

Written submission from Veolia on Sustainable Infrastructure for consideration in the Examination in Public of the London Plan

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Veolia is the UK leader in environmental solutions, providing a comprehensive range of waste, water and energy management services designed to build the circular economy and preserve scarce raw materials. Our business strategy is focused on manufacturing green products and generating low-carbon energy, helping our customers and suppliers reduce their carbon impact and save resources.

Veolia is a major player in sustaining the well-being of the capital providing essential public sector recycling and waste collection services to a third of London's boroughs and is a member of the Mayor's high-level Infrastructure Group.

The company welcomes the opportunity to input to the London Plan examination in public. We hope our contribution will add to the overall debate on the topic of sustainable infrastructure in London.

Veolia supports the aspirations set out in the London Plan policies to minimise greenhouse gas emissions (SI2), plan strategic investment in energy infrastructure (SI3) and manage heat in London (SI4), but notes that there will be challenges to overcome if these aspirations are to become a reality. We also recognise that there are areas where we believe these policies could go further to achieve the desired aims.

Policy SI2 Minimising greenhouse gas emissions

Veolia agrees that it is relevant for the London Plan to set out clear standards for development across London. Reducing greenhouse gas emissions (GHG) is a national priority if the UK is to achieve its targets and deliver on international commitments. It is also a necessity for London as the capital strives to reach zero carbon by 2050. We support the Mayor's target of net zero-carbon for new buildings, the proposed energy hierarchy and the Whole Life-Cycle Carbon assessment to be adopted at design, construction and operation.

However, we believe the Plan should promote a more comprehensive approach to minimising GHG emissions from buildings. Indeed, a London carbon policy should also focus on decarbonising the existing building stock. In the UK, 80% of the buildings that will be occupied in 2050 have already been built¹, and two thirds of existing dwellings are rated D or lower in terms of energy efficiency² causing fuel poverty. On the business side, commercial and industrial buildings make up around a quarter of London's building space but consume almost half the energy, with a total of £4 billion each year in gas and electrical bills³. Investing in energy efficiency of this infrastructure would reduce building energy consumption by 20%, deliver £1bn in energy cost-savings and 10% GHG reduction.

¹ Royal Academy of Engineering, *Engineering a low carbon built environment*, 2010
<https://www.raeng.org.uk/publications/reports/engineering-a-low-carbon-built-environment>

² Ministry of Housing, Communities and Local Communities, *Energy Performance of Buildings Certificates Statistical Release: Q3 2018: England and Wales*
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/756229/EPB_Cert_Statistics_Release_Qtr_3_2018_rev2.pdf

³ Association for Decentralised Energy, *Energy Efficiency in London*, 2016
<https://www.theade.co.uk/resources/publications/a-world-class-city-but-its-buildings-lag-behind>

To achieve the zero-carbon emissions goal, it is critical for the London Plan to promote a wider implementation of energy saving measures for the old fleet of buildings in London. The vision for emissions savings from this type of infrastructure is long-term. The Plan should incentivise carbon saving investments and consider supporting infrastructure retrofitting for energy efficiency and performance purposes. We would advocate for the Mayor to support for example a fiscal incentive (such as a tax rebate) for building projects which invest in energy savings in the long term.

From a waste management perspective all our facilities, whether sorting or recycling materials, recovering energy from non-recyclable waste or generating biogas from food waste, are designed to reduce carbon emissions and save natural resources. It would be sensible to differentiate the applicability of carbon reduction measures to waste industry-led projects which inherently save carbon, greenhouse gas emissions⁴ and reduce climate change by investing in bespoke waste management, renewable energy and water treatment solutions, but also to include the savings created when assessing the carbon impact of the facilities.

