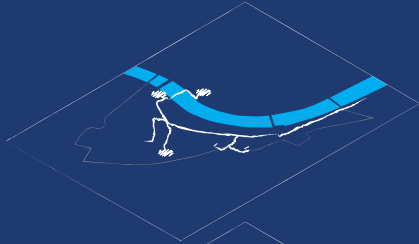
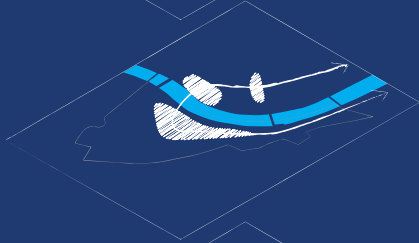


Chapter 9

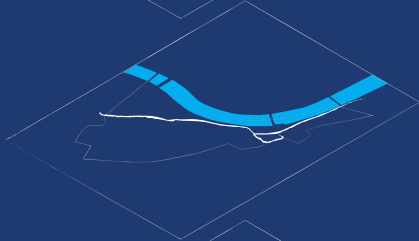
Environmental strategies



new energy network for the OA



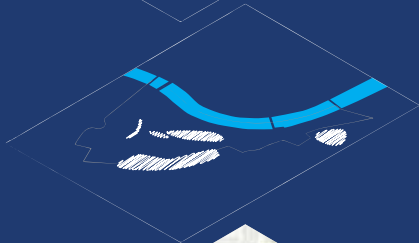
strategic links to nearby energy networks



noise and poor air quality



retention and protection of safeguarded wharves



flood prone areas



indicative masterplan

Key principles

- Delivery of VNEB CCHP/ CHP district heating network (DHN)
- Potential wider links to Pimlico, Whitehall and Waterloo energy networks
- Co-ordinated approach to electricity supply in OA – location/ timing/ size of new substation(s) required for new development
- Retention and protection of safeguarded wharves for waterborne freight handling purposes and designing adjacent development to minimise the potential for conflicts of use and disturbance.
- Maximise opportunities to use the wharves for transportation by river of construction materials and demolition waste associated with new development in the OA and the Thames Tideway Tunnel
- Enable construction of the Thames Tideway tunnel including a main tunnel drive site and combined sewer overflow site without adversely affecting new development
- Best practice to be followed for waste minimisation, reuse and recycling during demolition, excavation and construction
- Consideration of pneumatic waste collection system for new developments
- Mitigate the risk of flooding by integrating SUDS into the design of new developments and maximising opportunities to incorporate rainwater attenuation measures into the public realm and the linear park

