



TRANSPORT
FOR LONDON



MAYOR OF LONDON

London: The Ultra Low Emission Capital

Go Ultra Low City Scheme Bid



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Contents

London’s Go Ultra Low City Scheme Bid	6	Part 2: DELIVERING THE BID	
Part 1: LONDON’S BID		Delivery milestones	74
1.0 Why London? Unlocking the UK’s potential by investing in the capital	11	How London fulfils OLEV’s criteria	76
1.1 Changing infrastructure in residential areas	23	Costs	78
1.2 Changing infrastructure for car clubs	33	Bid partners	84
1.3 Charging infrastructure for commercial fleets	41	State aid	86
1.4 Neighbourhoods of the Future	55	Conclusion	88



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OVERVIEW

In July, London set out its vision to become an ultra low emission vehicle capital. London is bidding for £20 million in funding from the Office for Low Emission Vehicles (OLEV) Go Ultra Low City Scheme to make this vision a reality.

This bid builds on the progress made by London’s innovative policies such as the Congestion Charge and Low Emission Zone and local councils’ work to incentivise cleaner vehicles through parking policies and by expanding charging provision. The world’s first Ultra Low Emission Zone, which will come in to force in 2020, is a significant step change in London’s ambitions.

This bid, and further complementary bids, will help London continue on the path to an ultra low emission future by enabling London’s plans for a holistic transformation of its vehicle fleets. Our bid will create the conditions to realise independent projections for 70,000 ultra low emission vehicles (ULEVs) to be sold in London by 2020 and unlock progress to an almost entirely ultra low emission light vehicle stock by

2050. In doing so, we will deliver air quality benefits and will be able to track progress through our comprehensive emissions monitoring networks and data reporting.

London’s bid will overcome the most profound barrier to ULEV uptake; the availability of charging infrastructure. The new delivery partnership for residential charging addresses barriers for private users, primarily the lack of off-street parking and related complexity of charging. It will enable car clubs to convert their fleets, providing vital visibility and access to vehicles that are currently in the ‘early adopter’ stage. London’s rapid charging network addresses the barrier to commercial ULEV uptake by providing charging solutions for fleets with intensive duty cycles. We will overcome the challenges that have prevented wider roll out of rapid charging by finding sites and upgrading the electricity network. These networks will continue to complement existing and emerging commercial public charging networks, such as Source London and the POLAR network, which provide ‘top up’ charging for private and business users.

LONDON’S GO ULTRA LOW CITY SCHEME BID

RESIDENTIAL CHARGING:
Overcoming the barriers to allow ULEV owners to charge at home

- £8 million investment
- A new, sustainable delivery partnership to provide charging solutions for ULEV owners close to home
- Trials of innovative charging solutions to suit London’s different street scenes

CAR CLUBS:
Enabling the transition to a 50 per cent ULEV fleet by 2025

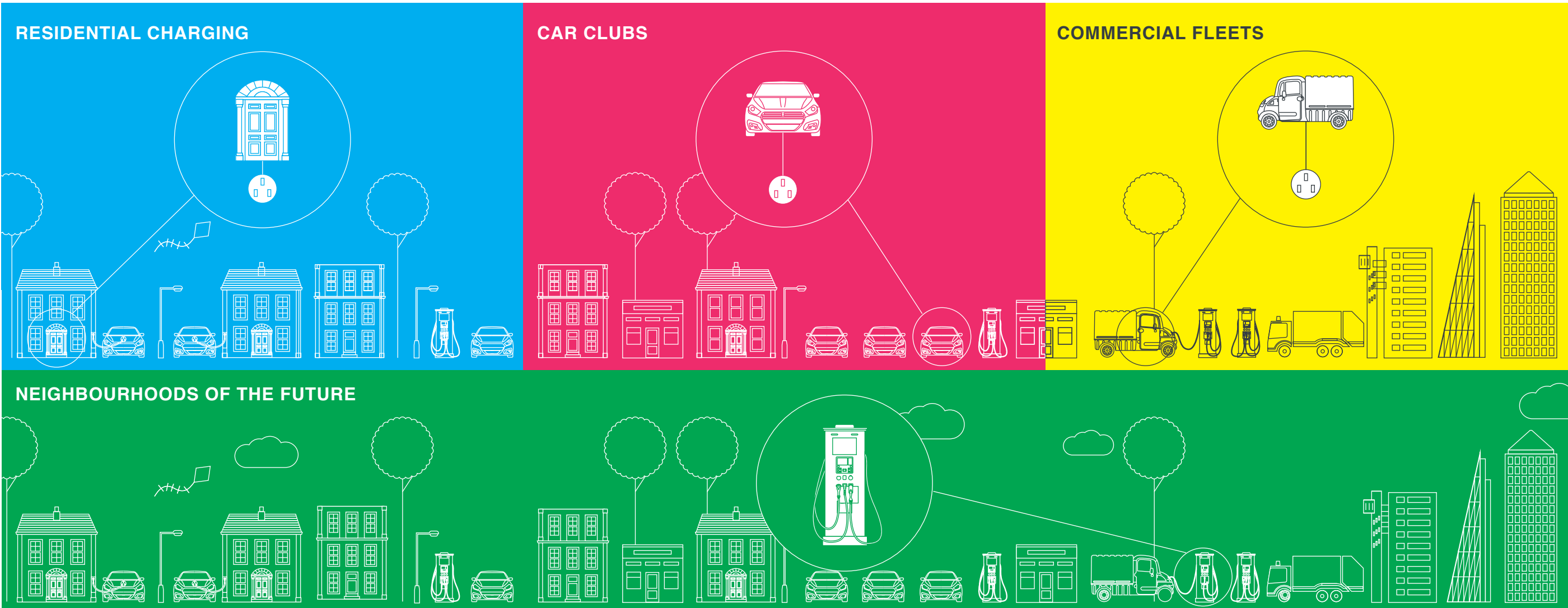
- £4.5 million investment
- Retrofitting charging infrastructure into 1,000 car club bays
- ‘Smart’ charge points to enable bays to be used for existing and emerging models of car sharing

COMMERCIAL FLEETS:
Unlocking ULEV use for fleets and enabling ULEV businesses to grow

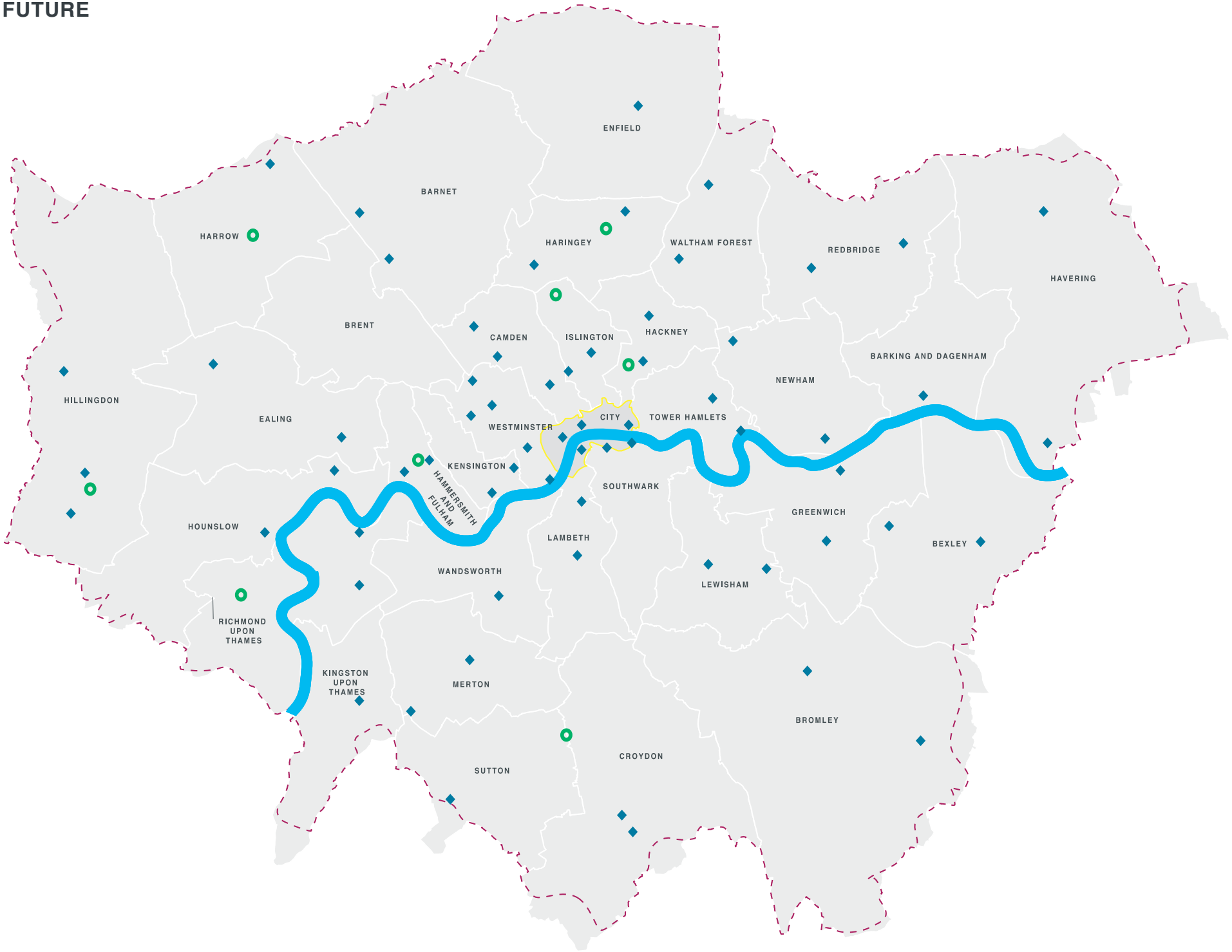
- £4 million investment
- Expanding London’s rapid charging network on arterial routes and across key locations by 2020
- Securing locations for rapid charging ‘hubs’ and investing to upgrade the power supply

NEIGHBOURHOODS OF THE FUTURE:
Eight borough-led, local schemes to radically increase the uptake of ULEVs

- £3.5 million investment
- A variety of geographies across the capital to test new ideas and provide learning for the rest of the UK



LONDON’S ULTRA LOW
EMISSION FUTURE



Locations indicative for illustration purposes

INTERVENTIONS ACROSS
THE CAPITAL

Public charging networks
Privately operated charging networks offering public access to ‘top up’ ultra low emission vehicles, including open access on a pay as you go basis

Car club bays
Charging infrastructure installed in 1,000 car club bays

Residential charging
Council-owned residential charging solutions to allow ultra low emission vehicle owners to charge up at home

- ◆ **Rapid charging hubs**
A network of rapid chargers and charging hubs on key arterial routes in to London and strategic locations across the capital to unlock ultra low emission vehicle use by commercial operators, including taxi and private hire vehicles
- **Low Emission Zone**
Operating 24 hours a day, seven days a week, to encourage the most polluting heavy diesel vehicles to become cleaner
- **Neighbourhoods of the Future**
Eight community schemes to radically increase the uptake of ultra low emission vehicles
- **Ultra Low Emission Zone**
The world’s first Ultra Low Emission Zone operating 24 hours a day, seven days a week from 7 September 2020 to encourage the use of newer, cleaner vehicles

1.0

Why London? Unlocking the UK's potential by investing in the capital

London is the best city in which to realise OLEV's ambitions. It has a global reputation for cutting-edge policy implementation and an unparalleled track record of delivering ambitious programmes on time and to budget. London is the UK's truly global city and therefore the only UK market of sufficient influence to inspire market innovation and ensure the whole of the UK benefits from the economic potential offered by ULEVs. London – "the Go Ultra Low Capital" – would be a powerful tool for OLEV's marketing campaigns while also offering experience and capacity to manage local, targeted campaigns.