The carbon targets in the London Plan for energy consumption of buildings are calculated using the Standard Assessment Procedure (SAP) methodology (Part L Building Regulations). **These calculations assume that the CO₂ emissions from power generated by CHP are equal to the grid CO₂ emissions and CO₂ emissions from power are discounted from total CHP CO₂ emissions to calculate CO₂ emissions from heat.** The knock on effect of this is that over time, as the grid decarbonises, the heat element will appear to have a greater carbon intensity. This would disadvantage heat from gas-fired CHP facilities and not reflect the true carbon benefits of using waste heat from CHP. As such we would recommend the calculation acknowledges that flexible CHPs offset the grid electricity at the grid marginal CO₂ emission factor rather than the grid average emission factor. Additionally, we believe the value of local heat networks in terms of flexibility, lower energy use and heat decarbonisation should be better reflected in the upcoming revision of Building Regulations.

Further comments:

- A clear date should be added in the text as to when the associated targets are to be reached
- On maximising opportunities for renewable energy on site, we suggest using the word “*generating*” instead of “*producing*” (SI2 A 3)
- To add energy efficiency to the already proposed monitoring, verification and reporting of energy performance (SI2 A 3A). Energy efficiency in buildings can be monitored and evaluated through tangible performance indicators.
- Regarding the minimum information on energy strategies of major development and particularly on proposals for Demand-Side Response to add to smart meters “flexible asset operation to lower and/or shift energy demand and minimise peak load and constraints on the grid”. We also recommend not to limit energy storage options only to short term (SI2 9.2.10 g)
- *Regarding the whole life-cycle carbon assessment calculation*, to require such assessments for referable and non-referable (to the Mayor) development proposals. We suggest to follow an already existing methodology/guidance like the one produced by the Royal Institution of Chartered Surveyors⁵ on calculating whole life cycle carbon emissions of new construction projects.⁶

SI3 Energy Infrastructure

Veolia welcomes the Mayor's plan to develop a more decentralised approach to energy supply in London. Diversifying the energy supply by including renewable and secondary heat sources will help the capital to become more self-sufficient and resilient while meeting its zero-carbon target. London's decarbonisation agenda is ambitious and needs a long-term sustainable vision for its energy and particularly heating infrastructure.

⁴ David A., Turnerlan D. Williams, Simon Kemp, “[Greenhouse gas emission factors for recycling of source-segregated waste materials](#)”, *Resources, Conservation and Recycling*, Vol. 105, Part A, December 2015, pp. 186-197

⁵ <https://blog.anthesisgroup.com/whole-life-carbon-assessments-construction-mandatory-rics>

⁶ NB: since May 2018, requirement to conduct at least two whole life carbon assessments: one at a project's technical design stage, which is mandatory, and another after practical completion, which is recommended best practice.

We welcome the strategic identification of Heat Network Priority Areas and the heating hierarchy which favours the connection to local existing or planned heat networks (SI3 D 1a) and maximises opportunities of district heating. We welcome the Mayor's direct role in promoting the delivery of heat networks by enabling more new and existing communally-heated developments in London to be able to connect into them. There are proven environmental, societal and systemic advantages of heat networks⁷, from an operational perspective, community-level energy infrastructure projects coupled with professional operations and maintenance of buildings and facilities tend to be more efficient and cost-effective decarbonisation solutions.

In our view, the Mayor and the London Boroughs should support the development of heat networks by removing the barriers to their future development by providing development rights similar to other utility providers. This could include the preparation and adoption of Local Development Orders to facilitate the provision of infrastructure to support the heat networks (SI3 9.3.4).

From a more technical perspective, we would like to add that district heating can channel climate-friendly energy sources such as renewables, energy recovery from wastewater treatment plants, waste heat and decarbonised heating fuels, thus lowering the carbon impact of the heating sector. Combined with waste-to-energy facilities, district heating utilises the waste heat making the facilities more efficient and diverting waste from landfill, thus saving further carbon emissions.

Taking South East London Combined Heat and Power station (SELCHP) as an example, Veolia is working in partnership with the London Borough of Southwark to supply over 3,000 Southwark properties with heat and hot water on a 5km pipework system. This scheme has proven very valuable in assisting the council's campaign against fuel poverty by making heat cheaper than gas and providing low carbon heat, as the waste that SELCHP burns is approximately 60% renewable carbon. The heating provided to the London Borough of Southwark by SELCHP has displaced gas that was previously burned to provide heating to residents and now no longer needs to be used, which contributes significantly towards CO2 emissions reduction - a cut of approximately 8,000 tonnes of CO2 per year. Further developments are currently in planning to ensure the system is expanded to more heat consumers and residents, which will further reduce carbon emissions.