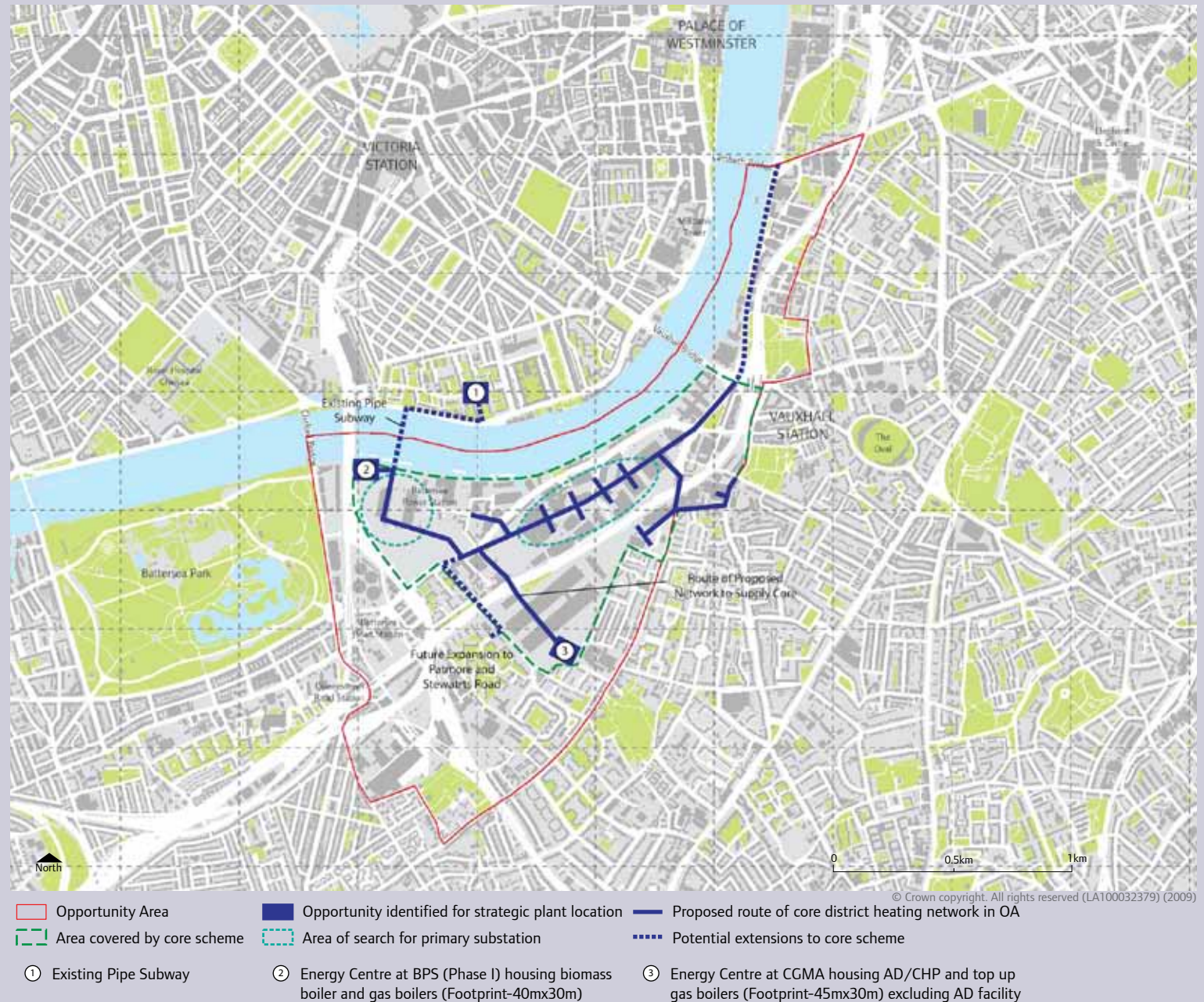


Figure 9.1 Conceptual map showing proposed District Heating Network and Energy Centre locations for core scheme

