunity Area.

## Background

Together with the Greater London Authority Southwark Council is developing an Area Action Plan (AAP) for Old Kent Road and the surrounding area. The area is identified as an Opportunity Area and significant growth and regeneration is being planned. This will place pressure on existing utilities.

The boundary for this area will be formally agreed in 2016 at the preferred option stage of the AAP/OAPF. In the meantime, we have identified an appropriate area for the purposes of this study. See figure below.

**Figure 1: Old Kent Road AAP indicative area**



*Planning context*

The Further Alterations to the London Plan, incorporated into the London Plan in March 2015, identify a new opportunity area on the Old Kent Road. The Old Kent Road area has the potential to support very high levels of housing and business growth. The area is evolving and significant change is expected over the next 15 years. Key drivers include the potential for the Bakerloo line extension (BLE) and two new tube stations, the changing nature of business space, including growth of demand for flexible and hybrid business space and declining demand for warehousing and industrial space, changing shopping patterns and potential for growth of new residential neighbourhoods. The BLE in particular would need significant housing numbers to help justify the level of investment required and also help pay for it. However, it would also transform accessibility, increase land values and inflate demand for non-residential space. These changes have the potential to transform the Opportunity Area.

Collaborating with the GLA and TfL, the council is preparing an AAP which identifies land uses, capacities, sites, design guidance and infrastructure requirements. The plan will help manage change and growth and ensure that the potential transformation happens in a way that results in a better place to live, visit and work while retaining and enhancing what is currently valued.

The AAP will be a statutory development plan and the council expects to publish a preferred options report in spring 2016. In the meantime, the council and GLA are engaged in preparing evidence to support the plan and are front-loading consultation to ensure that there is an opportunity to influence the plan prior to publication of the preferred options.

The studies being prepared to inform the AAP include a 'place making' study which is exploring the potential to create new "places" along the Old Kent Road (OKR). This study includes assessment and rigorous testing of development capacity (taking into account the emerging place-making principles) to give confidence that development can be implemented

in a manner which is consistent with the emerging vision and place-making principles. **The emerging scale of growth being considered at the time of initiating this study is around 20,000 new homes and 5,000 additional jobs.**

## **Objectives**

The Objectives of the study are to:

- Establish the current utilities provision and capacity in the area – including energy, water, sewerage and ITC
- Forecast the future infrastructure reinforcement required for the area based on the level of growth planned for the OKR Opportunity Area
- Provide an estimate of the costs of the identified infrastructure reinforcement, the anticipated funding sources (including any committed funding), the land requirements for new assets (e.g. new substations) and where possible indicative timescales

The evidence developed through this study will be critical for informing OKR AAP policies and the delivery of necessary infrastructure, including understanding the cost burden to development and implications for CIL and/or s106 requirements. It will inform the need for any more detailed assessment of infrastructure planning and delivery requirements.

## **Methodology**

Utility providers' strategies and long term statements were reviewed for information relevant to Southwark along with infrastructure studies undertaken in London such as the Central London Infrastructure Study (URS, 2009), Electricity Infrastructure (London Infrastructure Group, 2013), London Infrastructure Plan 2050 (2015) and Lewisham's Infrastructure Delivery Plan (2016). Also infrastructure background papers produced by Southwark Council for the Core Strategy and Canada Water AAP. These documents provided useful background information and highlighted specific points for follow-up with utility providers.

Utility providers operating within Southwark were then contacted to understand their growth plans, existing and future spare capacity and the need for reinforcement based on the planned growth in the OKR Opportunity Area (OA).

Details of utility providers contacted are listed in Table 1 below:

Table 1: Utility providers contacted

Utility	Company	Contacts
Electricity	National Grid	Richard Walsh, Regional Stakeholder Manager, UK and EU Public Affairs, National Grid - Corporate Affairs <a href="mailto:richard.walsh2@nationalgrid.com">richard.walsh2@nationalgrid.com</a>
	UK Power Networks	Planning managers for London: Chris Winch (Infrastructure Planning Manager) – <a href="mailto:Chris.winch@ukpowernetworks.co.uk">Chris.winch@ukpowernetworks.co.uk</a> Veronique Martre (Distribution Planning Manager) – <a href="mailto:Veronique.Martre@ukpowernetworks.co.uk">Veronique.Martre@ukpowernetworks.co.uk</a> Head of major connections, <a href="mailto:Stephen.Bradley@ukpowernetworks.co.uk">Stephen.Bradley@ukpowernetworks.co.uk</a> ; <a href="mailto:irvine.nyamapfene@ukpowernetworks.co.uk">irvine.nyamapfene@ukpowernetworks.co.uk</a>
Gas	SGN (previously Scotia Gas Networks)	Leigh Keegan, Network Support Manager, Third Party Connections - <a href="mailto:Leigh.keegan@sgn.co.uk">Leigh.keegan@sgn.co.uk</a>
Heat	SELCHP	Lynn Davis, Veolia, Contract Manager - District Heating (SELCHP)
	Heygate Estate ESCO	Amber Jenkins, Energy Development Manager, Lend Lease - <a href="mailto:Amber.Jenkins@lendlease.com">Amber.Jenkins@lendlease.com</a> Anthony Poole, EON - <a href="mailto:Anthony.Poole@eonenergy.com">Anthony.Poole@eonenergy.com</a>
Water/ sewerage/ waste water	Thames Water	Mark Mathews, Town planning manager, <a href="mailto:mark.mathews@thameswater.co.uk">mark.mathews@thameswater.co.uk</a> ; Edmund Woodger, South London Infrastructure Asset Planner Wastewater Strategy, Planning & Assurance, <a href="mailto:Edmund.Woodger@thameswater.co.uk">Edmund.Woodger@thameswater.co.uk</a>
Digital connectivity	BT Openreach	Martin Corbett, <a href="mailto:Martin.corbett@openreach.co.uk">Martin.corbett@openreach.co.uk</a>
	Virgin Media	Chris Wood, National new development officer, London East, <a href="mailto:chris.wood3@virginmedia.co.uk">chris.wood3@virginmedia.co.uk</a>
	Hyperoptic	Philip Cooper <a href="mailto:philip.cooper@hyperoptic.com">philip.cooper@hyperoptic.com</a>
Surface water flood risk	Thames Water	See above (also Southwark Council's flood risk manager)

Discussions on infrastructure planning and delivery issues were also held with representatives of Old Oak Common and Park Royal Development Corporation (OPDC), Vauxhall Nine Elms and the GLA.

Engagement with utility providers involved:

- Introductory email seeking a meeting (with follow up call where relevant).
- Meeting or conference call to provide an overview of the planned growth at OKR OA, establish what information we need for the study and explore what information they can provide and next steps.
- Follow-up meeting or correspondence (where required) to discuss further information requirements and how these might be resolved.

## Results

This section of the report highlights the findings of the research by utility type, beginning with energy utilities.

## Energy

The Mayor of London's Infrastructure Plan Update Report (March 2015) provides a useful summary of key challenges for energy infrastructure in London. It must supply energy securely and reliably, provide affordable and cost-competitive energy, and deliver an 80% reduction in carbon dioxide emissions by 2050<sup>1</sup>, in line with Mayoral and national government policy. New and existing energy infrastructure must also be made resilient to climate risks.

This study covers reinforcement requirements for the OKR OA for three types of energy infrastructure: electricity, gas and heat.

## Electricity

### *Existing infrastructure*

There are four key elements involved in providing electricity – generation, transmission, distribution and supply. This study considers the first three elements, including strategic and secondary electricity sub-stations (e.g. Old Kent Road and Neckinger) and cable network, but excludes supply as the supply companies do not directly influence utility infrastructure provision in Southwark. Due to security concerns utility providers do not share maps of existing electricity infrastructure.

### *Results of review of relevant documents*

The London Plan notes that in the short-term (at least), **electricity demand in London could increase by up to 4% annually**. The Mayor of London has established a London Electricity High-level Working Group to investigate requirements for more strategic provision of electricity infrastructure **in advance of need**. Under current Ofgem rules investors are not able to finance electricity infrastructure ahead of demand<sup>2</sup>, which can have an impact on the cost and delivery times of developments in Central London. The GLA has been working with Ofgem, No. 10 and the Department of Energy and Climate Change to look into how these barriers to investment could be removed.

**UK Power Networks (UKPN) is London's main Distribution Network Operator** and is responsible for distributing electricity from National Grid's 400kV and 275kV networks at a number of 'Supergrid' sites and distributes it to customers (88% of whom are domestic households) through a succession of networks operating at various voltages ranging from 132kV down to 400/230V.

**UKPN maintains and where necessary replaces existing cables, substations and other assets; reinforces the network to facilitate growing demand (e.g. by providing new, replacement or upgraded assets in order either to increase electrical capacity or**

---

<sup>1</sup> Southwark Council's Energy and Carbon Reduction Strategy (2011) sets out interim targets up until 2020 for working towards the highly ambitious target of an 80% reduction in carbon emissions by 2050 (relative to a 2003 emissions baseline).

<sup>2</sup> The regulatory regime rightly protects consumers from unnecessary investments that have an impact on their bills, but in many other ways the system is in need of improvement.

**maintain security of supply); and provides new connections to development upon request from developers.** UK Power Networks undertake an annual review of capacity constraints and the necessary upgrades associated with general load growth are built into their capital programme.