Against this backdrop, we believe that the London Plan **should not exclude the use of energy from waste schemes that are connected to a heat network from the list of sources available for development proposals (SI3 9.3.7)** if it wishes to further optimise the local energy loops and fight against fuel poverty by producing heat cheaper than gas. We envisage waste heat (and cooling) from industry, commercial operations and other urban sources are to play a major role in the energy mix of the future, alongside renewable energy solutions.

District heating also offers numerous storage options, both thermal and electric (through the use of Combined Heat and Power (CHP) systems), hence increasing the flexibility and resilience of the entire local energy system.

Flexibility is key for the transition to a low carbon future. Heat networks with thermal stores provide flexibility to local grids, with the stores discharging or charging as necessary as heat demand rises and falls. By only using grid electricity to top up requirements, this also minimises the energy used from coal power stations. This helps to reduce costs and carbon emissions.

We would like to further clarify that the use of low-emissions CHP is a better alternative to gas boilers. In relation to the air quality concerns, the existing legislation, specifically on the Medium Combustion Plant Directive, effectively addresses the issue and puts stringent limits on the acceptable run hours and emissions levels from medium combustion plants to mitigate adverse air quality effects.

More generally, we would like to highlight that whilst renewables incentives are progressively being removed, with the plans to further penalise embedded generators via additional Balancing Services Use of System (BSUoS) charges in the Targeted Charging Review a particular concern, district heating development is being stalled by financial hurdles, lack of regulatory clarity and the prospects of decreasing heat demand. As

⁷ Reduction of the carbon footprint, emissions reductions, independent electricity supply, less exposure to electricity price fluctuation, cost savings for consumers.

a result private investors are reluctant to bear the high upfront investment district heating requires and are being put off installing or operating decentralised energy sources which are desperately needed to meet our energy demand.

To enable the decentralised grid and flexibility market to thrive in the coming years, regulators (Ofgem, BEIS) and the London Mayor should consider incentivising decentralised energy in a new and competitive way in order to decarbonise existing and future infrastructure and to enable the charging of a growing number of electric vehicles.

A key aspect that we believe could be further addressed in this Plan relates to planning aspects. Some of the current planning requirements are too stringent and hamper the development of strategic networks in London while cities like Leeds, Sheffield, Nottingham and Bristol have already invested in long-term technology neutral and low-cost district heating solutions to meet their decarbonisation agenda.

The Mayor could play a greater role in assisting the development and delivery of district heating projects by for example supporting a demand guarantee scheme which would help to offset the risk of securing long term offtakers of heat (for example if fewer properties are built under a development project than originally planned) given the large upfront capital investment necessary to install district heating systems. To guarantee installation quality, we recommend to include a standard set of high quality technical specifications to ensure contractors comply with a minimum standard. Support for business rates reform that sees heat networks treated comparably to other utilities would also be welcomed.

On energy masterplans, we agree and support the preparation of energy masterplans for large scale developments which can utilise the opportunities from the development of heat networks linked to existing and future energy from waste plants. However, we also believe that a number of medium sized developments and closely located clusters could offer opportunities for connection to heat networks. This should be more clearly suggested in the London Plan (SI3 A). Energy masterplans should seek to identify the barriers to the development and extension to existing heat networks and developers should be required to work with the Mayor and London Boroughs to unlock these opportunities (SI3 B).

Regarding the communal low-temperature heating system (SI3 D) for major development proposals, we agree in principle on the existence of such systems as long as they remain efficient and achieve carbon savings. However, we would like to point out that the decrease in network supply temperature, although possible in new buildings, may not be possible for the expansion of existing networks. Old buildings with ageing infrastructure will not be able to run with low temperatures.