KEY

Electric/Hybrid Transmissions and Fuel Cells – from Automotive Supply Finder

- 1 Continental Engineering Services UK
- 2 Elektromotive
- 3 GKN AutoStructures
- 4 GKN Evo E-Drive Systems
- 5 Intelligent Energy
- 6 ITM Power
- 7 Magnetic Systems Technology

Original Equipment Manufacturers

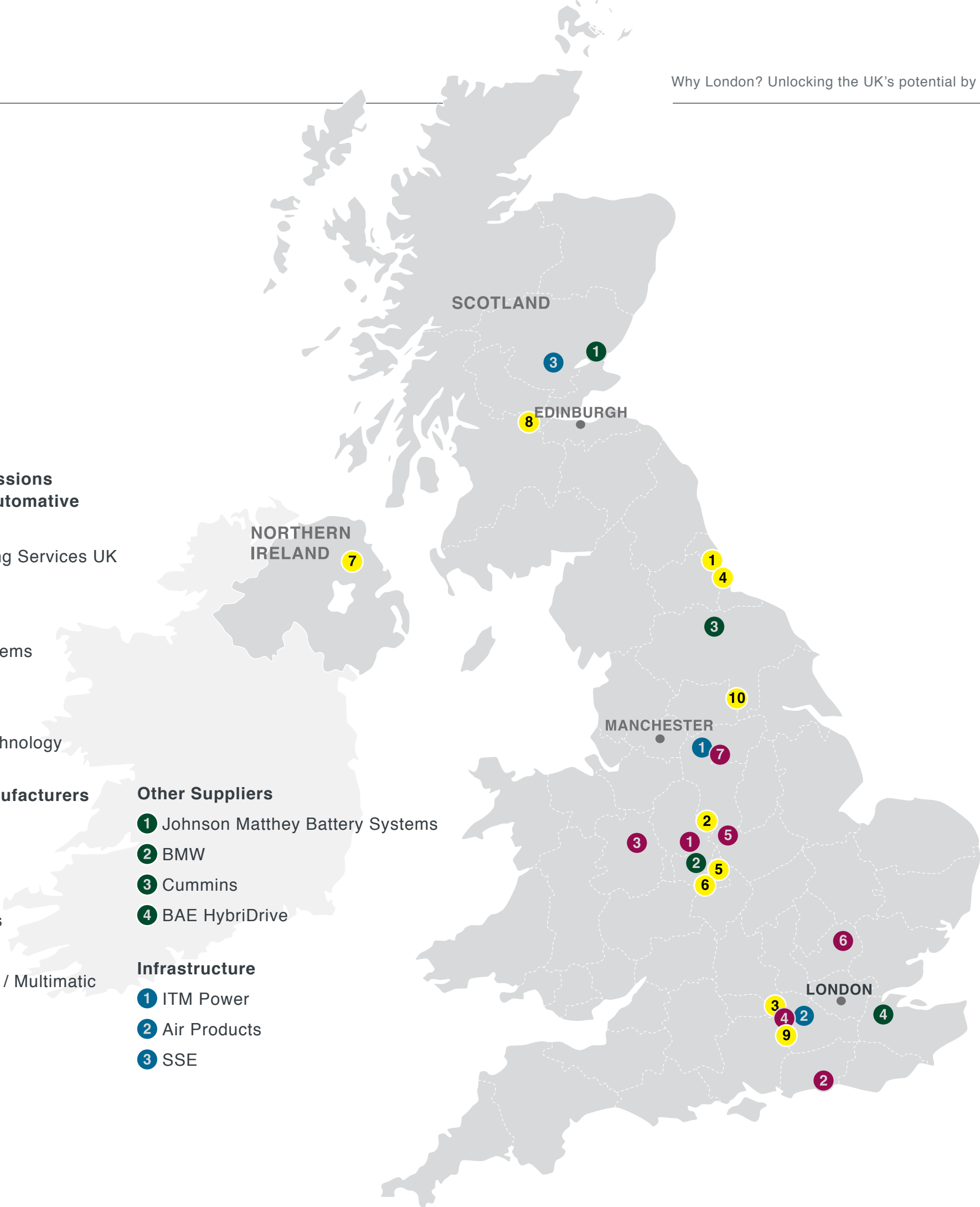
- 1 Nissan
- 2 Toyota
- 3 McLaren
- 4 Smith Electric Vehicles
- 5 London Taxi Company
- 6 Frazer Nash Metrocab / Multimatic
- 7 WrightBus
- 8 Alexander Dennis
- 9 Alexander Dennis
- 10 Optare

Other Suppliers

- 1 Johnson Matthey Battery Systems
- 2 BMW
- 3 Cummins
- 4 BAE HybriDrive

Infrastructure

- 1 ITM Power
- 2 Air Products
- 3 SSE



London has the largest market share of ULEV sales anywhere in the UK: in 2013, twelve per cent of all UK hybrid and EV sales were in London. Projections suggest that by 2020 there could be as many as 70,000 privately owned ULEVs sold within the capital and by 2050 London’s light vehicle stock could be almost entirely ultra low emission.

Investment in London benefits other parts of the UK. The new zero emission capable taxi has secured £300 million investment and jobs in Coventry, while London’s electric single deck buses are manufactured in Leeds. Independent economic assessment by Ecorys shows that high uptake of ULEVs in London – which initial investment from OLEV would help to realise – would result in total net GVA for the UK of around £230 million a year by 2050, with over 3,000 net jobs created or safeguarded across the country.



© Office for Low Emission Vehicles

There are wider benefits to ULEV uptake too. Ecorys has also calculated the social and environmental benefits of securing wider uptake of ULEVs in London. This showed nearly £30 million benefit by 2025, including health benefits due to reduced pollutant emissions worth around £10 million by 2025.

London has world-leading transport and environmental policies. It is the only city to have both a congestion charge and low emission zone, and will introduce the world’s first Ultra Low Emission Zone in 2020.

London is therefore the only UK city with the capacity and supporting policies already in place to secure a step change in behaviour. London was the first city to recognise the powerful potential of incentives, providing a 100 per cent discount

to the Congestion Charge and favourable local parking policies. These have contributed to London having a higher market share of ULEVs than in the UK overall.

London has used other powerful levers, most notably the planning system. The London Plan commits the city to ensuring no Londoner is more than one mile from a public charge point; that employee car parks will offer workplace charge points installed by business; and requires 20 per cent of all new development car parking spaces to provide electric vehicle charging.

London would promote itself as the Go Ultra Low Capital. We would work with OLEV to use international icons such as the New Routemaster and the black taxi and make use of considerable promotional capacity, including motoring

occasions such as the Regent Street Motor Show and Formula E. London will be able to showcase the UK as a world leading ULEV city through networks such as the C40 Cities Climate Leadership Group¹ and the Electric Vehicles in Urban Europe (EVUE) programme². London is also keen to work in collaboration with other successful Go Ultra Low cities to share good practice and transfer knowledge between cities and to other parts of the UK.

London influences the rest of the UK. Source London has been replicated elsewhere and Westminster City Council’s guidance for on-street

charging has been used across the country. London has undertaken a comprehensive research programme, including work coordinated by Hackney Council into the barriers around the ULEV residential market. The local visibility and credibility of London’s councils has propelled successful local campaigns to encourage behaviour change, as demonstrated by smarter travel campaigns, and this experience will be used to drive the uptake of ULEVs. This collective knowledge and experience has helped to inform the proposals in this bid and will help bring forward innovative ideas.

¹ C40 is a network of the world’s megacities committed to addressing climate change.
² London’s Cross River Partnership, a public private partnership made up of local authorities, business organisations and other strategic agencies relevant to London, hosted the EVUE programme, engaging with continental leaders to share best practice and knowledge.
³ Smarter Travel Sutton for example achieved a 75 per cent increase in cycle traffic

LONDON'S DIRECTION

London's Ultra Low Emission Vehicle Delivery Plan sets out guiding principles that give confidence to businesses and ULEV owners that London is serious about realising its ultra low emission future:

- ULEVs are part of London's sustainable transport system: When public transport, walking or cycling are not feasible, Londoners need to be able to use ULEVs with ease and convenience. Some areas are better served by public transport than others. Where there is greater reliance on travel by car, particularly outer London, encouraging ULEV uptake
- is an important part of local transport strategies.
- An open, fair and accessible market offering coherence for users: There is no 'one size fits all' solution for charging and refuelling for ULEVs and different providers will operate in London. There must be interoperability between networks and open access for relevant user groups.
- The right infrastructure in the right place, making the best use of space: Partners in London will form shared views on infrastructure locations, considering flexible options to make the best use of space.
- Incentivising early ULEV uptake: London will offer discounts or otherwise incentivise ultra low or zero emission vehicles.



INNOVATION IN LONDON

FREVUE (Westminster)
Trials of electric freight vehicles to demonstrate that they can offer a viable alternative to diesel vehicles.


LaMiLo (Camden)
A scheme to increase the use of low emission vehicles in last mile of the delivery chain, trialling the concept for all of London’s public sector.

Shoreditch Zero Emission Network (Hackney)
A project helping businesses to work cheaper, cleaner and greener with exclusive member offers including free trials of electric cars and vans, credits for car club use and money off zero emissions taxi fares.

ZeEUS
Investigating the effectiveness of geofencing on three inductively-charged diesel electric hybrid buses on Route 69 from Walthamstow to Canning Town.

Private Hire Vehicle geofencing in City of London
370 hybrid Addison Lee vehicles will be sent a message to switch the engine to electric in four areas of the city.

Geofencing trials
Using bus route 159 (which includes Oxford Street) as a test route for geofencing to produce a geofencing prioritisation toolkit for buses in air quality hotspots.



PROJECTS ACROSS THE CAPITAL

ELIPTIC
A project assessing the feasibility of accessing and sharing the Underground electricity distribution network to charge electric buses at transport hubs and bus garages, reducing reliance on the public electricity distribution network.

CITYLAB
London is one of seven global ‘living laboratories’ testing different solutions including using ULEVs to improve city logistics.



© GLA

London’s Low Emission Zone, Congestion Charge and forthcoming ULEZ prove that we can coordinate innovative policies across regional and local government, with significant impact. Local cross-boundary partnerships, such as the Cross River Partnership and WESTRANS, and Londonwide programmes such as Local Implementation Plans and the Mayor’s Air Quality Fund, demonstrate that we coordinate to make the most of London’s governance and structures. This bid provides a framework for a consistent approach to charging infrastructure across London.

By providing Go Ultra Low City Scheme funding to London, national government would be targeting pollution and related health problems where they are most severe. London’s air quality has improved significantly in recent years but more than one million Londoners live in areas which exceed the legal limits set by the European Union for NO2 and London accounts for 49 of the 50 roads with the UK’s highest NO2 concentrations. With 80 per cent of all journeys made by road, increasing ULEV uptake will be an important component of tackling this challenge.