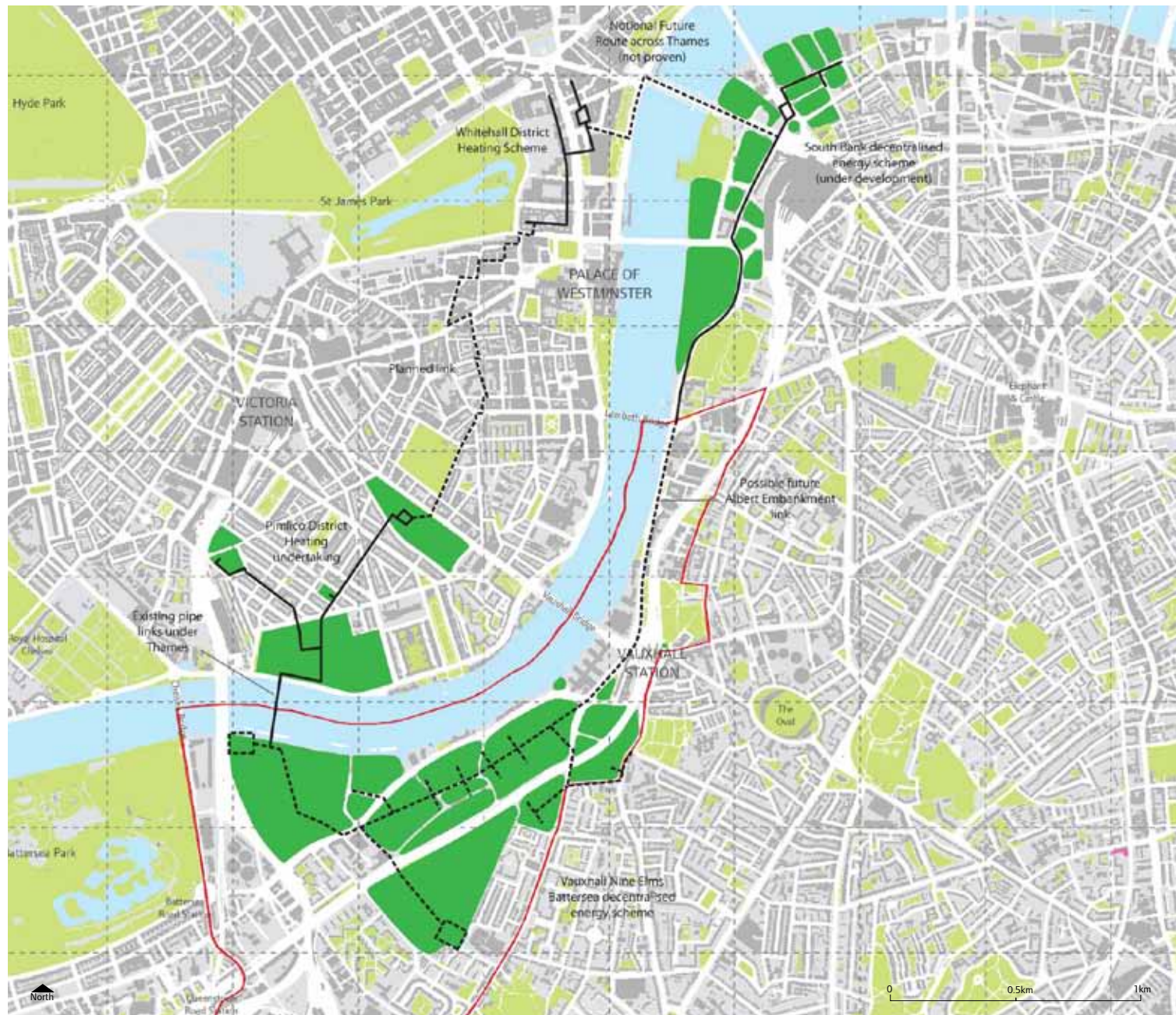


Figure 9.2 Map showing strategic context in relation to adjacent DE networks (existing and planned)

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9.1 Energy Strategy

The London Plan and the Mayor's Climate Change Mitigation and Energy Strategy emphasise the important role of decentralised energy systems in reducing carbon emissions and tackling climate change. London Plan policy 5.5 promotes the development of decentralised heating and cooling networks at the development and area wide levels including by identifying opportunities for new networks and expanding existing networks, developing energy master plans for specific decentralised energy opportunities and requiring developers to prioritise connection to existing or planned decentralised energy networks where feasible.

The energy strategy for VNEB is set out in TA5 of this document. In spatial planning terms it sets out an illustrative energy master plan, which connects key sites in the OA to a district heating network (DHN). Figure 9.1 illustrates the proposed route of the core network and indicative locations for two main energy centres, as well as a potential extension of the core network along Albert Embankment.

The energy strategy also identifies the potential for the VNEB DHN to connect to other energy networks beyond the OA boundary. These are illustrated on figure 9.2 and comprise:

- The Pimlico District Heating Undertaking (PDHU) in Westminster
- Whitehall District Heating Scheme in Westminster
- South Bank Decentralised Energy Network (under development) in Southwark

The key recommendations of the energy strategy are as follows:

- Key stakeholders to work with GLA, LDA and Boroughs as part of a VNEB District Heating Steering Group, to establish a district heating network in the core areas of Nine Elms, Battersea, Vauxhall, to supply low carbon heat to all new developments in this area.
- Ensure developments connect to the VNEB district heating network. Where a development is completed before the VNEB network is completed, the development should be designed using technical standards established by the VNEB District Heating Steering Group to ensure it can connect to the VNEB network with the minimum delay and modifications. Planning obligations will be used to ensure connection occurs.
- Ensure that council owned buildings in the OA connect and benefit from the low carbon DHN where appropriate.
- Ensure that the strategic connection between the PDHU and VNEB via

the existing pipework beneath the Thames is secured, including any access requirements and space for heat exchangers & pumps on the Battersea Power Station site.

- Ensure that the opportunity for the PDHU to be linked with a future VNEB heat network is fully investigated.
- Ensure that a route for the buried district heating mains is safeguarded in the strategic open space.
- Encourage the collection and processing of organic waste across the OA, using anaerobic digestion (AD) plant located at New Covent Garden Market.
- Determine the optimum location, scale and combination of energy generation technologies to provide a reliable and low carbon supply of heat for the district heating network, with the flexibility to adapt to future changes in relevant guidance and regulation.
- Ensure that opportunities to locate strategic energy generation technologies at Battersea Power Station and New Covent Garden Market are fully explored.
- Take a collective approach, through the establishment of a VNEB District Heating Steering Group (see Appendix 6 in TA5 for draft Terms of Reference), to determine the optimum ownership and contracting structure of the scheme and agree the preferred delivery approach.
- Develop technical standards and guidelines to ensure compatibility between developments and the VNEB district heating network to ensure a common approach to issues such as metering.

- Take a collective approach to the planning and provision of electrical capacity in the OA and establish areas of search for predicted EDF sub station capacity uplift (see sections 4.1 and 5.1 of TA5).

Progress towards implementation

Since the OAPF energy strategy was originally produced, the VNEB Energy sub-group has been created. The group meets quarterly and has representation from the two boroughs, the GLA, and major landowners. It reports to the Utilities and Wharves working group and is responsible for developing a detailed energy master plan for the OA, making recommendations in respect of energy network ownership and governance options and will ultimately oversee implementation of the network. Lambeth and Wandsworth Councils with the support of the GLA are commissioning an energy master plan for the OA based on a district energy network. The study will include energy demand forecasting and identification of plant size, locations for energy centres, routes for pipework, outline investment costs and opportunities to connect to existing energy loads and systems within or adjacent to the OA. The study will inform the next stage of work which will address procurement and commercial issues including a business model and pricing structure.