The incorporation of Demand-Side Response (DRS) measures in energy masterplans is to be welcomed (SI3 B.11 A). DRS measures will be key in ensuring that energy supply and demand are matched with no additional constraints being put on the grid. DSR measures would help energy users to change their electricity consumption patterns while developing a smart and flexible energy system. We would like to add that there is a need to have clear guidelines, incentives and accessible frameworks for their management on a wider scale. The structure and provision of balancing services needs to be customer-oriented and technology-neutral to support the energy transition in the long-term and provide a **more flexible** and decentralised grid.

SI4 Managing heat risk

Veolia supports Policy SI4 to minimise the adverse impacts of the the urban heat island. The proposed cooling hierarchy sets out a basic approach which is preventing buildings from heating in the first place. We welcome the circular thinking to reuse the waste heat created by air conditioning systems (SI4 9.4.4). To further enhance the efficiency of the cooling hierarchy, we recommend support energy audits for existing buildings and promote buildings retrofitting proposals.

In our view, minimisation of internal heat generation through energy efficiency design should be supported by smart and adaptive controls and monitoring (SI4 B 2A). Active and efficient cooling systems should include high-temperature cooling and well as heat pumps, where feasible (SI4 B 6).

Overarching Comments

Emphasis on the use of renewables

The outlined policies in the London Plan do put an emphasis on renewable energy on site and the incorporation of renewable technology. We welcome the Mayor's effort to make renewable energy more effective in London and would like to highlight the need to maintain a diversified approach to London's energy mix in order to ensure a resilient and secure supply. As such it is important that energy from waste schemes that are connected to a heat network are maintained under the list of supported sources available for development proposals (SI3 9.3.7).

Alignment with national policy

It is important that the policies outlined here in the Draft London Plan are consistent with national policies, such as Defra's Resources and Waste Strategy, the 25 Year Environment Plan, BEIS's Clean Growth Strategy and Industrial Strategy. Therefore we wanted to highlight in the Resources and Waste Strategy, the policy 'Driving greater efficiency of Energy from Waste (EfW) plants by encouraging use of the heat the plants produce'. The London Plan must therefore be aligned with this policy in helping the companies that run EfW plants to use the heat produced to improve their efficiency and to help industry make the right decisions over infrastructure investment.

As per the Resources and Waste Strategy, work is underway across Government to make the remaining plants more efficient, by assessing and removing barriers to making use of heat produced when incinerating waste. The Department for Business, Energy and Industrial Strategy (BEIS) has a Heat Networks Investment Project, with a £320m capital fund, and Government is working to ensure that this project helps to utilise EfW plants as a source of heat for district heat networks where possible. The Mayor should look to support this initiative and perhaps have its own fund for London.

Emphasis on energy efficiency

Under the energy hierarchy of 'be lean, be clean, be green', the London Plan should aim to achieve all three aspirations rather than taking the cheapest or easiest option. This would avoid the split incentive (cheap to build, expensive to operate) which hinders energy efficiency in the first place. We suggest there to be clear efficiency and performance standards at design and construction but also operational and consumption stages, with minimum energy standards for all buildings. We would further welcome if the London Plan committed to bringing 70% of London's buildings to EPC C or above by 2030.⁸

Digitalisation as an enabler of intelligent network systems

Digitalisation is a key enabling factor in the transition towards intelligent decarbonised network systems. Because of the number of already existing buildings in London, it is crucial to leverage digital tools to deliver on the decarbonisation agenda. Similarly to what exists in some other countries, it would be useful to create a public map database of energy consumption and intensity (electricity and gas, area and age) of the main buildings, so developers could at a low cost identify the location of inefficient buildings or plan district heating networks. Thermal imagery and heat maps could also be used to create visual clues. Allowing tenants to compare/benchmark themselves to their neighbours would also be valuable to drive virtuous behaviours, maybe by setting up inexpensive "Digital energy certificates" using software rather than physical audits. Because energy efficiency is an operational issue, live data reporting of energy equipment and occupancy would be key to predict electricity peak and air quality. It is imaginable that people could connect to a London Sustainability app to reduce their consumption by changing their behaviour in real time.

⁸ London's Climate Action Plan, Element Energy report, commissioned by the GLA and C40 Cities Climate Leadership Group, September 2018