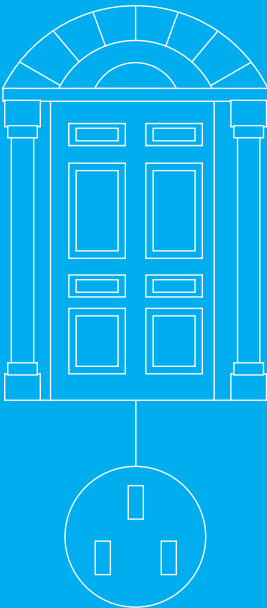


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1.1

Changing infrastructure in residential areas

London’s bid for £8 million will secure the provision of charging infrastructure in residential areas. A new public sector partnership will simplify the provision of council-led charging infrastructure, by overcoming the practical and structural barriers that have held back the installation of charging infrastructure. It will provide customers and councils with one point of contact for installing, managing and maintaining charging infrastructure. The new “on demand” service will begin to meet the demand for the estimated 36,000 vehicles without private parking that will need access to residential charging infrastructure by 2020. All public sector funding for charging infrastructure in residential areas will be channelled through this new partnership.





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THE BARRIER TO ULEV UPTAKE

Access to local, safe and reliable charging infrastructure is a key barrier preventing widespread uptake of ULEVs in urban areas. In outer London 33 per cent of households have no access to off-street parking and this rises to 46 per cent in inner London. Yet our research shows that ULEV owners want to be able to charge vehicles at or close to their property and they do not think there are enough charge points at the moment.

Currently, each council must address legal requirements and design specifications for charging and keep abreast of changing technology. This complexity, and a lack of technical expertise to manage the process, has slowed down the provision of charging solutions. The lack of easy options for charging ULEVs is the single largest factor holding back greater uptake in London.

Recent research led by the London Borough of Hackney found that public access networks, such as Source London, are unlikely to provide the main solution for residential charging. It found that the provision of residential charging lacked the commercial viability to be driven by the current commercial model.

It also identified the barriers that need to be overcome to meet demand for residential charging. The key considerations the research identified that will help to determine suitable solutions for London include electricity distribution network capacity; parking, including how to restrict access to EV users and manage tension between residents; and streetscape, considering the visual and spatial impact of charging facilities.

LONDON’S SOLUTION

London will develop a new public sector partnership responsible for council-led charging infrastructure in neighbourhood settings, such as residential streets or in communal parking areas in estates.

This new partnership, formed of London’s local councils and Transport for London, will manage all public sector funding for residential charging, including grant funding from OLEV. It will have a number of responsibilities and may contract some of these responsibilities through a competitive tendering process. The new partnership will:

- Provide and manage all installations and maintenance, coordinating all stakeholders and processes to agreed service standards, including providing vital technical expertise and capacity to manage these processes for councils;
- Provide a single point of contact for ULEV owners and operators that will provide advice on what infrastructure is suitable and available for the customer needs, and promote the availability of charging infrastructure;
- Agree a design specification with councils and ensure installations meet those standards and analyse the market for new ideas that meet those design standards;
- Develop a sustainable funding model that in the long term funds the installation of charging infrastructure without the need for public subsidy;
- Manage a membership system and bookings, including using smart allocation of spaces and pre-booking apps; and
- Manage back office functions once infrastructure is installed, including maintenance, to deliver a simple and straightforward user model in residential areas.

London’s ULEV Delivery Plan recognised that there is no one size fits all solution given the size and multiple needs of the capital. This new partnership approach will complement London’s existing commercial networks such as Source London



© GLA

and POLAR. The locations for these commercial network points mean they predominantly meet the need to ‘top up’ while carrying out other tasks such as shopping, rather than meeting the need for residential charging very close to home.

A new public sector delivery partnership will be better able to secure councils’ support and overcome the current barriers. It retains public control of the parking bay, which will allow councils to manage parking, for example to limit dwell time in each bay and ensure equitable access for different users. Borough leadership will also mean a simpler process for securing the right locations for residential charging

solutions. This will be complemented by further strengthening of policies in the new London Plan to ensure the Mayor’s and boroughs’ statutory powers are aligned with the new delivery model to maximise its impact.

A single partnership with responsibility for council-led charging infrastructure is a powerful driver to ensure all parties involved in charging in London sign up to common standards to enable interoperability, most importantly pay-as-you-go charging which will enable users to switch between different networks.



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DELIVERING SUCCESS

The maps and table below, collated for TfL by Element Energy and WSP Parsons Brinckerhoff, show likely demand for on-street charging. Based on projections of ULEV uptake, the tables show the number of electric vehicles that will require residential charging. The maps illustrate the geographic distribution of demand for residential charging taking into account the availability of private, off-street parking which is more limited in high density areas.

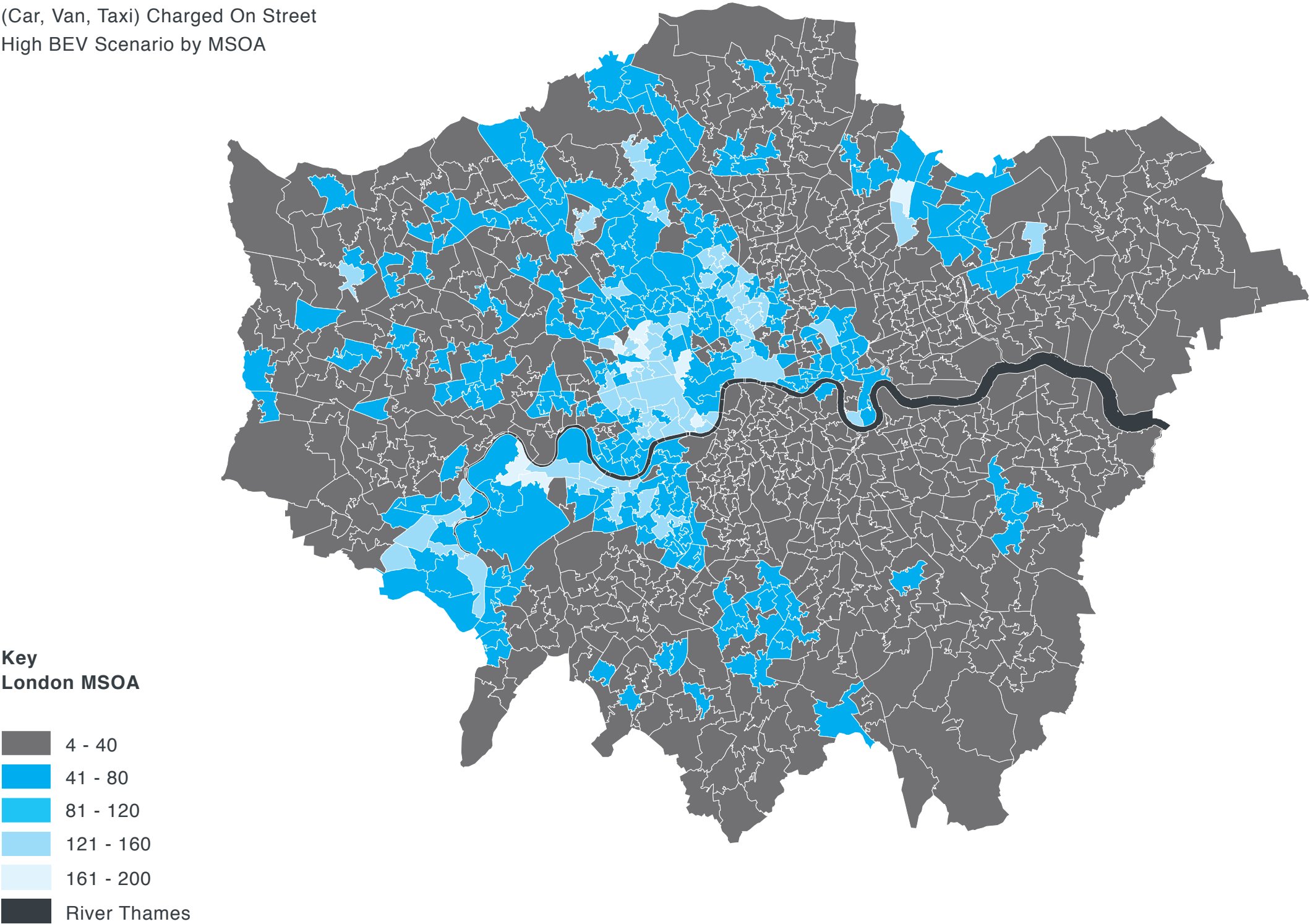
This scale of demand illustrates the increasingly urgent need to find a solution to increase the delivery of residential ULEV charging infrastructure. The new partnership will begin this process by providing approximately 1,225 points by 2020 with funding from OLEV. Additional funding will be sought through other funding schemes (such as EU innovation funds) and match funding (such as Local Implementation Plan, Section106 and Community Infrastructure Levy priorities) to ensure that it can deliver infrastrucure quickly enough to meet demand. In the longer term, this will establish an operating model that can become self-sustaining. A breakdown of the estimated costs for London’s bid is set out in part two of the bid document.

TABLE 1
Electric vehicles requiring on-street charging in residential areas in 2020 and 2025

	2020		2025	
	Number	%	Number	%
EVs charged on-street	36,000	61	150,000	59
EVs charged off-street	24,000	39	104,000	41

**GEOGRAPHIC SPREAD
OF DEMAND FOR ON-STREET
CHARGING INFRASTRUCTURE**

2020 Residential Combined Vehicles
(Car, Van, Taxi) Charged On Street
High BEV Scenario by MSOA

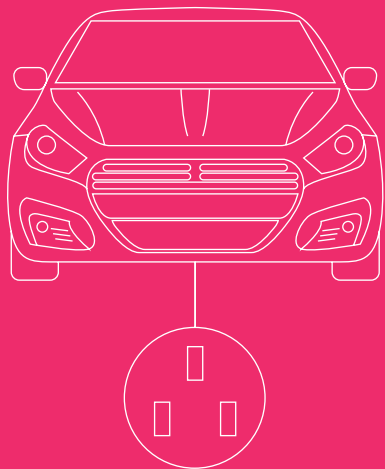


A number of councils have also provided information about their local priorities for residential charging through the Neighbourhood of the Future process. These indicative locations give confidence that councils want to identify locations within their communities. This information will inform discussions with councils and private landowners as this infrastructure is rolled out. Increased provision of residential charging infrastructure is critical to deliver many councils' aspirations for the transformation of these areas.

The funding available will enable a number of different technological approaches to be tested and delivered, ranging from lamp post charging, local hubs and, in the future, inductive charging.

1.2

Charging infrastructure for car clubs



Car club operators in London have committed to increasing the proportion of ULEVs in car club fleets to 50 per cent within ten years. This bid will provide £4.5 million funding to councils to install charging infrastructure in up to 1,000 car club bays to support car clubs to realise this ambition.

THE BARRIER TO ULEV UPTAKE

London has the bulk of the UK's car club market, with over 80 per cent of car club members and 70 per cent of car club vehicles. A number of car clubs and different operating models are currently established and emerging in London, with other companies interested in expanding to the capital. London's Car Club Strategy recognises the three main types of car clubs: round-trip; fixed one-way and floating one-way. The round trip model has operated in London for over ten years, while newer one-way models have gained traction in other European cities. Some councils are supportive of these new models of car sharing, allowing car club operators to explore one-way car sharing models in parts of the capital.