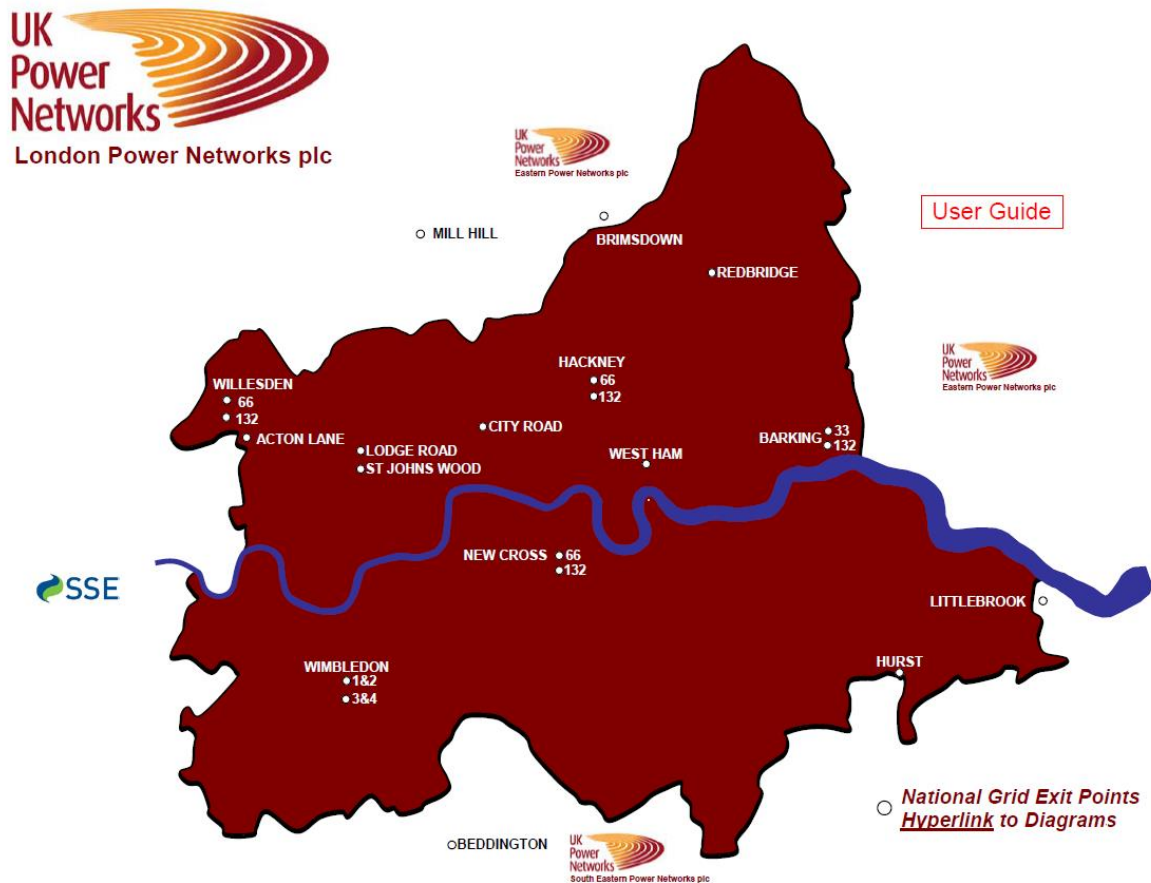
UKPN's Long Term Development Statement (November 2015) for London Power Networks states that: *"UKPN's forecast for load-related network reinforcement investment for the period 2015/16 – 2018/19 is based on expectations of load growth, taking account of anticipated new-build activity, increases in uptake of Distributed Generation... and increased use of low carbon technologies such as electric vehicles and heat pumps."* (emphasis added). However, the statement also highlights a number of recent trends that will influence reinforcement requirements, including:

- **Growth in air conditioning/ cooling** – this will lead to a growth in summer load which will flatten out seasonal demand variations. Substations that have their peak demand occurring during summer will need reinforcing sooner than an equivalent substation where peak demand occurs during the winter because the ratings of transformers are dependent upon the ambient temperature
- **Larger and taller office buildings** – the increased floor area in these buildings combined with the density of IT equipment and associated cooling requirements is producing developments with extremely high demands, particularly in the City of London. In many cases the occupiers are also seeking a duplicate supply from an alternative source because of the criticality of business operations. Demand forecasts indicate a significant growth in the Central London area and major reinforcement schemes are already underway with more planned. For example a 20kV distribution network has recently been laid **in the Southwark area** and a 33kV distribution network is developing north of the Thames to provide the high resilience for of supply.
- **Lifestyle changes** – a load shift associated with increasing social and commercial activity in the evenings, late night and Sunday shopping and an increase in leisure activities will tend to flatten the daily load curve.
- **Growth in Distributed Generation and CHP** – this could be beneficial in deferring reinforcement, particularly if optimally sited; however increasing levels of generation will also tend to increase system fault levels (i.e. shifts in current), which could lead to additional reinforcement requirements. There is also a concern that a voltage disturbance originating at high voltage could cause widespread loss of embedded generation, thus effectively increasing the load on the distribution network to which the generators are connected.

Based on all of the above considerations the statement concludes that: *"...the likely effect is that, at least in the short term, the need for network reinforcement will be determined by the underlying growth in units distributed and maximum demand, and the increasing number of summer-peaking network. Increased distributed generation will result in some fault level initiated reinforcement or protection related redesign, but will only in certain optimal situations reduce the need for load-related reinforcement. Potential network enhancement opportunities that will improve the ability of the network to support increased distributed loads will also be identified."*

UKPN is not regulated to carry out speculative upgrades of the network and whilst it does monitor London Plan and borough Local Plan strategies and allocations, **it responds to requests from developers to connect, with developers meeting these costs and a relevant proportion of any reinforcement that is necessary.** As noted above, a **key challenge** to coordinated and timely delivery of electricity infrastructure to support development is the inability of UKPN or others to invest ahead of confirmed need, which creates uncertainty, delays developments and increases associated costs.

**UKPN's Long Term Development Statement** (November 2015) for London Power Networks includes plans for the development of its London power networks during 2015 and 2016. These include reinforcement and extension works associated with the National Grid Connection point at New Cross Substation, which despite its name is located between **Old Kent Road** and Verney Road in Southwark. It serves 6 grid, 14 primary and 4 Network Rail substations within the London Boroughs of Southwark and Lambeth.



Source: UKPN's Long Term Development Strategy (November 2015)

**UKPN's Regional Development Plan for New Cross** (March 2014)<sup>3</sup> highlights the increasing strategic importance of New Cross, referring to plans to upgrade these facilities and also to create a connection (via a deep cable tunnel) to City Road in Islington via the City of London over the next 3-4 years. This highlights the complexity and interconnectivity of the electricity network, with these substations helping to supply the Isle of Dogs, London Bridge and the South Bank (including the Shard) via Bankside substation<sup>4</sup>.

The Regional Development Plan recognises the 'significant regeneration potential' in Southwark and Tower Hamlets and the identification of opportunity areas in our Local Plans. Development areas at Bermondsey and Canada Water were identified as impacting on the

<sup>3</sup>

[http://library.ukpowernetworks.co.uk/library/en/RIIO/Asset\\_Management\\_Documents/Regional\\_Development\\_Plans/LPN/LPN\\_RDP\\_New\\_Cross.pdf](http://library.ukpowernetworks.co.uk/library/en/RIIO/Asset_Management_Documents/Regional_Development_Plans/LPN/LPN_RDP_New_Cross.pdf)

<sup>4</sup> A recent £60 million refurbishment of UKPN's substation at Tate Modern, completed in 2011, freed up space for expansion of the gallery, installed new electrical equipment and connections, and enabled the capture of heat emitted by the six electricity transformers in the new substation for use in heating and hot water in the new building. Source: <https://www.ukpowernetworks.co.uk/internet/en/news-and-press/press-releases/substation-handed-to-tate-modern.html>



New Cross network and an intention to proactively monitor additional action and opportunity areas to assess their impact on capacity requirements is noted. The Regional Development Plan states that “...the recommended strategy for this supply area is designed to promote flexible and timely response to customer requirements while ensuring continued adherence to security of supply criteria and maintain reliable network operation by asset replacement, or refurbishment, of poorly performing equipment identified through asset condition monitoring.”

#### *Results of contacts with utility providers*

National Grid indicated that they typically look to UKPN to come back to them regarding reinforcement needs on the basis of their studies. The ‘London Tunnels’ project<sup>5</sup> – a seven-year project commenced in February 2011 to construct 32km of tunnels under London to carry high voltage 275-400kV cables – is raising National Grid’s ability to meeting increasing electricity demand across London, taking account of projected cumulative population growth in London for next 10 years. Therefore it is likely there will be no problems regarding National Grid electricity infrastructure to support OKR development.

UKPN confirmed that they develop load growth projections annually for a 10-12 year period but that under current Ofgem rules they are not allowed to invest in infrastructure ahead of confirmed need i.e. a customer application for connection. Developers are advised to contact UKPN 5 years before connection is required to ensure the required work can be planned and implemented without causing delays.

Developers can apply for electricity connection individually or collectively (i.e. all pay contribution to new sub station, for example if coordinated by a Local Authority, the GLA or a consultant). Individual applications will lead to greater costs overall, greater disruption from works, and greater costs and delays to individual applicants in some instances (i.e. those unlucky enough to trigger a need for infrastructure reinforcement or a new sub-station, which may have a 3 year lead-in time). However, applicants that ‘get in early’ may avoid triggering reinforcement costs and land take<sup>6</sup> for new infrastructure and thereby get a cheap outcome. **The incentives for developers, especially ‘early movers’, to coordinate are therefore weak at present.**

**The GLA is currently making the case to Ofgem to amend the rules on investment ahead of need where the need can be substantiated. To support housing and economic growth and secure energy supplies the GLA are proposing regulatory change to allow for implementation of a ‘DevCo’ third party funding model to deliver electricity infrastructure (and possibly other forms of infrastructure) in a timely and efficient manner** where the risks of advancing the infrastructure build out exceed those it is thought reasonable for the regulated utility to take<sup>7</sup>. Investment ahead of need would be permitted if the developers that stand to benefit from forward investment bear the risks of new infrastructure being left substantially unused and stranded.

The DevCo model (see figure 1 below) is not intended as a substitute for the regulated utility making the required forward investment where appropriate, but is a model suitable for use where the risks involved are more than the customer base of the utility should bear.

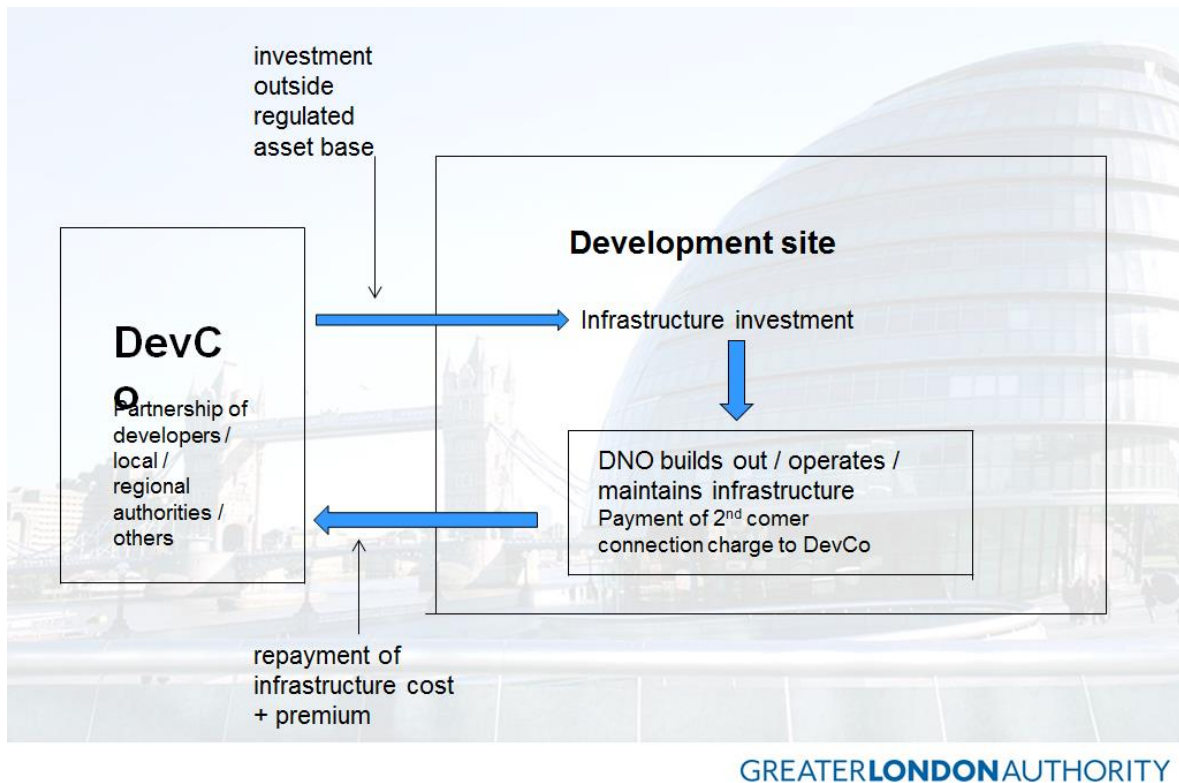
Figure 1: DevCo model proposed by GLA

---

<sup>5</sup> <http://www.londonpowertunnels.co.uk/overview/>

<sup>6</sup> A substation could be located in a basement but this is not recommended due to flood risk and the challenge of gaining access to extract/replace a dead transformer.