Planning applications already approved have been designed to enable straightforward future connection to the district heat network as and when it becomes operational.

9.2 Safeguarded wharves

The wharves and waste strategy is set out in TA6 of this document and sets the policy framework, baseline information and technical background for the spatial interventions proposed.

The OA contains three safeguarded wharves:

- Cringle Dock – an operational waste site (Western Riverside Waste Authority). Specialist infrastructure enables waste transfer activities to take place in a covered dock.
- Kirtling Wharf* – an operational aggregates wharf (Cemex) which has planning permission to increase throughput of the wharf.
- Middle Wharf – currently non-operational but considered to be capable of being made viable for waterborne freight handling purposes and may be required for construction of the Thames Tunnel. Following completion of the tunnel it should be brought back into operational wharf use and be able to contribute to the shortfall in wharf capacity in West London.

In line with the London Plan, the safeguarded wharves will continue to be safeguarded for waterborne freight handling uses in the long term, subject to a five-yearly review.

* "Kirtling Wharf has previously been known as RMC Battersea, Metro Greenham and Cringle Wharf"

Use of the wharves for transportation of construction and demolition materials will play a key role in reducing the number of road freight vehicle movements in the area during the construction period and such opportunities should be maximised.

The OAPF sets out a strategy for mitigating noise and visual intrusion around the wharves. This includes wrapping the wharf uses in commercial or other non-residential uses to prevent environmental issues emerging in the medium term when new residential development is occupied.

The OAPF also recommends the enclosure i.e. covering or containing within a building of the existing operational Thames Water site to the south of Cringle Dock in order to allow for continuation of use whilst also improving the quality of the built environment for those located around the facility.



Figure 9.3a Protected wharves - existing situation

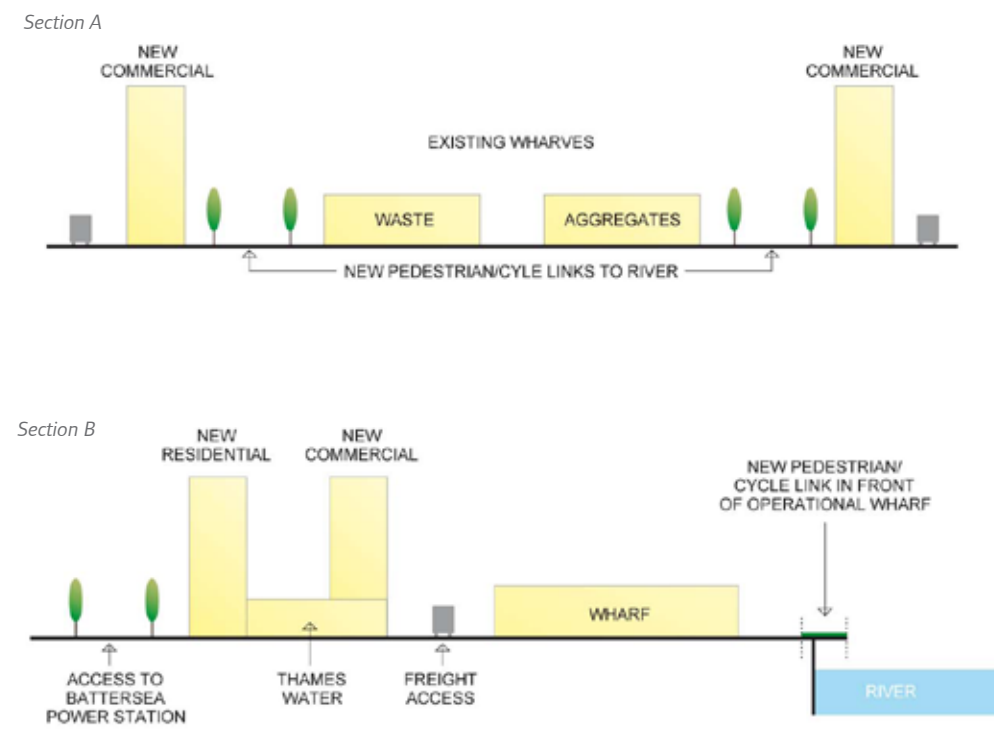


Figure 9.3d Section of proposed commercial development wrapping wharves and operational water site

Thames Tideway Tunnel

Thames Water has identified the need for a main construction site for the Thames Tideway Tunnel. Its Phase Two consultation material (November 2011) identifies a main tunnel driver site extending into the river foreshore and encompassing land at Kirtling Street and Cringle Street, including Kirtling Wharf, with a combined sewer overflow (CSO) connection site at Heathwall Pumping Station and Middle Wharf.

The preferred outcome would be to limit the extent of the jetty structure to minimise the impact on the adjacent Riverlight development by not encroaching into its river frontage. The main construction site would be required for approximately six years, and the CSO site for approximately three years, with a permanent requirement for maintenance access.