Car club operators are proud to be seen as a "green" transport option and are keen to remain in the forefront of clean vehicle technology. Currently, around 11 per cent of London's car club fleet is ULEV. In London's Ultra Low Emission Vehicle Delivery Plan, car club operators committed to increasing the proportion of ULEVs in their fleet to 50 per cent within ten years.

Including electric vehicles in car club fleets in London could help 'normalise' electric vehicles by making them visible, desirable and accessible to a much wider audience than is currently the case. Carplus, the umbrella

body for car clubs, reported positive experiences of electric vehicle use in car clubs: "Around one in five [survey respondents] had tried either an electric or hybrid car club vehicle. Of those who had experienced these vehicles, over three quarters had a 'good' or 'very good' experience."

The ability to access charging infrastructure is a challenge for car clubs. It has been difficult to meet the high upfront costs involved in installing charge points: operators have found it difficult to access grants from OLEV, while councils have been reluctant to pick up the costs for the exclusive benefit of car clubs. Network reliability and uncertainty around costs and access to privately-operated charging networks has led to uncertainty for car clubs and restricted uptake of ULEVs in the fleet.



CASE STUDY

London Borough of Hounslow/ Zipcar

Zipcar is a car club that has operated in London since 2004 (originally as Streetcar). It now has over 1,500 vehicles across the capital, including five electric and 95 hybrid vehicles.

As well as offering individual memberships, Zipcar offers corporate car share services to businesses in London.

One of its customers is the London Borough of Hounslow Council, which currently has ten Zipcar vehicles available to staff. Hounslow Council appointed Zipcar to provide a corporate car-share service for council employees to use when it's necessary to travel by car to fulfil certain business commitments.

Jaspal Kharay, an employee of the council, regularly books Zipcar's Vauxhall Ampera, a range-extended electric car. "I book it whenever I can as it's reassuring to know that local journeys are zero-emission" says Jaspal. "I hadn't driven an electric car before, but I found the experience to be quieter, smoother and a more relaxing drive than that of a conventional car". Jaspal's experience demonstrates the value of electric vehicles in car club fleets, which can provide drivers the opportunity to try out these vehicles. Jaspal says he would "recommend everyone to try driving electric if they can, as they are ideal for short journeys in the local built up environment", making them the perfect vehicle to use in the capital.



LONDON’S SOLUTION

OLEV’s funding will enable the new residential delivery partnership (proposed in the previous section) to install and manage charging infrastructure in car club parking bays. Car clubs and councils will make decisions about those bays most suitable to be allocated as electric vehicle car club bays. Car club operators are able to share trip data with councils to illustrate demand and how vehicles are used, to help inform decisions about those vehicles most likely to be suited to conversion to electric vehicle.

This delivery partnership will ensure that councils retain ownership and sovereignty of the public asset (parking bay and charging infrastructure) and the flexibility to operate the bay in ways that suit the local population.

As the car club market develops and new models emerge, councils will also have the ability to use these assets to provide for new forms of car sharing

where these are locally supported. As is the case currently, councils will determine which models they want to support in their boroughs according to their wider transport strategy.

We anticipate that ‘smart’ charge points will be installed to enable flexibility and inter-operability between networks, car club operators and different models. Effective ‘back office’ functions that help provide an integrated service, such as a charge point booking service, will be central to enabling this. This integration will also enable usage of charge points to be maximised and will ensure the best value for money. Therefore car club operators will have a role to play in developing these management systems and may want to work together to maximise efficiency of this infrastructure and realise the opportunities of using it in new ways.

DELIVERING SUCCESS

London’s Car Club Strategy aims to deliver a million members by 2025, with a ratio of 100 members per vehicle. This means that 5,000 new ULEVs could be bought in to the car club fleet by 2025.

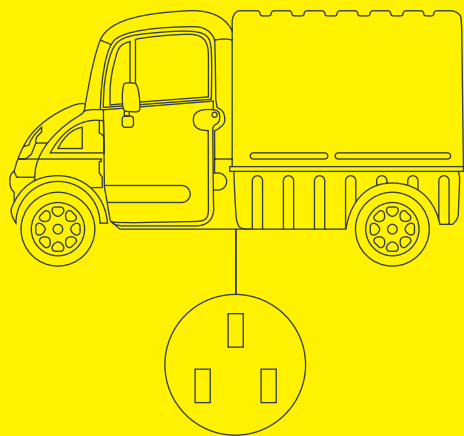
This funding will allow up to 1,000 car club bays to be fitted with charging infrastructure, a positive start to supporting the longer-term ambitions to 2025. Engagement with the car club industry demonstrates there will be sufficient demand from the market for this level of infrastructure, managed as proposed.



© Office for Low Emission Vehicles

1.3

Charging infrastructure for commercial fleets



An accessible and reliable rapid charging network will be vital to unlock the potential growth in ULEV use by commercial fleets with intensive duty cycles. A £4 million investment will help the network to grow beyond currently funded plans towards the 300 rapid charge points calculated to be required by 2020.

THE BARRIER TO ULEV UPTAKE

London's commercial fleets, including taxis, private hire fleets and car club operators, form a considerable proportion of the vehicles on street in London. Light commercial vehicles make up 12 per cent of London's road traffic and up to 21 per cent during the morning peak in central London. Taxis make up 18 per cent of traffic in central London and private hire vehicles around eight per cent. These commercial vehicles tend to operate high mileages and have intensive duty cycles. To be able to switch to ULEVs they will require access to rapid charging in order to maximise productivity.

Rapid charge points can charge a vehicle battery considerably faster than standard charging, delivering an 80 per cent charge in 20-30 minutes. They are ideally suited to high mileage urban fleet duty cycles. Research and stakeholder engagement has identified three possible use cases for rapid charging for commercial fleets:

- Charging for depot-based vehicles which can generally charge overnight but may need to top-up during the day, especially those with higher daily mileage.

- Charging for fleets that are not depot based, such as private hire, where drivers take small commercial vehicles home between shifts but may not be able to install charge points at home and would therefore require access to rapid charging while working.
- Organisations which work in London but are based a significant distance (perhaps up to 80 miles) outside the capital, which can potentially run electric vehicles by topping up from a rapid charge point on their way in and out of central London.

Meeting the demands of these duty cycles presents challenging power requirements. London is already working closely with OLEV, UK Power Networks, Ofgem and the Department of Energy & Climate Change to understand how best to approach this issue in delivering a network of rapid charge points. This includes identifying suitable locations with minimal cost implications.





CASE STUDY
eConnect cars

Alistair Clarke is the founder and director of eConnect cars, a chauffeur-driven car company with an entirely electric vehicle fleet. The company has been operational in London for 18 months and now has 25 business-class electric vehicles in its fleet.

eConnect cars carefully manages its fleets to realise the benefits of electric vehicles: “Each vehicle averages around 100 miles a day. It takes more management to do that driving in an electric vehicle, but our drivers and customers really enjoy the experience of an electric vehicle.”

The main challenge for eConnect cars has been the availability of charging infrastructure. “Because of the mileage we need our drivers to cover, we rely on rapid chargers” says Alistair. eConnect cars even invested in its own rapid charger for its central London office to ensure drivers would always be able to access a charge point. “The lack of public rapid chargers places a limit on our ability to grow so I’m really pleased to be able to support London’s plans for a network of rapid chargers across the capital.”

©Amec Foster Wheeler
Artists impression of a future
charging station in London
Locations and interventions
indicative for illustrative purposes



London’s bid has the support of a range of companies and commercial partners across the city, demonstrating the scale of enthusiasm for ultra low emission vehicles across the capital. A selection of the companies pledging their support have told us:

“We’re supporting London’s bid because...

“...it is essential that London gets as much help as possible to improve its air quality. Government funding is necessary to support the work the Mayor has already done, particularly the proposed Ultra Low Emission Zone initiatives. In our view London would represent the best value to government by way of funding and support.” **The Licensed Private Hire Car Association**

“... we support London’s aim to become Europe’s ultra low capital city knowing that it has the capacity and integrity to bring together a large group of influential stakeholders in order to achieve its target of drastically increasing its ULEZ fleet across several sectors.” **Car2Go**

“...Gnewt Cargo as a large electric vehicle user believes in a zero emission future.” **Gnewt Cargo**

“...London has the scale and openness to change, to transform, its vehicle fleet and reduce emissions to improve the health of its population.”

Heathrow Airport LTD

“...we need a cleaner city to live in.”

Powerday PLC

“...electric vehicle charging is important for the development of flexible car charging.” **DriveNow**

“...the switch to electric vehicles is the logical step towards cleaner air in London.” **eConnect Cars**

“...we need it to realise the potential for zero emission capable taxis and the future London air quality objectives” **The London Taxi Company**

“...we need to innovate and develop commercially robust LEV solutions in meeting the common goals of business and our environment.” **Veolia**

“...the funding is necessary to stimulate momentum in the change from fossil fuels to ULEV’s” **TNT**

“...it is a great opportunity to innovate and solve the air quality issue essential for London’s future.”

Pie Mapping

“...the future of London’s air quality is very important.”

Kilnbridge Construction Service

“...ultra low emission is an admirable and necessary objective and we want to be part of it.”

O’Donovan Waste Disposal Ltd

“...it will deliver necessary action to improve quality of life.”

Stratford Original

“...as the premier capital city of the world, London must be seen at the forefront of low emission technology and development.” **Millbrook**

LONDON’S SOLUTION

London has funded plans to install 150 rapid charge points in the Capital by 2018 to meet the charging needs of commercial fleets. Beyond this, 300 rapid charge points are likely be needed by 2020 to service zero emission capable taxis, private hire vehicles, other commercial vehicles and car clubs. This bid will help London to grow the network by providing funding for up to 100 additional charge points.

TfL recently started early market engagement through a Prior Information Notice to identify the best way of deploying charging infrastructure to support the electrification of taxi, private hire, car clubs and other commercial fleets. This indicated considerable interest in London’s plans. Following a period of market engagement, TfL will issue an Official Journal of the European Union (OJEU) invitation to deliver a network early in 2016. This delivery model will be used to deliver the additional charge points for commercial fleets that OLEV funding will provide.