<sup>7</sup> Bearing in mind the need to protect consumers from the financial effects of the risks involved, particularly the planned return on the assets being delayed by the development timetable not being realised as predicted.



Given the estimated increase in electricity demand linked to the proposed level of growth in the OKR OA over the next 20 years (see table 2 below) and the lack of substations in the area with this level of spare capacity and/or space for upgrading, UKPN anticipated that if a coordinated application was submitted for OKR this would trigger the need for a new primary substation. If individual applications are received in the area then UKPN would look at the closest substations to assess if they had sufficient capacity (e.g. Verney Road and Neckinger substations). A recent application triggered a new substation at Surrey Quays which may help to relieve some of the load on Neckinger; there may be scope to accommodate new transformers here but this would need to be fully investigated when triggered by need.

Table 2: Estimated growth in peak electricity demand for OKR OA

	2018	2023	2028	2034
Estimated peak electricity demand (MW)	0.8	5.2	12.0	18.4

Source: Estimates provide by AECOM as part of their work on the Decentralised Energy Strategy, based on information supplied by the council on anticipated quantum, types and phasing of growth.

The Council requested a 'budget estimate' desktop study (this does not involve any ground checks or reserving of capacity) from UKPN to secure further information on infrastructure requirements based on the above peak electricity demand estimates. This confirmed the expectations expressed above that a new primary substation will be required to connect the anticipated load resulting from the planned development to their network.

UKPN's budget estimate indicates that the works required to connect 18.4MVA to their network could cost in the order of £16.1 Million, excluding land costs. The work will involve:

- Installation of approximately 3km of EHV cable route to a new primary substation location.
- A new 66/11kV 30MVA primary substation

- Provision for 4km of new 11kV feeders (The configuration of the 11kV network will depend on distribution of load in the development area for which no details have been provided)

### *Summary/conclusions*

Given the significant level of growth planned the peak electricity demand is forecast to increase by up to 18MW over the next 20 years. This will trigger a need for reinforcement of the electricity infrastructure, specifically a new primary substation and associated network, at a cost estimated at £16.1 Million, excluding land costs.

The Council, working with the GLA, will need to encourage developers to coordinate their developments and their applications for electricity connection to UKPN (allowed for under section 22 of the Energy Act) to ensure that infrastructure provision is optimised, disruption to local residents and businesses is minimised and there is a 'level playing field' in terms of developer contributions.

Lessons should be learned from the collaborative approach to utilities planning being attempted at Nine Elms (including assessment of sites for, and procurement of, a 1800sqm primary substation<sup>8</sup><sup>9</sup>). This has involved a joint connection application to UKPN via a consultant and use of a SPV to represent all developers and drive forward engagement with utilities, including procurement of the substation.

The Council should provide an Old Kent Road case study to GLA to support them in their negotiations with Ofgem regarding changing the rules on investment in electricity infrastructure ahead of need.

---

<sup>8</sup> The establishment of a primary substation provides a revenue generating commodity that may attract investment. Indeed GLA are developing a third part funding model.

<sup>9</sup> Note that at OKR the fragmented land ownerships and varied timings of development coming forward will make coordination all the more challenging, particularly given the need to invest in a substation three years in advance.

## Gas

### *Existing infrastructure*

- Gas network
- OKR gas holder site (gas holders no longer in use)

### *Results of review of relevant documents*

National Grid owns and operates the high pressure national transmission system (NTS) which transports gas from terminals to two distribution networks in London which operate at lower pressure. These are the National Grid network north of the Thames as well as Battersea to Lambeth and the SGN (previously known as Scotia Gas Networks) network for the rest of the area south of the Thames including Southwark.

Partly because of improvements in operational efficiency, the industry is not expecting a general increase in gas demand. However, alongside the continuing programme of replacing old metal gas mains, **local infrastructure improvements may be required to supply growth areas.**

SGN is legally obliged (by Ofgem) to develop and maintain an efficient and economical pipeline system and, subject to that, to comply with any reasonable request to connect premises, provided that it is economic to do so. However, in many instances, specific system reinforcement may be required to maintain system pressures for the winter period after connecting a new supply or based on demand. **Dependent on scale, reinforcement projects may have significant planning, resource and construction lead-times and two to four years' notice is typically required** of any project requiring the construction of high pressure pipelines or plant, although in certain circumstances, project lead-times may exceed this period. Where reinforcement is required as a result of a development connection, SGN may apportion the costs.

**SGN's report 'Long Term Development Statement 2015'** (October 2015) is the key strategic infrastructure planning document, published annually, providing a ten-year forecast of transportation system usage and likely system developments. The report notes a material reduction in the 2015 demand forecasts when compared to those for 2014, due to the lingering impact of the economic recession and changes in gas consumption by end users as a result of energy efficiency improvements. There is uncertainty over the predicted strength and speed of economic recovery. However, the introduction of government targets for renewable energy, policies to decarbonise the energy economy, growing low-carbon economy and smart metering are **expected to result in an overall loss of demand in the period 2015-25 (annual demand down 10%, peak day demand down almost 7%; this includes anticipated falls in both demand indicators in the South Eastern Local Distribution Zone, within which Southwark is located, meaning a reduced need for investment (which is primarily demand driven)).**

A medium to long term drop in gas demand is also predicted by the GLA. They suggest that while total energy demand is expected to increase moderately (up by 20 per cent by 2050), if London is to meet its climate change targets then there will need to be a significant shift away from domestic gas consumption (down by 60-70 per cent) to electricity (up by 140-200 per cent)<sup>10</sup>.

In their 'local transmission system' (pipeline system operating at above 7Bar that transports gas from NTS offtakes to distribution systems) SGN aim to provide sufficient system

---

<sup>10</sup> London Infrastructure Plan 2050.

capacity and diurnal storage to meet the forecast levels of 1 in 20 peak day demand as required by their Licence. Their below 7Bar distribution systems, as found in Southwark, are designed and reinforced to meet a peak six-minute demand level, which is the maximum demand level (averaged over a six-minute period) that can be experienced in a network under cold winter conditions. SGN state they will continue to invest for reinforcement and new connections consistent with the growth in peak day demand forecast.

#### *Results of contacts with utility providers*

National Grid have indicated previously that for the five Central London authorities which it covers, there is likely to be sufficient capacity within regard to medium and the higher pressure gas networks to cater for demand up to 2026.

SGN responded to our high-level query as to the impact of an additional 20,000 homes in the Old Kent Road area. SGN confirmed that the within their 10 year design horizon they do not envisage any demand growth capacity issues as a result of the planned development (the existing OKR gas holder site means there is significant sized pipes and high pressure supply in the area). The data the council supplied on anticipated growth and phasing has been recorded by SGN and will be considered within any future infrastructure designs in this vicinity. They will also continue to monitor Local Plans.

SGN advised that where gas powered energy centres are planned, these should be linked into high pressure supplies if possible otherwise they can create pressure waves in the system which can undermine supply to others.

#### *Summary/conclusions*

The existing gas infrastructure in the vicinity should be sufficient to support the planned development in the OKR OA. No major infrastructure upgrades will be required to absorb the estimated additional capacity on the network. Therefore developers should only see local connection costs when applications are made.

SGN has been provided with data on the planned scale of development and phasing to inform their infrastructure design. Southwark Council will monitor phasing and implementation of development and continue to share data with SGN as relevant.

## Heat

### *Existing infrastructure*

- SELCHP heat network
- Emerging district heat network centred on Heygate Estate redevelopment and managed by EON

### *Results of review of relevant documents*

#### *SELCHP heat network:*

Opened in 1994, the South East London Combined Heat and Power plant (SELCHP) in Deptford (relatively close to the eastern edge of the OKR OA) processes around 430,000 tonnes of waste from Southwark, Lewisham and other London Boroughs and generates electricity, which is fed into the National Grid. In 2014 Southwark Council, working in partnership with Veolia Environmental Services, developed a heat network that supplies about 2,500 Southwark properties in southeast Bermondsey on a 5km pipe work system with heat and hot water.

The development and operation of the scheme is funded by Veolia who charge the Council a fixed and a variable cost to cover its day to day expenses and the infrastructure investment. There is a projected CO<sub>2</sub> emissions reduction of 7,716 tonnes, as well as benefits in terms of reduced heating costs and fuel poverty.

Negotiations between Veolia and British Land are understood to be ongoing with regard to linking the SELCHP heat network to the regeneration be planned at Canada Water.