Figure 9.4 Thames Water Kirtling Street

9.3 Waste

The OA will see substantial new residential and mixed-use development, and this will give rise to significant quantities of waste, during construction and occupation. Waste reduction and recycling needs to be fully considered and implemented in the design phase, the construction phase as well as the operational phase.

Design Phase

This is often the most critical phase where waste can be designed out of the construction materials manufacturing process as well as the process on site. An appropriate design, specification and procurement strategy needs to be developed at this stage with appropriate targets set. Targets should be set in terms of percentages of reused and recycled materials used within the construction process.

Demolition and Construction Phase

Audits should be carried out prior to demolition to identify materials and products suitable for reuse and recycling. These items should be removed appropriately before demolition, as should any hazardous materials. Any remaining materials should be recycled following demolition.

Site waste management plans should be prepared for all construction sites with maximum emphasis placed on proper separation and sale/disposal of recyclable materials.

There is likely to be a degree of overlap between the construction periods of the various developments in the OA over a

prolonged period of time. It is therefore recommended that one or more temporary waste and materials consolidation centres should be established in the OA. Such centres offer controlled and secure facilities which provide reliability of materials delivery, fewer vehicle movements and lower CO2 emissions, and reduces over ordering, spoilage and loss of materials. Any consolidation centre should seek to maximise the potential of rail and river access transport for the delivery / removal of materials. They also enable better segregation and recycling of individual waste streams and to exceed standard and best practice industry performance. The Thames Tunnel main construction site could offer an opportunity to provide this.

Soils and excavated material should be reused or recycled rather than being sent to landfill. Ideally, contaminated materials should be treated and recycled rather than being landfilled. New approaches which support reusing these materials on and offsite are now available through the Development Industry Code of Practice* published by CL:AIRE. Their use should be considered on all new developments.

Operational Phase

It is critical that adequate space is designed for and provided within the homes and business premises to allow for efficient segregation of dry recyclable, organic and other waste. Space issues are one of the most significant barriers to recycling in businesses and in homes especially in flatted developments.

* "The Definition of Waste: Development Industry Code of Practice; Contaminated Land: Applications in Real Environments 2011 [Online] http://www.claire.co.uk/index.php?option=com_content&view=article&id=210&Itemid=116"

The OA will see high density development. The potential for innovative solutions to waste disposal and collection such as pneumatic waste collection systems*, which minimise the need for outdoor bins should be considered early in the design phase of new developments and should be developed in consultation with the borough waste teams. Such systems maximise the potential for recycling by residents and businesses whilst also increasing the attractiveness of the street environment. This could be particularly beneficial to the quality of the public realm and the linear park.

Other options may be suitable for particular waste streams, such as sink waste disposal units for organic waste.

More guidance on the opportunities related to new development will be available in the forthcoming SPG on Sustainable Design and Construction as part of the London Plan.

* "a pipe system particularly suitable for high density neighbourhoods using vacuum technology to take waste and recyclable materials to a few centralised points, saving space on outdoor bins"