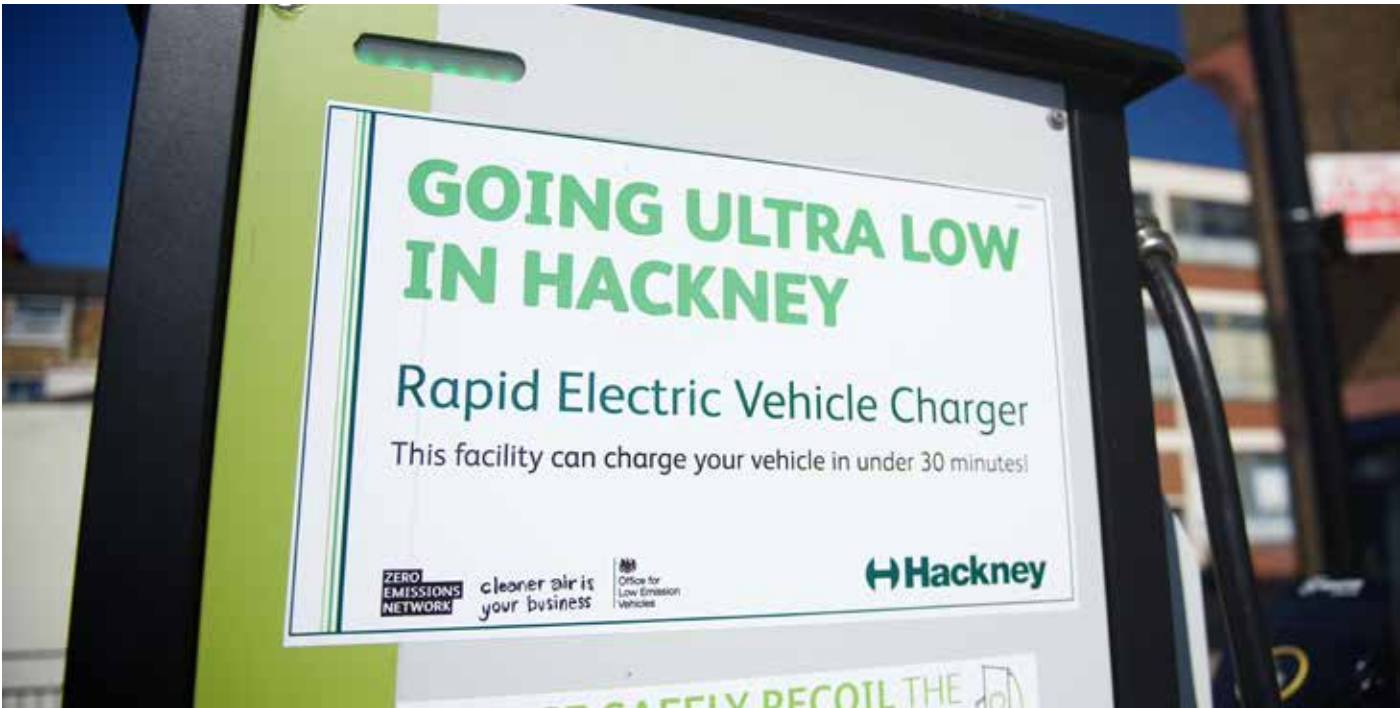
Suppliers highlighted that securing sites for charge points, the availability of sufficient power for rapid charging and the prohibitive cost of electricity grid upgrades are barriers to the growth of commercial markets. To overcome these issues TfL will engage with potential charge point hosts and UK Power

Networks to identify suitable locations for the deployment of rapid charging infrastructure. TfL will pursue a hub model, where multiple charge points are installed at a single strategic location with the provision of complementary services such as toilets and wifi. This was highlighted as the preferred model for charge point deployment over single on-street charge points and confirms TfL’s research findings.

Accessible and reliable infrastructure will go some way to making the switch to ULEVs possible for businesses. Commercial businesses also need to be convinced about the appropriateness of these vehicles for their operations.

As a starting point, in September the London’s bid partners hosted an industry event to discuss the potential for ULEVs in London’s commercial fleets which helped to identify businesses’ priorities and concerns. Later this year, TfL will launch a Low Emission Commercial Vehicle Programme to accelerate the development, supply and uptake of low emission commercial vehicles.

The public sector has an important role to play in demonstrating the value of ULEVs in fleets and showing that London is a suitable environment for these vehicles. London’s public sector fleets are already rising to this challenge: London’s world leading “green bus” programme will see a trial



© GLA

of the world’s first purpose-built electric double deck bus this year and three bus routes operated entirely by electric buses in 2016. The London Fire Brigade has plans to convert all of its support cars to electric by 2016. Funding secured by OLEV will be available to public sector partners to install rapid charging infrastructure where this would unlock the conversion of their own or their contractors’ fleets.

As major vehicle operators in London, the public sector can stimulate the uptake of ULEVs through our own procurement processes and share knowledge with other organisations. In the coming months, TfL will look to establish a new procurement framework for electric vehicle charge points, to be

in place in 2016. This would be open to a wide range of suppliers, enabling a simplified purchasing process and realising the financial benefits delivered by bulk procurement.



© TfL

DELIVERING SUCCESS

The further funding in this bid would progress the planned rapid network. It will increase it from the 150 to be provided through funding secured through the National Infrastructure Plan towards the 300 charge points that research has shown will be required by 2020 to support commercial fleets.

TfL's early engagement with industry partners indicates confidence in the market and the appetite for private investors to provide investment

to develop the commercial charging network. This is likely to secure additional points to meet demand and will provide the capacity to grow the network as required once initial barriers of securing sites and grid capacity have been overcome.

TfL commissioned the Energy Saving Trust to understand movements of possible rapid charging fleet users, by analysing data from more than 2,000 vehicles operated by 26 fleets. This fleet mapping exercise identified those routes which could be completed using a suitable ULEV and where

rapid charge points should be located to support the use of these vehicles. The analysis found that installing rapid charge points at 85 locations within the M25 would support the acquisition of over 1,900 plug-in vehicles by 20 organisations out of the 26 participants. This gives an indication of the impact of strategic interventions and the potential number of vehicles that could be changed to ULEV across the far larger number of fleet operators in the capital.

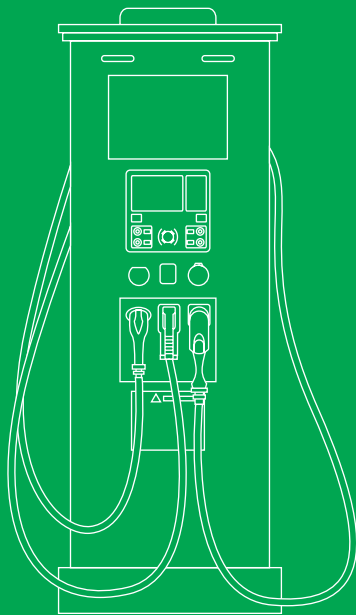
A number of councils have also provided information about their local priorities for rapid charging for

commercial use through the Neighbourhoods of the Future process. These indicative locations demonstrate the enthusiasm to support businesses to convert to ULEVs and gives confidence that councils want to identify locations within their communities. Increased provision of rapid charging infrastructure is critical to deliver many councils' aspirations for the transformation of these areas. They align well with the locations identified by TfL's research and will inform discussions with councils and private landowners as this infrastructure is rolled out.

1.4

Neighbourhoods of the Future

London’s Neighbourhoods of the Future are borough-led, area-based schemes offering a package of ambitious measures to radically increase the uptake of Ultra Low Emission Vehicles in a specific high-opportunity area. The schemes build on London boroughs’ experience delivering programmes such as the Mayor’s Air Quality Fund and mini-Hollands, which deliver local interventions to help progress London’s collective ambitions. They combine the enhanced infrastructure secured through the rest of this bid with awareness raising and behaviour change measures. These communities will provide for and prioritise ultra low emission vehicles to help normalise ULEVs. A £3.5 million investment will support eight Neighbourhoods of the Future across the capital.





©Amec Foster Wheeler
Artists impression of the Neighbourhood
of the Future measures proposed in
Croydon and Sutton
Locations and interventions indicative
for illustrative purposes



© Office for Low Emission Vehicles

THE BARRIER TO ULEV UPTAKE

London’s bid will overcome some of the fundamental infrastructure challenges to provide a varied network across London to meet the different requirements of vehicle owners. It is, though, more than availability of infrastructure that has held back London’s ULEV market. Our proposals for Neighbourhoods of the Future (NoF) will complement and accelerate the rest of this bid. The schemes provide a balanced programme of infrastructure provision and behaviour change interventions.

The other elements of the bid will provide the foundation for communities transitioning to a low emission future. Councils that submitted NoF proposals

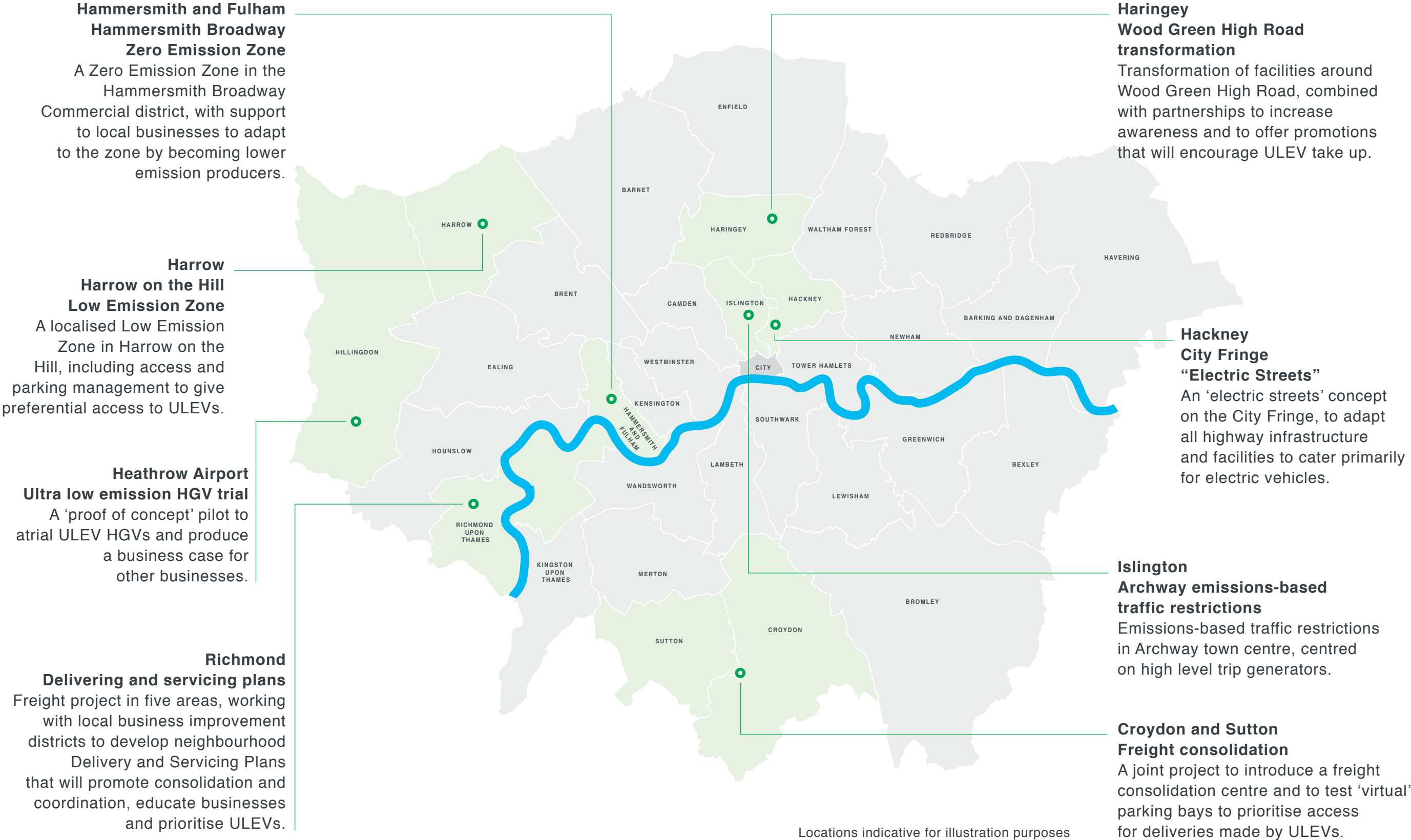
have shown considerable appetite to get infrastructure in place, for residents, car clubs and commercial operators. Each NoF included details of its priority locations for this enabling infrastructure, which will be needed to support the ambitious community interventions in these neighbourhoods. NoF projects and policies will maximise the benefits of this infrastructure by addressing more challenging issues that have restricted ULEV take up: winning confidence; changing behaviours; and designing a system that favours ULEV users.