#### *Heygate estate heat network:*

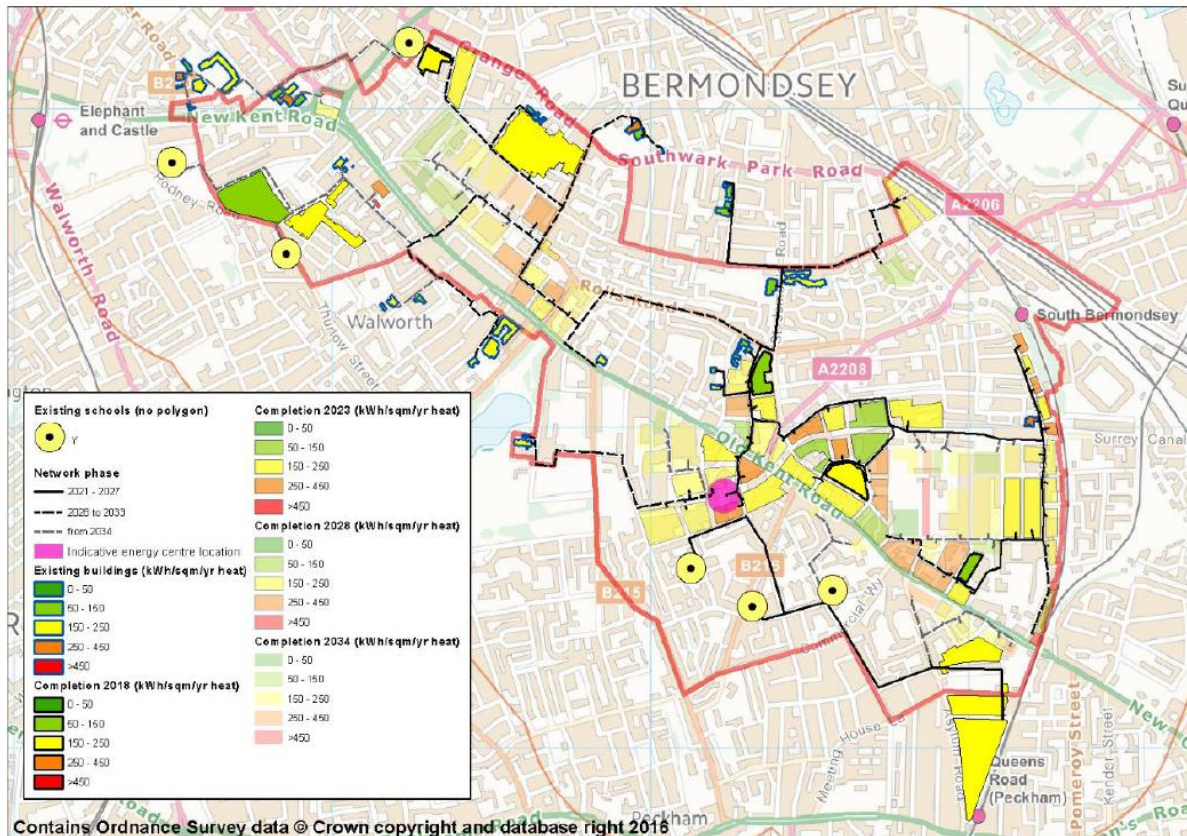
The Heygate regeneration scheme just to the southeast of Elephant and Castle shopping centre is currently under development, comprising ~2400 homes in total and significant retail space. The energy strategy is focused on high levels of energy efficiency and an on-site gas-fired CHP system that has been sized to provide capacity to connect to a significant number of off-site properties. Opportunities to supply heat to nearby buildings and new developments are being actively investigated by Lendlease and EON. However this energy centre is located a considerable distance from the OKR OA and connection is not being considered as part of decentralised energy planning for the OA.

#### *Potential Old Kent Road heat network:*

The feasibility and viability of developing a heat network as part of the development in the OKR OA has been investigated through an Old Kent Road Decentralised Energy Strategy commissioned by the council. This has indicated that a heat network is deliverable in the area and that there are three different approaches that could be taken to delivering this. One of these involved connection to SELCHP (see above); the other two options involve stand alone energy centres within in the opportunity area. Indicative capital costs for these three options range from £63 million to £70 million. The land take for the energy centre is not insignificant; for example the single energy centre option footprint is estimated at 10,000sqm. All three options offer a positive rate of return on investment, with option 3 (connection to SELCHP) having the lowest rate of return, though still exceeding the 6% threshold.

An illustration of the option 1 network based on one large energy centre is shown in the figure below.

Figure 2: Map showing indicative energy centre location and network routes



### Results of contacts with heat providers

Southwark Council and AECOM met with SELCHP to discuss the growth being planned for in the OKR OA and to discuss the scope for SELCHP to provide heat to new development in the area. SELCHP has capacity to serve further developments with heat. Potential route options for connecting SELCHP to the OA were discussed along with alternative approaches to network development based on onsite energy centres. Subsequently the Old Kent Road Decentralised Energy Strategy has been completed. This indicated that a network connection linking SELCHP to the eastern edge of the opportunity area is technically feasible, though at greater cost relative to two other network options (see above). SELCHP are interested in discussing the technical aspects of potential connection options further.

### Summary/conclusions

Development of a heat network in the OKR OA is feasible and viable. Depending on the network options pursued, development of the network would cost between £63 million and £70 million. The Old Kent Road Decentralised Energy Strategy sets out a range of delivery options and next steps for delivering the network. For example, if an Energy Services Company (ESCO) was interested in delivering the network then it could take on the capital costs and recoup these through connection and heat charges.

The Council should consider the findings of the Old Kent Road Decentralised Energy Strategy and develop planning policy within the forthcoming Old Kent Road AAP to support the development of a heat network in the OA. Considerations of what network options are likely to be most deliverable will be critical. The strategy will set the basis for Southwark Council to carry out further detailed investigations and for discussions with Energy Services Companies (ESCO).

## Water resources

### *Existing infrastructure*

- Trunk sewers and network of combined sewers
- Water supply network
- Combined sewer overflow (CSO) and pumping station

### *Committed and planning infrastructure*

- Thames Tideway Tunnel – a scheme to reduce and limit pollution of the Rivers Thames and Lee from the Beckton and Crossness sewerage system. It involves the construction of a storage and transfer wastewater tunnel from West London to Beckton in East London and the interception of a number of combined sewer overflows along the River Thames. The Thames Water Utilities Limited (Thames Tideway Tunnel Order 2014) grants consent for the project, which is included in the National Infrastructure Plan (2014) for delivery over the next six years.
- Tidal flood defence system – although not located within the opportunity area, this infrastructure (e.g. river defence walls/banks) is critical to protecting the area, which lies within flood zone 2 (land which has between a one in 100 and one in 1000 annual probability of river flooding), from river flooding from the Thames.

### *Results of review of relevant documents*

#### *Water supply:*

Thames Water as a statutory water undertaker has a duty to maintain the security of water supply in 6 water resource zones including the London resource Zone. Infrastructure investment decisions are based on projected needs within zones as far as possible although some overlaps across zones do sometimes occur.

Thames Water's Water Resources Management Plan 2015-2040 indicates a large and increasing supply demand deficit in the London zone (a dry year annual average demand increasing from -59 Ml/d in 2015 to -414Ml/d in 2040). The forecast deficit in London is driven by a combination of population growth (which outstrips demand management activity) and climate change impacts. Thames Water set out a preferred plan to remove this deficit and keep supply and demand in balance. This focuses primarily on demand reduction in the short to medium-term, through a combination of leakage reduction, progressive roll out of metering and water efficiency measures. Development of new trading agreements, new groundwater schemes and a 150Ml/d wastewater re-use plant (scheduled for delivery in 2025-2030) will secure long-term resilience. The demand reduction focus is reflected in water use and supply policies within the London Plan:

- Promoting the use of rainwater harvesting and using dual potable and grey water recycling systems, where they are energy and cost-effective; and
- Requiring development to minimise the use of mains water by incorporating water saving measures and equipment and designing residential development so that mains water consumption would meet a target of 105 litres or less per head per day.

Thames Water's review of the existing 25 year plan is considering potential 'pinch points' in east London where, given the cumulative scale of growth coming forward in this region, reinforcement may be required. Water supply reinforcement is directly linked to development so Thames Water can claw back costs from developers (e.g. over 12 year period).

Thames Water currently has no specific plans to upgrade water supply infrastructure in Southwark, although it will review the need for network improvements on an ongoing basis and prioritise any works accordingly.

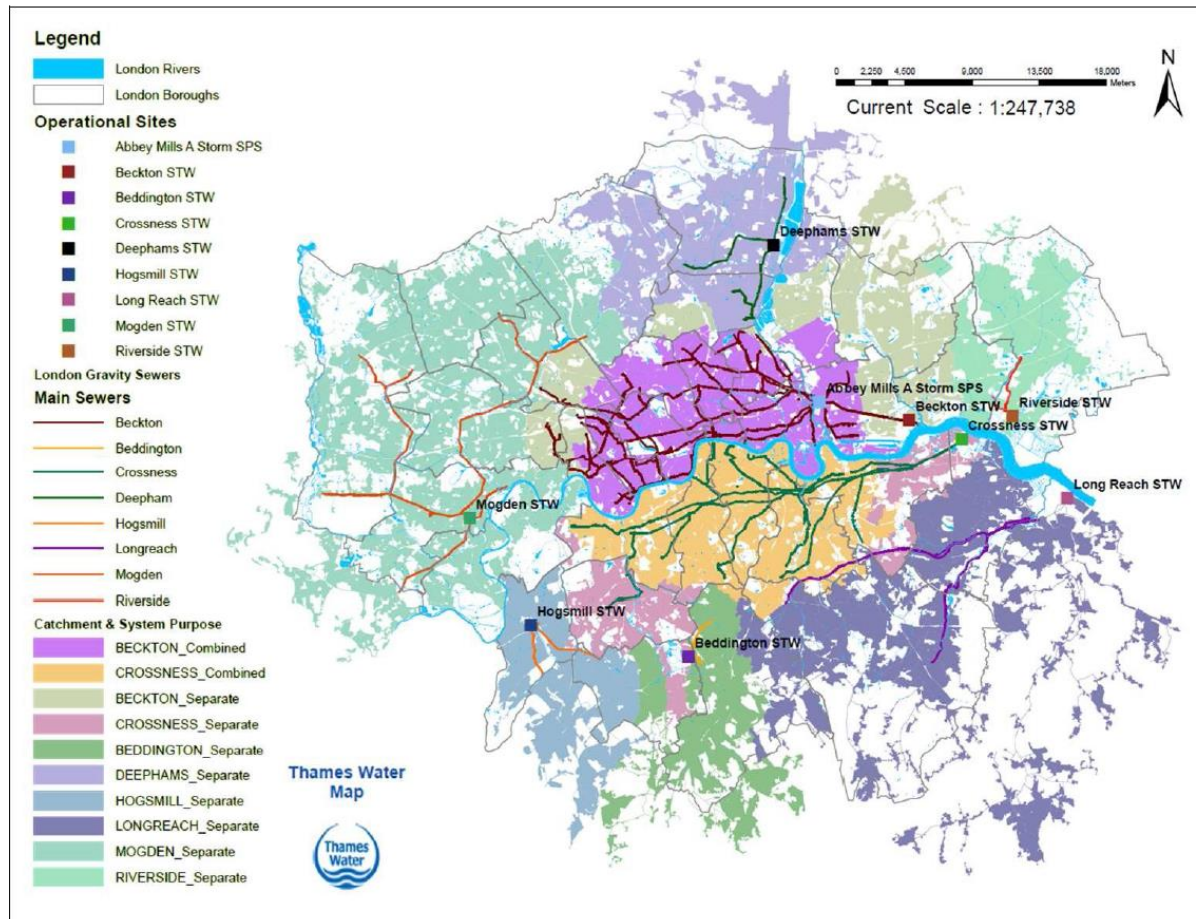


### Surface water and foul water:

The majority of the borough is served by combined sewers (owned and managed by Thames Water, they accept both foul and surface water) serving the Crossness Sewage Treatment Works (see figure below). Thames Water has advised that these treatment works had phased upgrades between 2003 and 2015 and will be upgraded further as required.