Figure 9.5: pneumatic waste collection system at Wembley

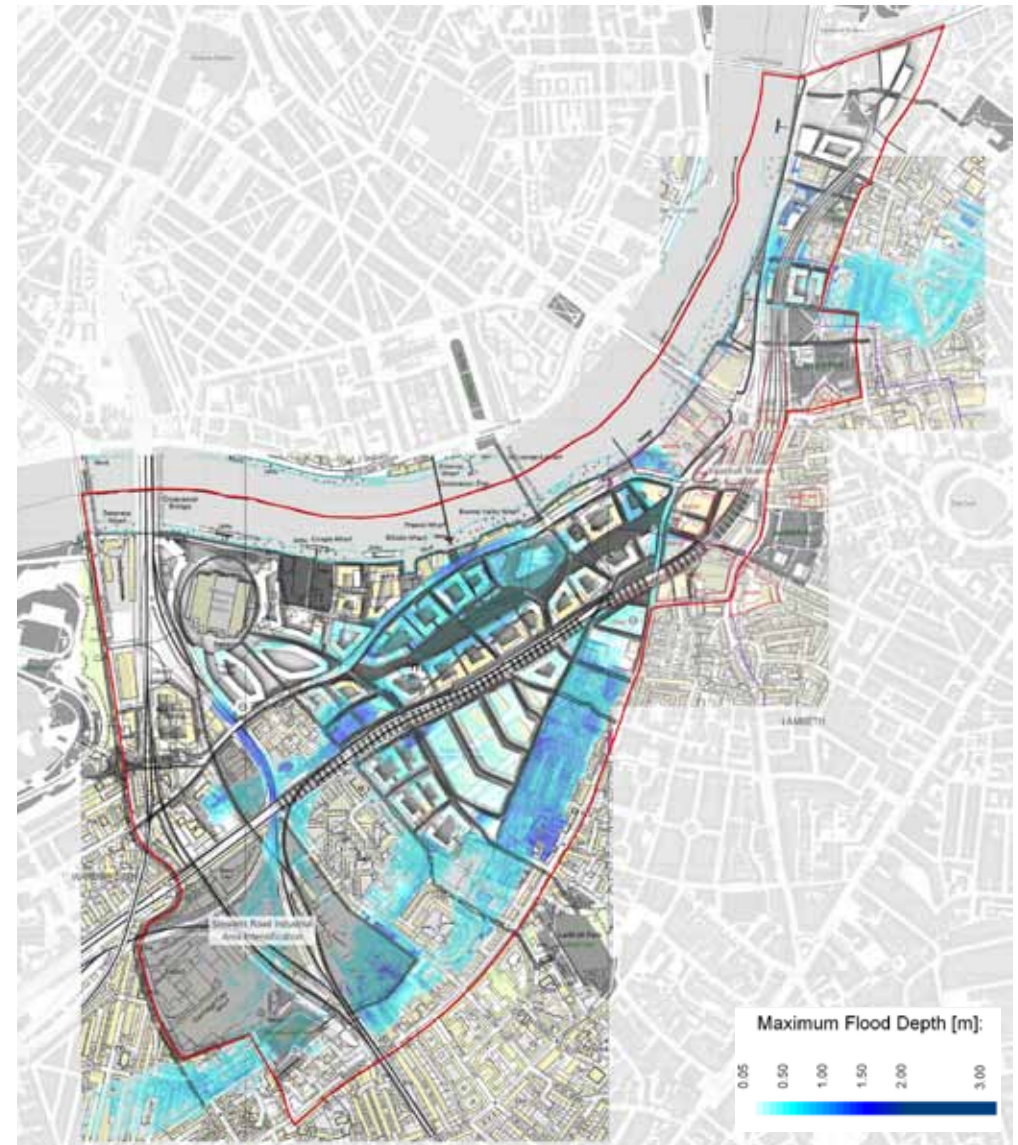
9.4 Flood risk

The water strategy for the OA is set out in TA7 of this document and provides the policy framework and baseline information in relation to flood risk and water conservation and management at strategic, site-wide and building level.

The whole of the OA is located within a high fluvial flood risk zone (PPS25 Zone 3a). It does benefit from a high level of flood protection (0.1% chance per year) by a combination of river walls and the Thames Barrier. Despite this there is a residual risk of flooding from either an overtopping of, or breach in, the flood defences. Breach modelling has been undertaken as part of the Strategic Flood Risk Assessments (SFRAs) for both Lambeth and Wandsworth. The 1:1000 year flood risk modelling demonstrates that the following areas could be affected:

- North of Spring Gardens
- Heart of Nine Elms
- New Covent Garden Market – Main Market
- Existing housing along the southern OA boundary around Crimsworth Road
- Lambeth College
- Parts of the Patmore Estates
- Areas within Stewarts Road SIL

Nine Elms has also been identified as a Critical Drainage Area as part of the Preliminary Flood Risk Assessment, looking at surface water flooding. This work has been undertaken as part of the requirements of the Flood Water Management Act 2010 (FWMA) and Flood Regulations 2009.



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Figure 9.6 – potential for the public realm to provide long term flood relief

The public realm strategy for the OA includes a linear park and strategic green links across the OA, which provide an excellent opportunity for flood risk mitigation in the areas set out above. Diagram 9.6 indicates that whilst the whole OA is not affected, there is a risk that many existing and proposed residential properties would be flooded and key transport routes including rail would be affected.

Through careful design of the public realm to include ponds, wetlands, swales, basins and drainage channels, the new green infrastructure in the OA will serve to reduce flood risk throughout the area. It will still be important for individual developments to consider the risks and ensure that they are designed to manage those risks, particularly where the development involves strategic infrastructure such as the NLE, electricity sub stations or emergency services facilities.

As part of their duties as Lead Local Flood Authorities (LLFA), Lambeth and Wandsworth Councils are proposing to undertake a joint study to identify potential schemes to reduce the risk of surface water flooding. On completion this study will form a supporting document to the OAPF.

Individual schemes will be expected through design to minimise surface water run off through the application of the London Plan Sustainable Drainage hierarchy, including the use of sustainable urban drainage systems (SUDS). Given the proximity of the River Thames, most rainwater should be discharged to the river rather than the combined sewer network. Measures to conserve water through good strategic water management in line with the Mayor's Water Strategy and to incorporate rainwater harvesting and green roofs on both residential and commercial

buildings will also be expected.