London has been described as a city of villages. Each neighbourhood has its own character and transport challenges. Coordinating measures and targeting funding within smaller geographic areas will help to create exemplar

areas that can showcase the benefits of ultra low emission vehicles as part of a sustainable transport package. These high profile examples can have a powerful normalising effect and help generate public interest in ULEVs by:

- using council powers to take ambitious steps and make difficult decisions, such as parking restrictions, preferential access and changes to loading and servicing to create a favourable atmosphere for ULEV owners. The planning system will also be used to build in and prioritise supporting charging infrastructure.
- involving the local community by working with partners such as local businesses, schools, hospitals, the third sector and residents. NoFs will build confidence that ULEVs are suited to a variety of uses and will explain the community-wide benefits of ULEV uptake.
- engaging businesses such as car manufacturers/suppliers, potential sponsors and grid distribution companies to make the NoF a reality. NoFs will be supported to test new ideas so they can come to market sooner.
- securing match funding to help secure transformational change in each community, so that the opportunities presented by ULEV take up are maximised and tied to wider transport projects in the local area.

The level of enthusiasm for NoFs is indicated by the number of applications received. This shows the considerable appetite across London to realise the benefits of ULEVs for local communities. We also know that area-based schemes are supported by industry. BMW’s Centre for Urban Mobility is keen to build on its experience working with German cities through a small number of projects in London. It has expressed an interest in supporting London’s NoFs and will offer its toolkit and experience to learn what would work in individual neighbourhoods in London.



CASE STUDY

Heathrow Airport

Heathrow Airport is the gateway to London. It provides an ideal opportunity to demonstrate the scale of our ambitions to the world and can showcase the potential of ultra low emission vehicles to its 73.4 million passengers a year. Heathrow Airport Limited is a key partner to delivering this bid and a demonstrator of the scale of ambition for London’s Neighbourhoods of the Future.

Heathrow already provides incentives for ultra low emission buses, taxis and charging infrastructure in its car parks as part its plans to create the world’s first zero emission operations airport. It is committing that nearly all 8,000 of its airside vehicles will be zero emission by 2025 and as part of its five-year

business plan Heathrow is committing £5 million to the provision of charging infrastructure. The operating usage patterns for vehicles at Heathrow, combined with the small distances they need to travel, mean their fleets are excellent early adopters. Similarly, the controlled airside environment makes it a safe space to trial new and emerging technologies like dynamic inductive charging.

This hugely ambitious programme will need coordinated support from OLEV, GLA, TfL and relevant London boroughs. Funding will be provided to Heathrow to install rapid charging infrastructure for taxis and to provide further support for electric buses. This bid will also provide £100,000

to support a trial of ultra low emission HGVs, including electric, hybrid electric and hydrogen, for last mile delivery from the Heathrow Consolidation Centre to the airport.

Providing proof of concept for ultra low emission HGVs in the Heathrow operational environment is vital to enabling the conversion of a significant number of larger vehicles currently used as part of airside operations so that Heathrow can achieve its 8,000 vehicle target. The potential impact of this investment demonstrates the multiplier effect that relatively small amounts of OLEV funding can deliver and why a targeted local approach can pay dividends.

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Artists impression of the
Neighbourhood of the Future
measures proposed in Hackney.
Locations and interventions
indicative for illustrative purposes



CASE STUDY

Gnewt Cargo

London's councils and businesses have shown appetite to address the barriers preventing wider uptake of ULEVs in commercial operations. Freight consolidation is one way this ambition is being progressed in Neighbourhoods of the Future and the approach is already working in the capital.

Gnewt Cargo is an award-winning, FORS accredited, last mile logistics company operating in the central London congestion charge zone using a fully electric fleet of over a 100 vehicles.

Over the last year Gnewt Cargo has grown over 150 per cent (and 50 per cent year on year growth previously)



© GNEWT

and has set-up a second major Central London site this year. It now delivers on average between 5000 to 20,000 parcels daily into central London.

Its vehicles are sourced direct from large and small manufacturers alike. In 2014 Gnewt Cargo took receipt of a further 55 electric Renault Kangoo ZE's, the largest commercial EV

purchase Renault has ever had in the UK. Gnewt Cargo has also recently procured a further six Nissan ENV200, the latest commercial EV on the market.

Its operational environmental impact is measured through independent assessment which found Gnewt Cargo cut CO² emitted per parcel by 62 per cent on like for like deliveries.

LONDON’S SOLUTION

The funding provided to NoFs will implement innovative proposals that would be challenging without this additional funding. The NoF process has highlighted these councils’ priorities for charging infrastructure. This information will be used as part of the planning process for rolling out infrastructure in these areas, which will be an important first step in the transformation of these communities.

Over the summer, London’s bid partners ran a competition to determine the locations of these trailblazing communities. The wider package of measures in each NoF has been tailored to that area according to its circumstance and includes:

- a joint project between the London boroughs of Croydon and Sutton, to introduce a freight consolidation centre and to test ‘virtual’ parking bays to prioritise access for deliveries made by ULEVs;

- a freight project by the London Borough of Richmond upon Thames, working with local business improvement districts to develop neighbourhood Delivery and Servicing Plans that will promote consolidation and coordination, educate businesses and prioritise ULEVs.
- emissions based traffic restrictions in Archway town centre (Islington) centred on high level trip generators.
- a Zero Emission Zone in the Hammersmith Broadway commercial district, with support to local businesses to adapt to the zone by becoming lower emission producers.
- an ‘electric streets’ concept on the City Fringe of Hackney, to adapt all highway infrastructure and facilities to cater primarily for electric vehicles.
- transformation of facilities around Wood Green High Road in Haringey, combined with partnerships to increase awareness and to offer promotions that will encourage ULEV take up.

- a localised Low Emission Zone in Harrow on the Hill, including access and parking management to give preferential access to ULEVs.
- a ‘proof of concept’ pilot at Heathrow Airport to trial electric HGVs and produce a business case for other businesses.

London’s Neighbourhoods of the Future demonstrate a particular appetite to work with businesses and these schemes are consistent with the aspirations of businesses. Through our business engagement event, carried out in developing this bid, London’s businesses told us they want schemes through which:

- local councils use local policy measures, such as priority loading, to incentivise ULEV uptake among businesses and freight operators.
- micro-consolidation is enabled to promote the use of ULEVs for last mile deliveries, particularly given the lack of heavier ULEVs on the market.



© Office for Low Emission Vehicles

DELIVERING SUCCESS

Though focused on particular locations, NoFs will act as exemplars to other parts of London and the rest of the UK. In choosing NoF locations, London has consciously sought to ensure a spread of geographies that will help to make the lessons learned as applicable to other parts of the UK as possible. London’s NoFs will take place in the following geographies:

- Town centres
- Out-of-town industrial and construction zones
- Transport hubs, including an international destination
- Regeneration areas of housing growth and economic development

NoFs will provide invaluable case studies that will link these projects to other elements of this bid. For example, by working with local businesses, the lessons from NoFs can be shared with other companies to influence their activities. These examples could be utilised as part of the fleet aspects

of London’s bid. Where NoFs include development and regeneration areas, planning guidance that goes beyond existing national policies can help shape future provision of infrastructure and provide replicable examples across the UK.

NoFs provide useful test grounds for innovative ideas as they have already shown commitment to innovation and progress. Therefore innovative infrastructure solutions could be tested in NoFs with a view to being a more widespread solution used in other elements of London’s bid.

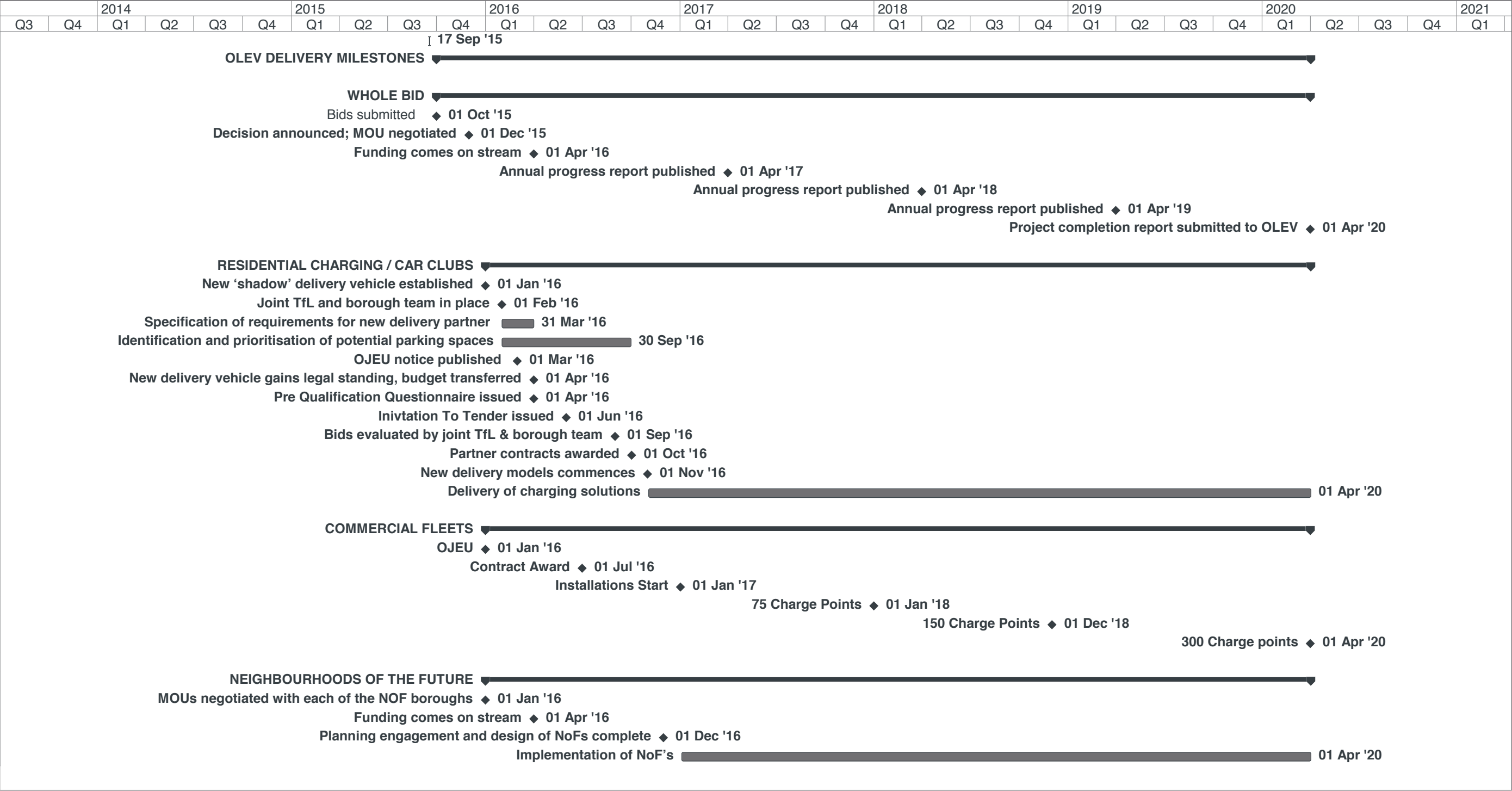
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Delivering the bid

DELIVERY MILESTONES

These delivery milestones are indicative and based on what the London bidding partners currently consider to be

the best approach to deliver of all of the elements of London’s bid. These are subject to negotiation with OLEV, following its judgment on the winning cities.