In many cases the combined sewers in London were designed and built in the late 1800s. Subsequent urbanisation and cross connection means the sewers across Southwark will have varying standards of capacities, particularly in the north of the borough.

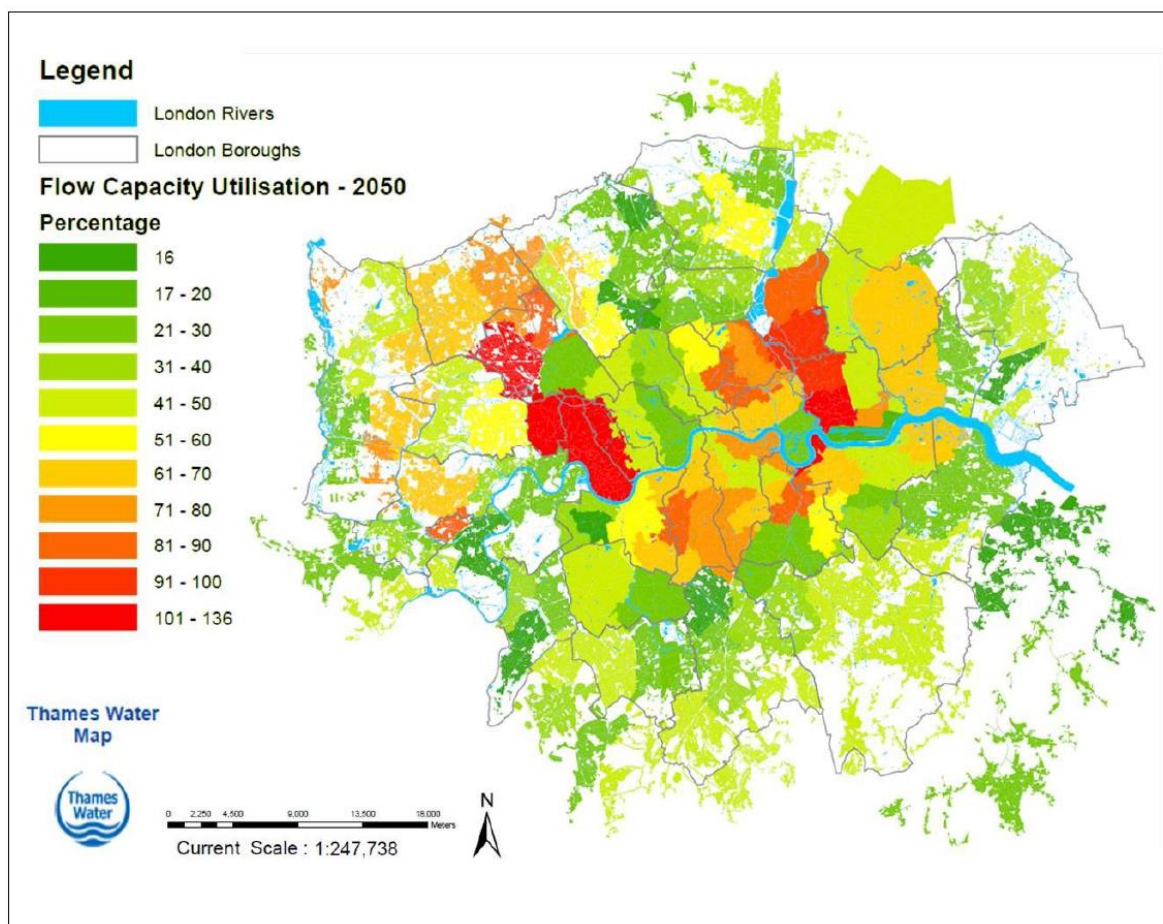
Figure 3: Combined and separated sewer systems



Source: Thames Water and GLA, [https://www.london.gov.uk/sites/default/files/lldap\\_final.pdf](https://www.london.gov.uk/sites/default/files/lldap_final.pdf)

Thames Water has modelled the impact of London's projected population growth and climate change on its drains and sewers to understand their ability to cope with these future challenges. The modelling shows that for a relatively common rainfall event in 2050 (one that would be expected on average once every other year), some areas of London would not have sufficient drainage or sewerage capacity to manage the expected flows, leading to an increasing risk of surface water and sewer flooding. Figure 4 below shows the mapped output of this modelling for the 2050s. Areas highlighted in red are where the projected flows in the system exceed its capacity and some flooding should be expected (none of these cover Southwark).

Figure 4: Modelled drainage and sewerage capacity to manage future population growth and climate change for the 2050s



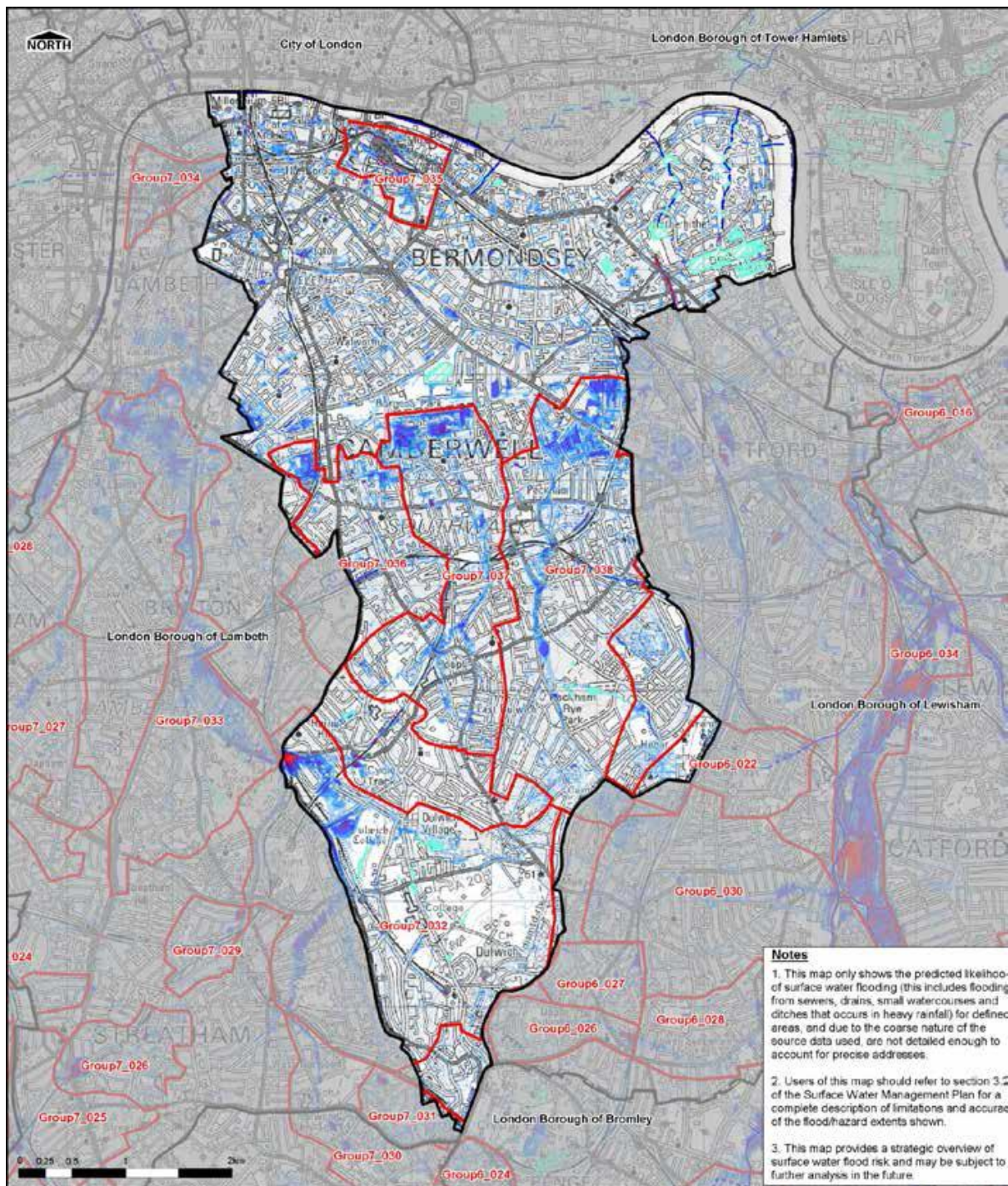
Source: Thames Water and GLA, [https://www.london.gov.uk/sites/default/files/lrdap\\_final.pdf](https://www.london.gov.uk/sites/default/files/lrdap_final.pdf)

Southwark’s Local Flood Risk Management Strategy (LFRMS, 2015) states that “...the most extensive areas of surface water flooding in the borough are located along the central belt of the borough north of the A202 (e.g. Camberwell and Old Kent Road)” (p.22). One **Critical Drainage Area** (East Southwark) overlaps with the **southern end of Old Kent Road** (see figure 5 below), indicating that this is the part of the OA currently at most risk of surface water flooding. Indeed the Local Flood Risk Management Strategy identified an indicative **Local Flood Risk Zone (LFRZ)** in this area (see figure 6) where flooding affects properties, businesses and/or infrastructure<sup>11</sup>. The Surface Water Management Plan (SWMP) indicates that surface water from Peckham Rye<sup>12</sup> flows north along the course of the ‘lost’ River Peck, to this area, with depths of flooding up to 1m for the 1% AEP rainfall event.

<sup>11</sup> The Surface Water Management Plan states that pluvial modelling indicates an area of deeper ponding to the south of Old Kent Road. Surface water from Peckham Rye flows north along the course of the ‘lost’ River Peck, to this area, with depths of flooding up to 1m for the 1% AEP rainfall event.