As part of the requirements of the FWMA 2010, Lambeth and Wandsworth Councils as LLFAs will need to set up a SUDS approval body. It is expected that these requirements will come into force in late 2012. This will mean that all developments will have to incorporate a SUDS that will need approval, and subsequent maintenance will be the responsibility of the LLFA.

9.5 Noise

Land use changes in the OA will raise a number of issues with regard to residential quality and noise.

Existing noise sources include:

- Strategic highways network in particular the Vauxhall gyratory and Nine Elms Lane
- Mainline railway lines to Waterloo and Victoria
- Safeguarded wharves – 24 hour operating licences
- All night activity at the New Covent Garden Main Market site
- Late night leisure activity around Vauxhall and Albert Embankment
- Rail and bus depots at Stewarts Road industrial area

In accordance with London Plan policy 7.15, individual schemes will be required to separate new noise sensitive development from major noise sources wherever practicable through the use of distance, screening or internal layout in preference to sole reliance on sound insulation.

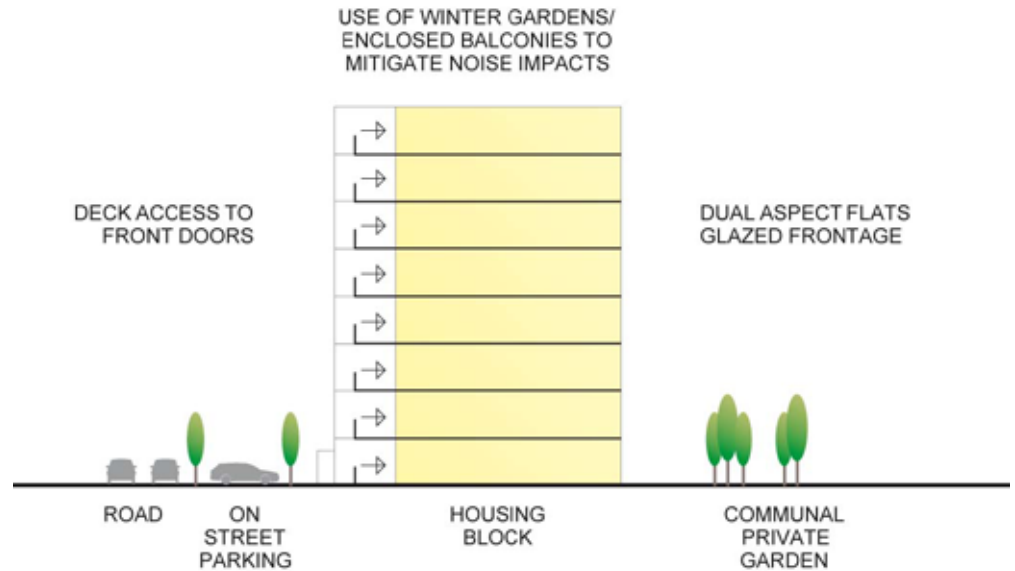


Figure 9.7 Residential layout – noise mitigation through design

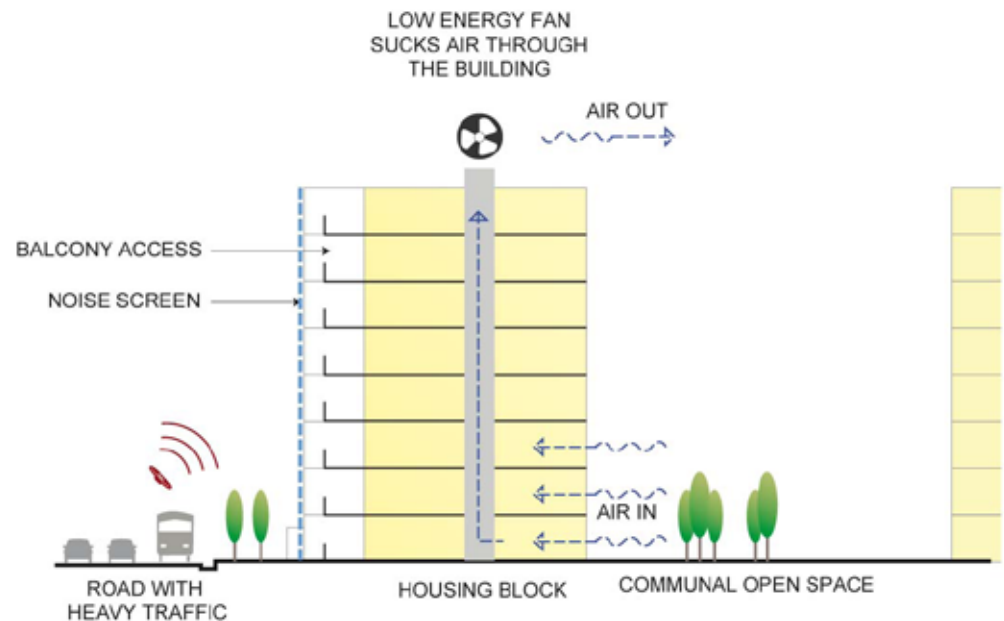


Figure 9.8 Residential layout – air quality mitigation through design

9.6 Air quality

Figure 9.9 shows the relative distribution of nitrogen dioxide (NO₂) concentrations in inner and outer London, with much higher concentrations within the central area. Figure 9.10 shows NO₂ concentrations in the OA and figure 9.11 shows the number of exceedences above the daily mean particulate matter (PM₁₀) concentration. Both are highest around Vauxhall gyratory and along Nine Elms Lane and Albert Embankment.