DPS TABLE HOW OLEV CRITERIA IS BEING FULFILLED

	Summary	Charging infrastructure in residential areas	Charging infrastructure for car clubs	Charging infrastructure for commercial fleets	Neighbourhoods of the Future
ULEV uptake	London’s bid will help to unlock the adoption of 70,000 ULEVs in the capital by 2020, on the way to having 225,000 by 2025. It will help London to realise an almost entirely ULEV light vehicle stock by 2050, by securing a sustainable model for installation, management and funding of infrastructure.	Projections show that up to 150,000 electric vehicles without private parking will need access to charging by 2025. The proposed public sector delivery partnership will unlock the delivery of charging infrastructure in residential settings to establish a sustainable model to begin to meet this demand.	This funding will allow for retro-fitting up to 1,000 existing car club bays, enabling at least 1,000 car club vehicles to become ultra low emission vehicles.	300 rapid charge points are likely be needed by 2020. This funding will secure up to 100 additional points over and above the 150 TfL has funded to 2018, towards the 2020 requirement.	NoFs will accelerate the uptake of ULEVs in chosen locations and provide exemplars for other areas of London and the UK to follow.
Air quality	To secure significant air quality improvements in the UK, the Government must support London’s bid. More than one million Londoners live in areas which exceed the EU legal limits and London accounts for 49 of the 50 roads with the highest NO2 concentrations in the UK. Independent assessments put the economic value of the potential health benefits of our bid at nearly £10 million by 2025.	The proposed public sector delivery partnership to unlock ULEV ownership for drivers without access to private parking could drive the uptake of ULEVs. If high uptake projections are reached this would result in NOx savings of approximately 135T in 2020 and 360T in 2025.	Converting 1,000 car club vehicles to ULEVs would result in NOx savings of between 3.6-6.9 T.	Supporting the uptake of ULEVs in these key fleets would lead to NOx savings of approximately 240T from Taxis, 35T from PHVs and 25T from vans.	Boroughs have identified NoF locations in key air quality hotspots. Accelerated uptake of ULEVs in hotspot locations are part of the solution to achieve earlier compliance with EU limit values.
Exemplar status	As part of an established global transport community, London can showcase these innovative proposals through networks such as the C40 Cities Climate Leadership Group. London will use TfL’s role as an advisor to the European Commission and relationships with major European cities to share learning.	The proposed public sector delivery partnership could be replicated in other parts of the UK. It will provide a model for a user charging to secure a sustainable future for residential charging.	London leads the UK’s car club market, with over 80 per cent of car club members and 70 per cent of car club vehicles. Successful conversion of London’s fleet to ULEVs will drive progress across the UK.	London’s rapid charging network will enable London’s businesses to demonstrate the value and viability of increased usage of ULEVs in fleet duty cycles.	London has consciously sought to ensure that NoFs include a spread of geographies to help to make the lessons learned applicable to other parts of the UK. Heathrow sees significant volumes of passengers and thus provides an extremely valuable ‘shop window’ and promotional tool to international visitors.

	Summary	Charging infrastructure in residential areas	Charging infrastructure for car clubs	Charging infrastructure for commercial fleets	Neighbourhoods of the Future
Innovation	<p>This bid combines unprecedented policy innovation, technical innovation and delivery innovation. The proposals are fitting for the only city in the world with both a Low Emission Zone and Congestion Charge and will build on the transformative impact of the world’s first ULEZ.</p>	<p>The proposed public sector delivery partnership will improve and accelerate the roll-out of vital charging infrastructure.</p>	<p>As the car club market develops and new models emerge, councils will have the ability to use their assets to provide for new forms of car sharing. ‘Smart’ charge points will allow future flexibility and inter-operability between networks and car club operators and models.</p>	<p>London is working with commercial partners to pursue a ‘hub’ approach to installing rapid and fast chargers. This includes considering proposals for new styles of fuelling station suitable for ULEVs.</p>	<p>Innovative proposals include EV only loading restrictions, virtual parking and loading bays, ULEV HGV trials and innovative lamppost charging.</p>
Link to other schemes	<p>London is already leading the way by introducing the world’s first ULEZ from 2020. To support the ULEZ, London has ambitious new requirements for all new taxis to be zero emission capable from 2018 and to increase the number of hybrid and zero emission buses by 2020. This will go some way to removing the most polluting vehicles from London’s streets but London’s bid will help to take the next step by accelerating the uptake of the cleanest vehicles in their place.</p>	<p>The Mayor’s Ultra Low Emission Vehicle Delivery Plan set out London’s transformational plans across all of London’s fleets. This bid will help to realise this potential by providing the infrastructure needed to support this transition.</p>			<p>London Boroughs have chosen NoF locations to complement existing projects in local areas. Match funding through existing Local Implementation Plan money and leveraging in section 106 money from developers and other private sector partners will help add additional value to the NoFs</p>
Monitoring	<p>London has the most comprehensive and representative emissions monitoring network in the world with 157 monitoring stations. This is complemented by two award-winning emissions inventories (the London Energy and Green House Gas Inventory and the London Atmospheric Emissions Inventory). To understand changes to the vehicle fleet we can use our unrivalled network of Automatic Number Plate Recognition cameras. The report Travel in London will provide a progress report on London’s progress in delivering ULEVs, making use of the various data sources.</p>	<p>The proposed public sector delivery partnership will monitor and share usage statistics with councils to ensure infrastructure is where it is needed most.</p>	<p>Network data will provide insight to ensure vehicles are used to their full capacity and that bays are located in the most effective locations. Carplus and the BVRLA – umbrella bodies for the car club and leasing sectors – will monitor and report on the progress and impact of ULEVs, including how behaviour varies between drivers using ULEVs and other vehicles.</p>	<p>London will use network data to monitor usage, such as how often and how long people charge. This would help to inform future installations and provide valuable information as technology develops.</p>	<p>As discrete projects, NoFs offer an excellent opportunity for consumer research. TfL will coordinate consumer research through its Customer Research and Insight function, testing attitudes to ULEVs before and after local interventions. This research will provide intelligence to guide future policy development and interventions.</p>

COSTS			
Charge point costs			
For London’s councils the cost of installation for a single charge point is currently in the region of £10,000 – £20,000. Variations in price are the result of the particular procurement and installation processes within each local authority, a lack of scale and the use of traditional charging infrastructure. Over the course of TfL’s participation in OLEV’s Plugged-in-Places funding scheme it has been demonstrated that the average cost per charge point can be reduced to around £7,500.		<ul style="list-style-type: none">• Economies of scales delivered by the size of the charge point requirement• Standardised installation processes for local councils to reduce cost of administration• Potential to introduce innovative charging solutions, for example. lamp post socket charging• For car club infrastructure, installing some of the charge points at off street car club bays	
The London bid expects to enable the average cost of an installed 7kW residential charge point to be reduced to approximately £5,500 and car club charge point to approximately £4,500.		Over the course of the funding period it is anticipated that further reductions in the cost of charge point deployment could be achieved as a result of continuous improvement in the efficiency of installation and procurement processes. The models set out below are contingent on these assumptions and would need to be reconsidered if London was unable to drive down the cost, as expected.	
Indicative costs per charge point would be as follows:		Charging infrastructure in residential areas	
<ul style="list-style-type: none">• Charge point – £2,000• Installation £1,500 – £2,000• Local Authority Signage and Traffic Orders – £1,000		The request is for £8 million, £6.75 million of which will deliver up to 1,225 new residential charge points (assuming an average install cost per charge point over the lifetime of the funding period of £5,500).	
The reduction in cost would be achieved as a result of the following factors which are key elements of the London bid:		The remaining £1.25 million is to develop and initially fund the operation of delivery and management models that will be necessary for both the residential and car club infrastructure.	
<ul style="list-style-type: none">• Frameworks to increase competition and drive down the cost of hardware and installations			
		Car clubs	
Request is for £4.5 million to retrofit up to 1,000 car club bays (assuming average cost per charge point over the lifetime of the funding period of £4,500)		funding has been requested in London’s bid. Furthermore it will manage these charge points with the aim of creating a self-sustaining business model for the continued growth in the number of available charge points for car club and residential users.	
Charge point delivery and management model for residential and car clubs		In its second year the partnership will aim to offset operating costs with revenue generated from the operation of the charge point networks. As the car club and residential customer base increases over time with more sharing of points, the delivery and management model will generate surpluses (beginning in Year three) which will be wholly reinvested in new charge point infrastructure to grow both the car club and residential networks. In addition to the delivery of infrastructure through the reinvestment of surpluses, London will continue to investigate additional sources of funding (including OLEV and EU funding – such as Interreg NW Europe and Horizon 2020) to ensure that residential and car club vehicle charging infrastructure can be delivered at a rate necessary to support the rate of ULEV uptake in the capital.	
		Request is for £1.25 million to support the set-up and first year operation of an on-demand charge point delivery partnership and management function. This function will be available to all London councils and will provide consistency and best practice in relation to all residential and car club charge point installations.	
		Indicative Set-Up Costs	
		<ul style="list-style-type: none">• Project Management and Procurement – £250,000• Legal – £75,000• Marketing and Communications – £75,000	
		Indicative First Year Operating Costs	
		<ul style="list-style-type: none">• Scheme Administration and Resources – £250,000• Charge Point Back Office and Network Management – £150,000• Charge Point Maintenance – £400,000	
		Further market research will be required if this bid is successful to refine this initial outline of the operating model.	
		This partnership will coordinate the installation of car club points and residential charge points for which	
		Importantly, this will be used to define the appropriate fee structures for residents and visitors (where relevant).	

Charging for commercial fleets

The £4 million in this bid will develop the rapid charging network across London. The process is underway to secure 150 charge points by 2018, using £10 million allocated to London in the National Infrastructure Plan. Beyond this, 300 rapid charge points are likely to be needed by 2020 to service zero emission capable taxis, private hire vehicles, other commercial vehicles and car clubs. This bid will help London to grow the network by providing funding for up to 100 additional charge points.

A significant proportion of the National Infrastructure Plan funding will be used to upgrade the electricity network, which potential network partners have identified as one of the biggest barriers to the growth of charging infrastructure networks. As these upgrades will be funded by the National

Infrastructure Plan funding, the unit costs of the additional points to be funded by the City Scheme are likely to be lower. These further points will be added to established hub locations, further bringing down the cost per unit compared to the earliest installations.

TfL’s early engagement with industry partners indicates confidence in the market and the appetite for private investors to provide investment to develop the commercial charging network. This is likely to secure additional points to meet demand and will provide the capacity to grow the network as required once initial barriers of securing sites and grid capacity have been overcome by this funding.

Indicative cost breakdown for the two stages of network installation is as follows:

£10 million National Infrastructure Plan funding (150 charge points):

- Charge points – £3.75 million
- Installation – £1.5 million
- Power Network Upgrades – £3.75 million (assuming £125,000 at 30 hub sites)
- Warranty and Maintenance – £1 million (over three years)

£4 million City Scheme funding (up to 100 further additional charge points):

- Charge points – £2.4 million
- Installation – £1 million
- Maintenance – £600,000 (over three years)

NEIGHBOURHOODS OF THE FUTURE

London’s Neighbourhood of the Future proposals will take the next step in transforming communities to their low emission future. In each case, the programmes rely on the provision of charging infrastructure to be provided through the earlier elements of this bid. Should funding for that infrastructure not be secured, the programmes and costs outlined below would need to be negotiated further.