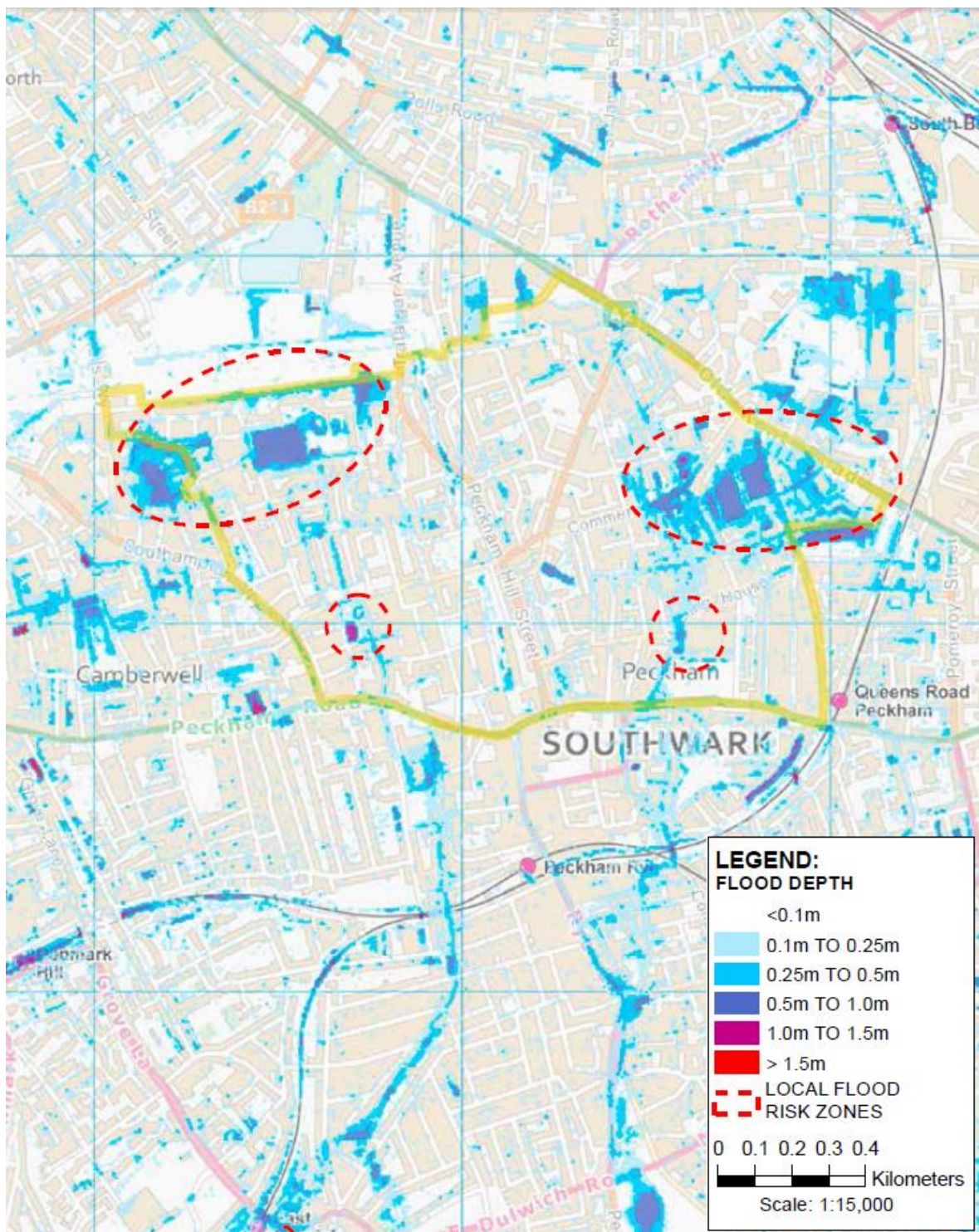
<sup>12</sup> Options for a flood alleviation scheme are currently being considered for Peckham Rye.

Figure 5: Critical drainage areas (red) and surface water flood depth (blue)



Source: Local Flood Risk Management Strategy

Figure 6: Map showing indicative flood risk zones



Source: Local Flood Risk Management Strategy

Increased development in the area could exacerbate surface water and sewer flood risk due to increased foul and surface flows to the combined sewers, especially when combined with the impacts of climate change (e.g. greater intensity rainfall). This could result in the combined sewers being overwhelmed, leading to unacceptable impacts on the environment such as sewage flooding of residential and commercial property, pollution of land and watercourses. Mitigation measures, including management of surface and greywater flows to the combined sewers, may therefore be required.

### Results of contacts with utility providers

#### Water supply:

Thames Water indicated that water mains are likely to be of sufficient size to supply the planned new development. Therefore in terms of water supply only local connection upgrades will be required to each site funded by the connecting developer. However given wider supply constraints and the scale of development proposed for OKR OA opportunities to implement communal waste water recycling should be considered to reduce mains water demand (see below).

#### Surface water and foul water:

At the request of the council Thames Water undertook some high level hydraulic modelling of the planned growth at OKR OA. The Pipe Full Capacity as calculated by our hydraulic model ranges between 640 l/s at the northern end of the road (in the blue circle) and > 1500 l/s as the gradient and pipe diameter increases at the southern end of the road (in the red circle).

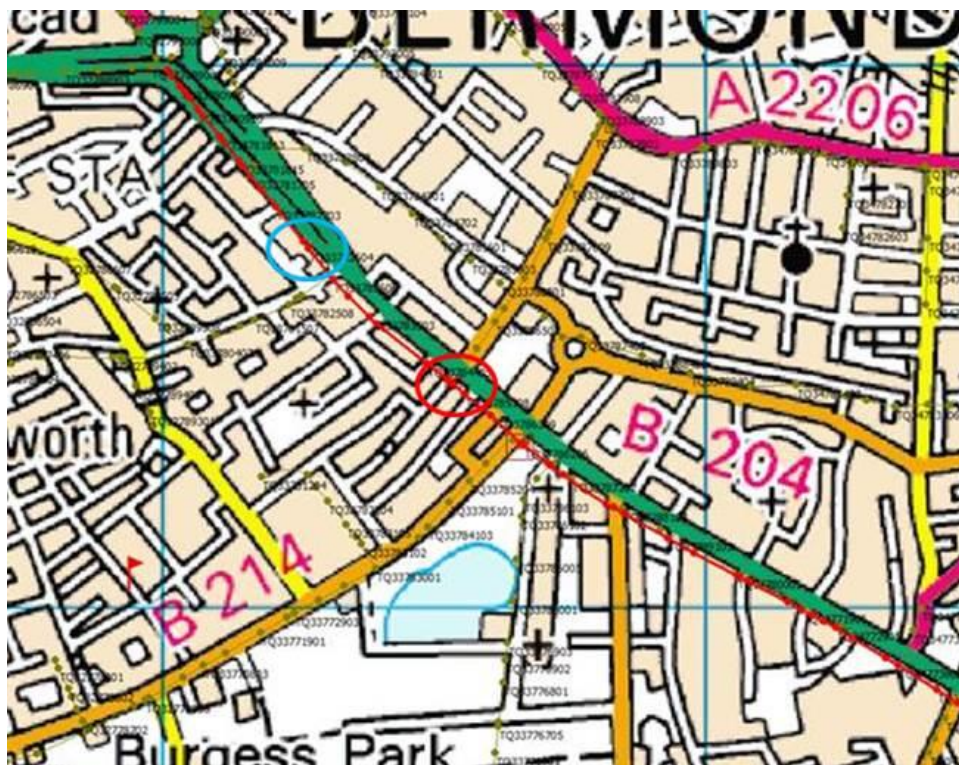


Table 3 below shows the increase in predicted spill volumes from the combined sewer network during the 240 minute critical storm as a result of all of the planned development being completed. The flows have been calculated using the current Thames Water (TW) guidance for new development assessments, which is based on the number of residential units, an assessment of school pupil numbers and area of commercial spaces. The calculations are indicative and do not take account of climate change or other growth areas in the combined sewer catchment (e.g. development upstream that increases flows).

Table 3: Increase in predicted spill volumes during the 240 minute critical storm as a result of the planned development

	Number of spilling manholes with a flood volume >25m <sup>3</sup> post development*	Increase in spill volume post development (worst case event)
No reduction in surface water runoff rate	33	3975 m3 (480 minute duration, 1 in 20 year event)
50% reduction in surface water runoff rate from development	3	160 m3 (960 minute duration, 1 in 20 year event)
95% reduction in surface water runoff rate from development**	5	-5 (1440 minute duration, 1 in 20 year event)

Notes:

\* 25m<sup>3</sup> is the standard flood volume used as part of the Drainage Impact Assessments as this is considered to be a significant increase in flood volume. For an individual development TW would generally consider a solution would be required for any flooding greater than 25m<sup>3</sup> or 10% increase in the flood volume. They would also assess whether there is an increase in the frequency of flooding and / or pollution events as a result of the development.

\*\* The 95% reduction option assumes 5l/s/ha runoff or 5l/s per development site.

The above findings indicate that the trunk sewer along Old Kent Road currently surcharges in TW's models during wet weather. There is no spare capacity within the sewer and there is an increased risk of combined sewer flooding without a reduction in surface water runoff. TW have therefore recommended the adoption of a robust approach to managing surface water drainage from new development across the opportunity area that reinforces London Plan policy. Specifically, they suggest that a surface water runoff of 5l/s/ha should be aimed for in the first instance (though they acknowledge that this can be challenging to achieve) because if a 50%-95% net reduction of surface water runoff can be achieved the number of combined sewer network upgrades required to accommodate the development can be minimised or prevented all together. If this cannot be achieved then developments being constructed later in the development programme could risk refusal of new connections to discharge their surface water<sup>13</sup>.

TW recommend adopting a strategic scale approach to SUDS to assist in achieving this target. They highlighted integrated water management strategies (IWMSs) being developed for Nine Elms and OPDC, which seek reduce water demand, minimise surface runoff and avoid channelling surface water into the combined sewer network.

In their formal consultation response to the New Southwark Plan Preferred Options Thames Water state that, *"In order to ensure that water supply and wastewater/sewerage infrastructure for the Old Kent Road area are addressed Thames Water consider that **an Integrated Water Management Strategy is required**. An IWMS should be commissioned to highlight the long term infrastructure requirements for water demand and drainage in the AAP area. Thames Water would like to work closely with the Borough in leading on the drafting of the IWMS."*

They also propose a scope for the IWMS which they suggest should include:

- Assessment of the existing water supply infrastructure in the Old Kent Road area;
- Assessment of the existing sewerage and drainage infrastructure in the Old Kent Road area;
- Consideration of the likely range of demands for water supply, sewerage and drainage through the redevelopment of the Old Kent Road area;
- Proposals for a range of options to minimise drinking water demand, maximise grey/rainwater re-use, maximise the use of sustainable drainage systems and minimise discharge to the combined sewer system.