In accordance with London Plan policy 7.14, development proposals should be designed to minimise exposure to existing poor air quality and provide on-site mitigation measures to ameliorate any additional negative air quality impacts arising from the development. Appropriate design solutions could include passive house technologies where the units are sealed and venting is taken from the less polluted side of the development and vented out at higher levels.

Modelled 2004 Annual Mean NO₂ Concentration (microgrammes per cubic metre), based on 2004 Meteorology and the LAEI 2004

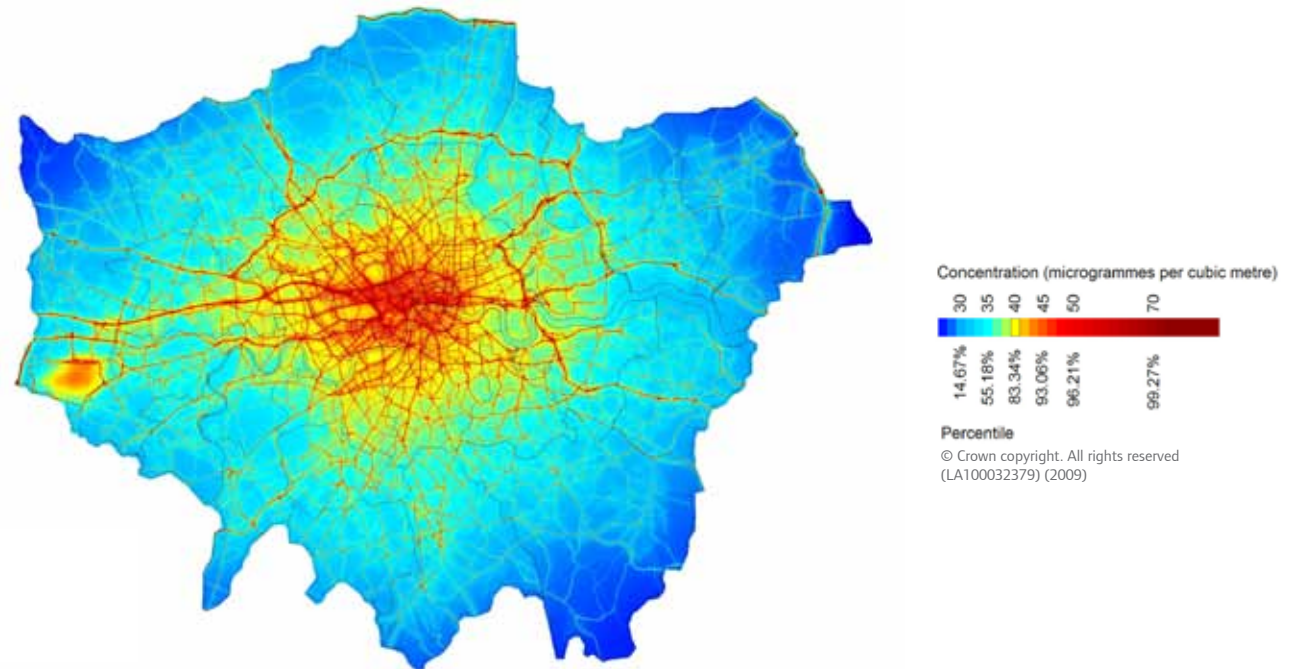


Figure 9.9 London-wide NO₂ concentrations

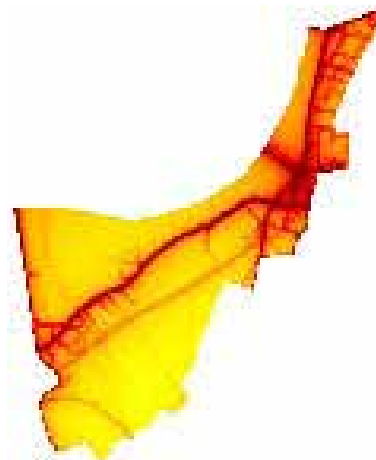


Figure 9.10 VNEB NO₂ concentrations



Figure 9.11 Modelled number of exceedences (days) above the daily mean PM₁₀ concentration using the LAEI 2004 emissions datasets and 2004 meteorology.



STOP