Indicative costs for the local programmes as submitted in borough’s expression of interest are as follows:

- London Boroughs of Croydon and Sutton: freight and deliveries programme – £500,000
- London Borough of Richmond upon Thames: Business Delivery and Servicing Plans – £380,000
- London Borough of Islington: Archway emissions-based traffic restrictions – £350,000
- London Borough of Hammersmith and Fulham: Zero Emission Zone – £260,000 and freight consolidation centre £200,000 (£460,000 total)
- London Borough of Hackney: ‘Electric Streets’ programme – £750,000
- London Borough of Haringey: Wood Green transformation – £550,000
- London Borough of Harrow: Harrow on the Hill Low Emission Zone – £370,000
- Heathrow Airport: Ultra Low Emission HGV trial – £100,000

MATCH FUNDING

London Go Ultra Low City Scheme bid partners will leverage additional funding from businesses, academic institutions and other partner bodies such as the EU. London has already had considerable success in securing funding for innovative ULEV projects, having secured European funding for projects including FREVUE, CITYLAB and ELIPTIC.

London also has experience in securing private sector funding to support its ambitions. The Source and POLAR networks are both investing in growth in London. Companies will need to invest in their fleets to meet the requirements set by the world’s first ULEZ. Car club operators will invest capital to purchase the vehicles required to support their anticipated growth in membership. These examples demonstrate the considerable volumes of private sector funding that will be spent by private companies in London as it moves towards its ultra low emission future. All of this funding can be seen as supporting OLEV’s funding and maximising its impact.

To maximise the potential of Go Ultra Low City Scheme funding the London bid would provide match funding from the Mayor’s Air Quality Fund. Councils will be able to consider opportunities to combine Go Ultra Low funding with Local Implementation Plan funds.

The Mayor and boroughs already concentrate considerable time and resources to educating the public about air quality in partnership through the Mayor’s Air Quality Fund. London’s Ultra Low Emission Vehicle Delivery Plan set out a range of TfL programmes that will help to increase the uptake of ULEVs. These funding streams will address many of the ‘softer’ measures required to support OLEV’s capital investment, by educating residents and businesses about the benefits of ULEVs.

BID PARTNERS

This is a joint bid submitted by the Mayor of London, Transport for London (TfL) and London Councils (representing the 32 London boroughs and the City of London Corporation). This partnership has been developed to ensure an integrated and consistent approach to the Go Ultra Low City Scheme across all levels of London government.

All bid partners will establish governance arrangements once funding is secured to ensure that action is taken at the most appropriate level of London government. Workstreams within this bid will be managed and delivered by key stakeholders including TfL, local councils, the Mayor of London, community groups, public-private partnerships (such as Cross River Partnership) and the private sector.

London’s councils have supported the proposals in this bid. Once funding is secured, there will be further discussion to confirm the new delivery model, taking in to full account the legal and financial implications. London Councils’ Transport and Environment Committee (TEC) will provide a steering group for these discussions, before formal ratification through each council’s governance processes where necessary.

London is expecting to apply for future funding streams promoted by OLEV which will be used to complement this bid. These other funding bids will be led by TfL, which has responsibility for buses, taxis and private hire vehicles within London.

London’s bid is also supported by a number of private sector partners, demonstrating the appetite to increase ULEV uptake in the capital and that London’s bid will deliver what businesses want. A full list of our supporting partners can be found on the back cover.

SUPPORTERS	
Addison Lee	Quattro Plant
Brixton BID	Road Peace
BMW	Skanska
Central London Freight Quality Partnership	South London and Maudsley NHS Foundation Trust
City Car Club	Stratford Original BID
Cross River Partnership	The Licensed Private Hire Car Association
DriveNow UK Ltd	The London Taxi Company
eConnect Cars	TNT
Ferrovial Agroman UK LTD	Transport and Travel Research Ltd
Fruit4London	UK Power Networks
Global Action Plan	University of Westminster
GMB Professional Drivers’ Branch	Veolia
Gnewt Cargo	WestTrans
Heathrow Airport LTD	Wilson James Ltd
Kilnbridge Construction Service	Zapinamo
Millbrook	Zero Emissions Network
O’Donovan Waste Disposal Ltd	Zipcar
Pie Mapping	
Powerday PLC	

STATE AID

We have considered the State Aid position in relation to the measures proposed in this bid and confirm that we consider we will meet State Aid compliance as set out below.

Charging infrastructure in residential areas

We note that OLEV consider that provision of the funding to local authorities does not constitute State Aid. We in turn, apply this interpretation to the provision of the bid funding to the public sector partnership which will be created under this measure, such that there is no State Aid at this level. This is on the basis that such a partnership, whilst potentially a distinct entity, would be exercising the same public functions as its member public organisations in the receipt and application of the relevant funds. There is in our view no difference, in State aid terms, between an individual public authority receiving and applying the funds and an entity that is an amalgamation of such public bodies doing so.

The constructed infrastructure will be made available to local residents on an open, transparent and non-discriminatory basis and charges for such use will be at market rates. We therefore consider that there is no benefit or ‘favouring of an undertaking’

for the purpose of State Aid and therefore no State Aid at this level either. The public sector partnership will procure relevant works, services or supplies in relation to the charging infrastructure in accordance with relevant procurement regulations and we therefore consider that this element of the measure will not constitute State Aid.

We note our previous correspondence with OLEV under which OLEV has kindly confirmed, subject to information available to date, that it does not believe that the recent state aid approval (as yet unpublished) SA. 38769 (relating to the use of public funding for the installation and operation of charging stations for electric vehicles) set any precedent in relation to the Go Ultra Low City Scheme funding. In any event, funding towards the construction and operation of the charging infrastructure is considered capable of being applied in line with Article 56 – ‘Investment aid for local infrastructures’ of the General Block Exemption Regulations No 651/2014 (‘GBER’) and therefore exempt from Commission notification requirements.

Charging infrastructure for car clubs

It is intended that the same public sector partnership described above in relation to the residential charging infrastructure, will receive the bid

funding for the car club infrastructure and similarly will procure relevant works, services or supplies in relation to the charging infrastructure in accordance with relevant procurement regulations. We therefore apply the same interpretation and do not consider that these elements of the measure will constitute State Aid.

The charging infrastructure for car clubs is potentially a selective benefit in that its availability is limited to the users of car club vehicles. Due to the number of car club undertakings in London, the de minimis cap for State Aid Commission notification exemption purposes may be exceeded (i.e. in respect of a car club undertaking(s), we may exceed the ceiling of EUR 200 000 which is the amount of de minimis aid that a single undertaking may receive per Member State over any period of three years pursuant to Commission Regulation No 1407/2013). However we would argue that parallels can be drawn with the state aid approval SA.34719 (relating to the Netherlands Electric transportation scheme in Amsterdam and in particular the purchase and installation of non-public and semi-public charging points for electric vehicles) where it was found that the selective benefit did not have any effect on intra community trade and that therefore the charging infrastructure did not constitute State Aid. We note that OLEV is encouraging investment in car club infrastructure and so we

would be pleased to work with OLEV to find a solution to this issue, including obtaining State Aid clearance from the Commission should this be required.

Charging infrastructure for commercial fleets

We consider this measure would not constitute State Aid on the basis that we intend to structure and procure the requirements for this measure as services, such services being procured through open and transparent competition. In addition the infrastructure will be made available to users on an open, transparent and non-discriminatory basis and so the benefit is non-selective and therefore no undertaking is favoured, with market rates for usage being charged.

Neighbourhoods of the Future

In relation to this set of measures, in a majority of cases funding will be provided directly to relevant London Councils representing the neighbourhoods and to the extent that the funding will then be used to procure works, services or supplies, these will be procured in accordance with relevant procurement regulations and we therefore consider that they will not constitute State Aid. In addition (with the exception of the Hammersmith zero emissions proposal mentioned below), we do not consider that there

is any selective benefit or undertaking favoured and therefore no State Aid benefitting the end users from the measures proposed.

In relation to the Hammersmith zero emissions proposal, we consider that any State Aid will be State Aid exempt from Commission notification requirements as it is expected that the State Aid will be of a de minimis level and/or falling within Article 48 – ‘Investment Aid for energy infrastructure’ or Article 56 – ‘Investment aid for local infrastructures’ – of GBER and therefore exempt from Commission notification requirements. In relation to the Heathrow Airport measure consisting of a proof of concept to trial electric HGVs, further work will be required to ensure that State Aid compliance will be demonstrated, with the most likely route being that this measure falls within and would be State Aid exempt from Commission notification requirements pursuant to the Article 25 exemption of GBER – ‘Aid for research and development projects’.

CONCLUSION

London’s bid makes a clear, compelling case for OLEV to invest £20 million in London’s vision for its ultra low emission future. The schemes proposed in our bid will be vital if we are to realise the uptake of 225,000 ULEVs in the capital by 2025 and an almost entirely ultra low emission light vehicle stock by 2050.

By supporting London’s bid, OLEV will help the capital to become a national and international exemplar for ULEV use. It will provide an important contribution to London’s efforts to overcome the capital’s air quality challenges, which affect the whole of the UK.

Nevertheless additional support is needed from OLEV and the government to fully realise the potential of London’s ULEV ambitions and to achieve compliance with EU NO2 limit values. As well as supporting London’s bid, we therefore ask government to:

- ensure complementary support is provided from other OLEV funding streams to transform London’s taxi and bus fleets. We estimate a total of £52 million is required from OLEV funding to unlock London’s full potential.
- continue providing incentives to encourage the uptake of ULEVs to secure the step change that will

normalise these vehicles. The plug-in car and van grants must continue on a similar basis as today until at least 2020, with ring-fenced funding for private hire vehicles and taxis. Given the additional costs for purchasing zero emission capable taxis this funding must be available until at least 2025.

- establish a national scrappage scheme to remove the most polluting vehicles from our roads. Localised interventions will not realise the full potential of such interventions and they should be nationally-led.
- ensure further support is provided to reduce emissions related to the existing operations of nationally important infrastructure that is located in London, such as Heathrow Airport.
- work with London’s bid partners and car manufacturers to increase the promotion and marketing of ULEVs to businesses and residents.
- work with the Green Investment Bank and other finance partners to ensure easy access to finance for ULEVs, in particular to monetise long-term fuel savings to help fund any short-term capital premium. This remains a key barrier preventing commercial uptake and OLEV should consider how it can work with industry to address this challenge.
- continue to support research and development into new vehicle technologies and innovative charging solutions. Our business engagement has identified a need for viable

ultra low emission heavy goods vehicles if the next stage of commercial use is to be realised.

- review the regulations on payload to implement a concession for instances where battery load contributes to taking payload over 3.5 tonnes, subject to full consideration of road safety implications.

London is the best city in which to realise OLEV’s ambitions. It is the UK’s truly global city and the only UK market of sufficient scale and influence to inspire innovation. This scale means that investment in London is the best way to ensure the whole of the UK benefits from the economic potential offered by ULEV research and manufacturing. We look forward to working further with you to consider how the benefits secured by a successful London scheme can benefit the UK.