<sup>13</sup> Under Section 107 of the Water Industry Act it is within Thames Water's power to refuse any new surface water or foul connection into trunk sewers.

With regard to surface water management, source control measures for OKR OA could include: green roofs<sup>14</sup>, swales, permeable paving, vegetated surfaces, rainwater harvesting, rain gardens, ponds and new/enlarged tree pits (which would fit in with the aspiration to achieve greener streets), below ground storage<sup>15</sup>. Opportunities to convey residual flows (via swales, hard engineered channels or below ground pipes) to communal SUDS features providing residual storage in local green spaces (e.g. swales, detention basins<sup>16</sup>, sub-surface storage) should also be explored. These could help to provide the significant attenuation volumes that are likely to be required to achieve greenfield runoff rates in a cost effective manner. The location and provision of attenuation storages and the conveyance network routing will be strongly influenced by the natural hydrological catchments (a need for pumping should be avoided where possible). Where possible SUDS measures should be designed into schemes from an early stage as an integral part of the design to reduce costs and optimise solutions; an IWMS could greatly facilitate an integrated approach.

Design and delivery of surface water management measures could involve various routes, such as onsite measures by the developer and offsite measures by Thames Water in partnership with the developer. Issues of ownership and maintenance will be important to clarify at an early stage.

As noted above, an IWMS could also explore options for maximising greywater/rainwater re-use. The OPDC IWMS identified a centralised wastewater recycling system as the preferred option for recycling waster (for non-potable uses) as such systems have a number of benefits of rainwater harvesting systems (e.g. greater certainty of supply, lower water storage requirements). They are also assessed to have capital and operational efficiencies compared to using individual greywater re-use systems within each development. However there are significant challenges inherent in achieving the delivery and ongoing operation of a third pipe network, including a centralised treatment facility, particularly given the fragmented land ownership in the OKR OA. The Nine Elms IWMS sought to minimise this complexity by limiting the system extent to the contiguity of sites as well as neighbouring sites being developed by the same developer, resulting in a number of communal water reuse systems rather than one centralised system.

Costs for implementation of an IWMS could be significant, although funding may be available from Thames Water through its 'twenty4twenty' scheme. This aims to transform 20ha of impermeable surfaces into sustainable drainage projects; or possibly from the GLA.

To support growth, Thames Water also strongly encourage that London Plan Policy 5.13 (Sustainable Drainage) is enforced by LPAs when considering planning applications. London Plan Policy 5.13 sets out the drainage hierarchy that prioritises the discharge of rainwater direct to a watercourse, before considering the discharge of rainwater to a surface water or combined sewer. By maximising the uptake of sustainable drainage measures, this should help to minimise the scale of foul and combined and surface water network upgrades required.

---

<sup>14</sup> OPDC IWMS identified these as the preferred attenuation measure for new build due to limited space requirements and potential to provide multiple benefits.

<sup>15</sup> As per the OPDC IWMS this would be the least preferable option due to the limited additional benefits such storage provides and due to the competing pressures for underground space from other subterranean uses; costs can also be higher than for blue-green SUDS solutions. However it is acknowledged that below ground storage may be the most practical means of achieving at least some of the required attenuation volumes, particularly within development plots, which are likely to be extremely spatially constrained.

<sup>16</sup> These can be profiled to ensure they remain sympathetic to the recreational use and character of the area and are generally designed to remain dry most of the time (i.e. outside rainy periods) ensuring there is no reduction in available amenity space.

## *Summary/conclusions*

### *Water supply:*

Water mains are likely to be of sufficient size; local connection upgrades will be required to each site funded by the connecting developer. Given wider pressures on water supplies and the scale of development proposed for the OKR OA, opportunities to implement communal waste water recycling should be considered to reduce mains water demand. The feasibility and viability of options could be explored as part of an Integrated Water Management Strategy (see below).

### *Surface water and wastewater flows:*

Given the scale of development proposed there is an opportunity for strategic level redesign of the surface water drainage regime in the area, working with relevant stakeholders such as Thames Water as part of a wider approach to water sensitive urban design.

The council should adopt and implement a robust policy on SUDS as part of the OKR AAP in order to reduce the risk of surface water and sewer flooding and to try to obviate the need for expensive and highly disruptive upgrades to the combined sewer network. It will seek to facilitate a strategic approach to SUDS design and delivery.

It should also robustly implement existing London Plan policies on water efficiency and consider adopting and implementing a policy on greywater recycling in order to further reduce flows into the combined sewer network and thus minimise the need for combined sewerage network upgrades in future.

As part of its work coordinating landowners and developers and other stakeholders to deliver the growth plans set out in the OKR AAP the council should consider working with Thames Water to facilitate the development of an **Integrated Water Management Strategy** for the OKR OA. This should draw on the approaches used at OPDC and Nine Elms, however it should seek to move beyond high level options appraisal to the development of site specific, costed proposals for the management of surface water, informed by data on ground conditions and levels. It could also evaluate the need for and the feasibility and viability of implementing different greywater treatment and reuse options, taking into account the delivery challenges presented by fragmented land ownership and the demands on CIL and s106 for funding wider infrastructure. Opportunities for securing funding through Thames Water's 'twenty4twenty' scheme should be explored further.

The council will use planning conditions where appropriate to ensure that development does not commence until impact studies on the existing water supply and sewerage infrastructure have been approved by Southwark in conjunction with Thames Water. Where there is a capacity problem and no improvements are programmed developers should contact Thames Water to agree what improvements are required and how they will be funded.



## Digital connectivity

### *Existing infrastructure*

- BT Outreach cable network and above ground facilities (including street cabinets); telephone exchanges that provide broadband and landline services are located in Walworth (SE17 2NJ) and Bermondsey (SE1 5RN)<sup>17</sup>
- Virgin Media cable network and above ground facilities (including street cabinets)
- Other Internet Service Providers' networks (e.g. UK Broadband's Relish 4G broadband, Hyperoptic's 1Gb fibre network)

### *Results of review of relevant documents*

Digital connectivity is vital for many businesses and access is also becoming essential for citizens to take part in modern society (e.g. to access Government services, cheaper shopping options, social media, training, employment and other opportunities).

Whilst London leads Europe in much of its broadband connectivity there are still concerns - slow and unreliable broadband is a common complaint from some high-tech businesses in the capital. The Mayor believes a shift from basic broadband to superfast broadband<sup>18</sup> could boost London's economy by around £4bn by 2024; he wants 99% of properties in London to have access to affordable superfast connections by 2018 and is exploring solutions with providers.

The Connectivity Advisory Group (CAG) developed a wide-ranging action plan, which included launching a Connectivity Rating Scheme, to rate and promote the connectivity levels of different buildings to assist consumers to find appropriate premises and encourage developers and property owners to improve the connectivity of their properties (see <http://wiredscore.london>). The GLA has also published a connectivity toolkit for London boroughs, which includes an interactive map displaying levels of connectivity across the capital using Ofcom postcode data (see <https://www.london.gov.uk/what-we-do/business-and-economy/science-and-technology/connectivity>). Figure 7 below shows a screenshot of this map for the OKR area which indicates a number of areas of slow broadband (data is from 2014).

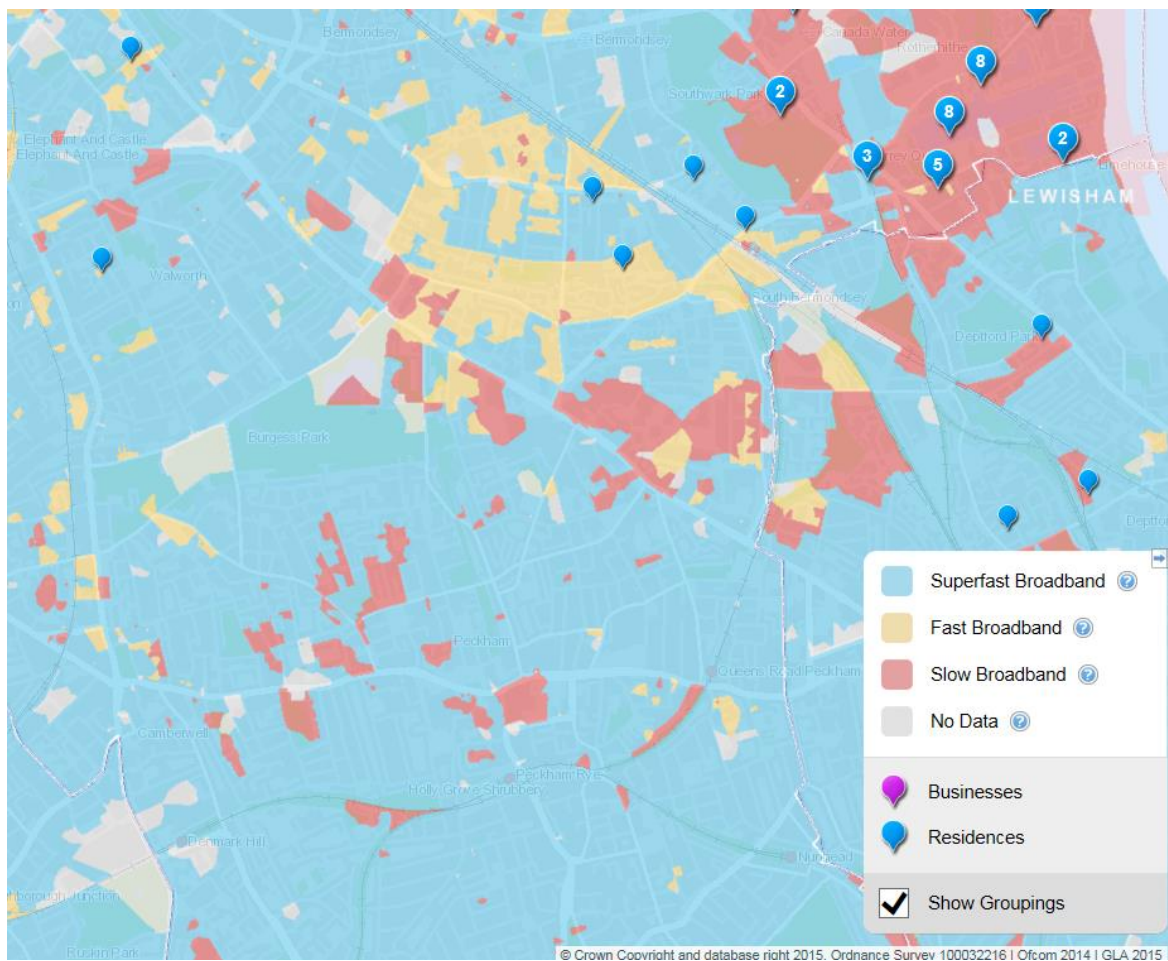
The EU Broadband Cost Reduction Directive (2014/61/EU) places requirements on development projects from July 2016 (transposed by Building Regulations). The directive sets out measures to enable and reduce the costs of deploying high speed broadband networks as well as improving in-building infrastructure. Any newly constructed buildings and those undergoing major renovation (for which a building permit application is submitted post 31 December 2016) must be 'broadband ready', meaning buildings must be equipped with physical infrastructure (such as mini-ducts) able to host high speed networks (in excess of 30Mbit/s). Communications access points and associated in-building infrastructure must be accessible to all communications network operators under fair and non-discriminatory terms. The UK is entitled to allow for exemptions from the broadband ready obligations, for example where the costs would be disproportionate or in respect of listed buildings. To assist potential buyers and tenants the Directive also envisages the development of a "broadband ready" label for buildings.

---

<sup>17</sup> <https://www.cable.co.uk/local/broadband/greater-london/southwark/>

<sup>18</sup> Ofcom states that Superfast broadband is the next generation of faster broadband services, delivering headline download speeds of greater than 30 Mbit/s.

Figure 7: Broadband connectivity



Source: <https://www.london.gov.uk/what-we-do/business-and-economy/science-and-technology/connectivity/connectivity-map-london>

There are numerous broadband providers who are active in Southwark, including:

- **BT Openreach** - a 'wholesale' provider of internet services. It inherited BT's extensive network, but is a separate company from BT. It does not sell broadband services, but works on behalf of service providers (such as Sky, TalkTalk and BT) to maintain and upgrade the network<sup>19</sup> and connect new properties to the network so that they can receive services. Openreach's fibre network is open to all broadband service providers on equal terms, ensuring that businesses and consumers benefit from competition and a wide choice of suppliers. In September 2015 BT Openreach announced plans for an expansion of high-speed fibre broadband in Southwark<sup>20</sup>. It plans to make fibre available to an additional 18,000 local homes and businesses in the next two years, taking the company's total coverage for fibre in the borough to more than 101,000 premises. This includes working with the council on a trial of new technology in Rotherhithe. Investment is focusing on upgrading city cabinets, rolling out 'fibre to the remote node' (FTRN) and to fibre broadband cabinets that serve multi-dwelling units, such as apartment blocks; and continuing to ensure the new

<sup>19</sup> Their network upgrade is helping the Government achieve its aim of reaching 95 per cent of UK premises with superfast fibre broadband by the end of 2017.

<sup>20</sup> <http://www.mynewsdesk.com/uk/btregions/pressreleases/bt-announces-investment-to-expand-fibre-broadband-rollout-in-london-borough-of-southwark-1224705>

fibre network is available on an 'equivalent' basis to all internet service providers that use the Openreach network.

- **Virgin Media** - has its own developing fibre network and above ground facilities (only BT Openreach and Virgin Media have their own physical networks).
- **Other** - there are a growing number of smaller independent providers that are developing their own fibre networks, such as **Hyperoptic**<sup>21</sup>, or wireless networks, such as **UK Broadband's** Relish 4G broadband product which is available in northern parts of Southwark<sup>22</sup>.

All 'Electronic Communications Code Operators' benefit from permitted development and prior approval rights as set out in Part 16 of the Town and Country Planning (General Permitted Development) Order 2015. This provides significant scope to develop broadband networks in Southwark.

#### *Results of contacts with utility providers*

##### *BT Openreach:*

- Openreach own and operate existing telecommunication infrastructure in the OKR OA which is serviced by telecoms exchange points
- They have a five year plan for their network, which draws on development information sources such as Local Plans.
- In order for Openreach to install new infrastructure to an area, a new connection application would be required from a developer in order to extend the applied for services to the site. Openreach do not speculatively upgrade infrastructure without developer contracts in place for required telecoms connections.
- They are committed to working with developers to roll out a fibre access network to new developments. Fibre based infrastructure will be offered to all new developments either for free or as part of a co-funded initiative
- Launched a [Connectivity Assessment](#) Tool (CAT) in February 2016 that allows a developer to receive an upfront assessment of the anticipated broadband connectivity and speeds to a site, and the developer contribution cost (where applicable to jointly fund the deployment of the local fibre network).
- To get the best possible options for a development they recommend a developer applies for an assessment **at least nine months** before the first occupancy date (preferably 12-24 months out). They are not able to offer fibre to a new site if there is less than nine months' notice, the default will be copper connectivity.
- Actively encourage that new build developments are registered at the land purchase stage (allowing the developer to offset the cost against the purchase price) or beginning of the planning process. This allows BT Openreach to meet their aim that fibre infrastructure is in place when customers move into their new homes.
- Costs of connection are site specific, depending on a range of factors such as the size of the development and existing infrastructure. Costs are covered by BT Openreach and the developer, there is no requirement for CIL/s106.

##### *Virgin Media:*

- Virgin Media have their own network so are not dependent on BT Openreach
- They are looking to grow the network and are investing £3B to this end
- They are increasingly delivering fibre end to end (rather than relying on copper or coaxial cable) from the 'head end' of the network (for OKR this is in Lewisham) via

---

<sup>21</sup> <https://www.cable.co.uk/local/broadband/greater-london/southwark/>

<sup>22</sup>

[http://www.uswitch.com/broadband/news/2014/06/uk\\_broadband\\_launches\\_relish\\_4g\\_service\\_offers\\_13mbps\\_without\\_landline/](http://www.uswitch.com/broadband/news/2014/06/uk_broadband_launches_relish_4g_service_offers_13mbps_without_landline/) and <https://www1.relish.net/>

'virtual hub sites' and street or basement cabinets direct to homes, particularly in growth areas (they are willing to invest upfront in network growth where there is certainty significant development will be delivered), enabling higher speeds

- Where they provide people with a physical connection to their network, most sign up, so they aim to get properties connected prior to first occupation
- Indicative cost for upgrading network from 'head end' to AAP boundary is ~£300,000.
- Cost is covered through agreements with developers and service charges

#### *Hyperoptic:*

- Hyperoptic make use of BT Openreach infrastructure, for example housing their own equipment in BT telephone exchanges and using BT Openreach's duct network to run fibre
- They have invested in upgrading river front 'exchange only' properties (they evaluate building by building) which relied on copper cabling linking each building direct to the local telephone exchange (no street cabinets), leading to poor performance due to drop off over distance. Replacing the copper with fibre with local distribution within buildings via data cabling leads to significantly faster speeds.
- They offer a 'symmetrical' service – same upload and download speed. Upload speed is often significantly slower, but Hyperoptic see this as key for supporting home working which is increasingly 'cloud' based.

Broadband costs are commercially sensitive and therefore have been difficult to obtain. Based on benchmarking of service providers, an estimate of £150-£200 per household<sup>23</sup> is required for the additional infrastructure to support broadband for new development, equating to an investment of at least £3M to connect the 20,000 new homes proposed in the OKR OA. However there may be economies of scale cost savings and costs will presumably also vary depending on existing digital infrastructure provision and the technology used, therefore this figure should be treated with caution.

#### *Summary/conclusions*

Digital connectivity is an important utility and is likely to become more so as services increasingly move online and television and telephone calls shift to the internet. Effective communications networks are vital in the efficient operation of business and home life, and have benefits for safety and security. Development of improved digital connectivity across the OKR OA will therefore be important to support new development.

The council is seeking to adopt a policy in the New Southwark Plan that states that *"Development should seek to enable high speed broadband for future occupants and users"*; there is no need to replicate this in the OKR AAP<sup>24</sup>. However the Council may want to consider strengthening the above policy. A useful model may be Cambridge's proposed policy which states that: *"Provision for high capacity broadband (such as ducting for cables) should be designed and installed as an integral part of development, to minimise visual impact and future disturbance during maintenance. All telecommunications infrastructure should be capable of responding to changes in technology requirements over the period of the development."*

While the level of investment in digital infrastructure may be significant, as the telecoms industry is a competitive market no planning contributions will be required to provide the major telecoms infrastructure to the area (this will be funded through agreements between providers and developers and service charges).

---

<sup>23</sup> [Upper Lee Valley Development Infrastructure Study \(2015\)](#)

<sup>24</sup> Indeed this New Southwark Plan policy may no longer be required if/when the EU Broadband Cost Reduction Directive is transposed into Building Regulations.

A **collaborative application** from multiple developers, facilitated by the Council (similar to that proposed at Vauxhall Nine Elms), could trigger a single infrastructure upgrade, allowing the installation of underground services (i.e. major duct services for future connections routed from existing telecoms exchange points) to be coordinated with other utility operators to limit disruption. Installation of ducts would also allow for multiple telecoms providers to plan, invest and install telecom duct services together, which would facilitate the monitored and controlled installation and routing of utility infrastructure. A collaborative approach could allow for the assurance of a flexible, competitive and secure fibre telecommunications infrastructure to be established in the OKR OA providing **fibre to the door** to all applicants.

Such a collaborative approach could also facilitate installation of “single utilities corridors”, bringing together fibre optics, electricity, gas and water in one clearly identified trench. This could greatly facilitate future flexibility and efficiencies in terms of maintenance, enhancements and wider public realm works.

Alternatively, the council could consider investing in installing ducts itself as part of development works. It could then take the lead in monitoring and controlling installation of utility infrastructure and would enable it to lease space in the ducts to digital providers, generating a revenue stream. Hammersmith and Fulham Council have pioneered this approach, securing delivery of over 10km of ducts, including via s106 agreements for CCTV networks on new developments.

The council will keep digital infrastructure providers informed of growth plans (e.g. quantum and phasing) as these are refined. The council will seek to facilitate coordination of works in the highway by multiple utility providers, including digital providers installing ducts, providing maximum possible notice so that all can complete works at the same time, reducing disruption to residents and businesses.

## Conclusions

This study has reviewed the available information on current utilities provision and capacity in the area and has explored the future infrastructure reinforcements required for to support the level of growth planned in the OKR Opportunity Area over the next 15-20 years.

Based on an analysis of the information available, it is recommended that the council take a proactive approach to addressing the following key infrastructure challenges for OKR OA:

1. Delivery of electricity infrastructure reinforcement
2. Delivery of heat network
3. Deliver of a strategic surface water drainage strategy that minimises surface water flows to the combined sewer

This proactive approach should include the development and implementation of planning policies as part of the OKR AAP and the coordination of the design and delivery of this critical infrastructure, working closely with developers and wider key stakeholders such as Thames Water and GLA.

The council should also consider further the opportunities for greywater/ wastewater recycling (to reduce water demand and further reduce flows to the combined sewer network), drawing on Integrated Water Management Strategies produced for OPDC and Nine Elms; and the opportunity for the council to invest in installing services ducts to facilitate delivery by digital providers and generate a revenue stream.