



ULEVs and
Access only

City of London
Barbican Low Emission Neighbourhood



CITY
OF
LONDON

Project name and location:

City of London – Barbican Low Emission Neighbourhood (LEN)

1. Location description:

The proposed LEN area submitted in the first round of bidding incorporated a large area of the City of London as shown in Image 1 below. Following a review of the area taking into account stakeholder feedback, the LEN guidance criteria and funding availability, a decision was made to reduce the size of the LEN area. This revised LEN area is focused upon 3 neighbourhoods in the City; Barbican, Guildhall and Barts (these neighbourhoods are shown in image 2).

Image 1: Original LEN area

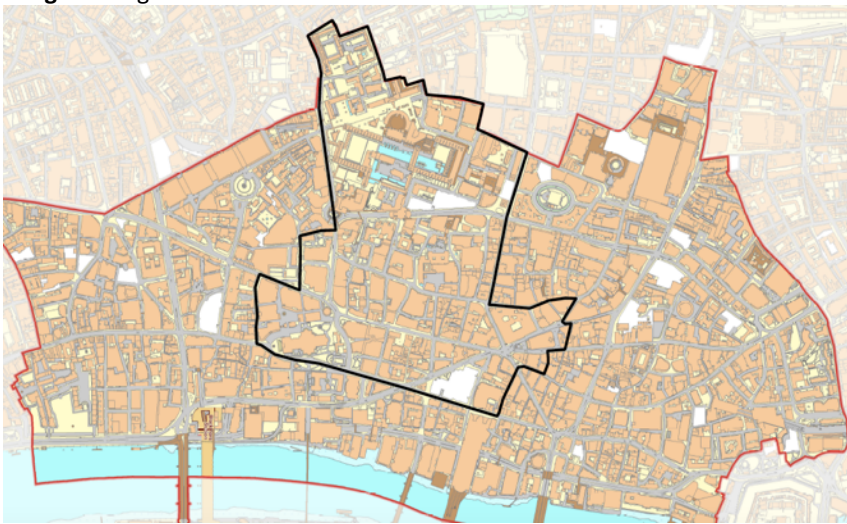
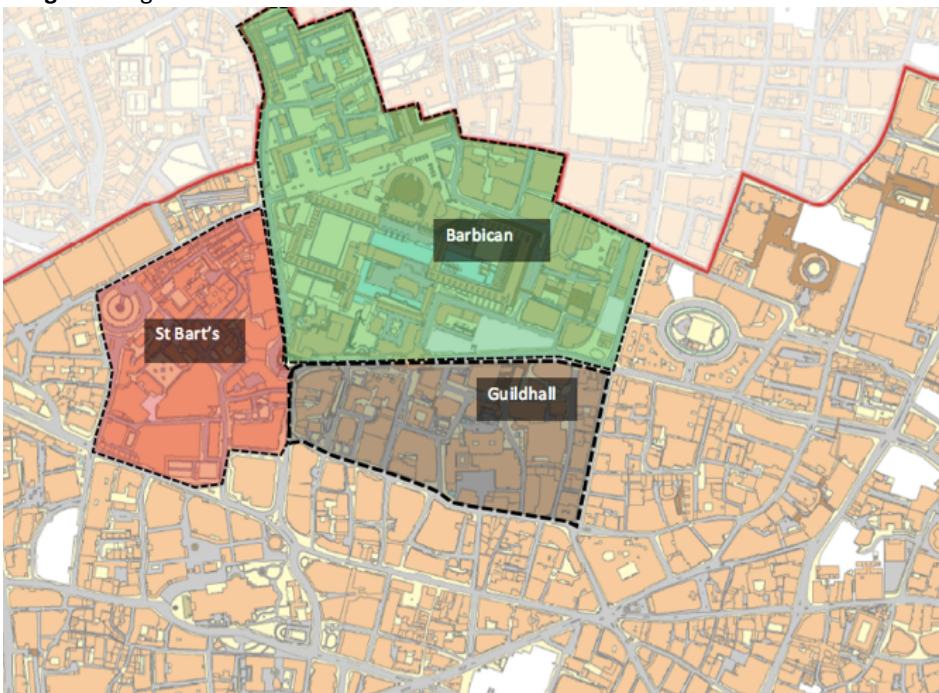


Image 2: Neighbourhoods to be included in the revised LEN area



The following neighbourhoods were chosen for inclusion in the LEN (reasons explained in Appendix B background document):

- Barbican
- Barts
- Guildhall

Core LEN area and wider area of influence

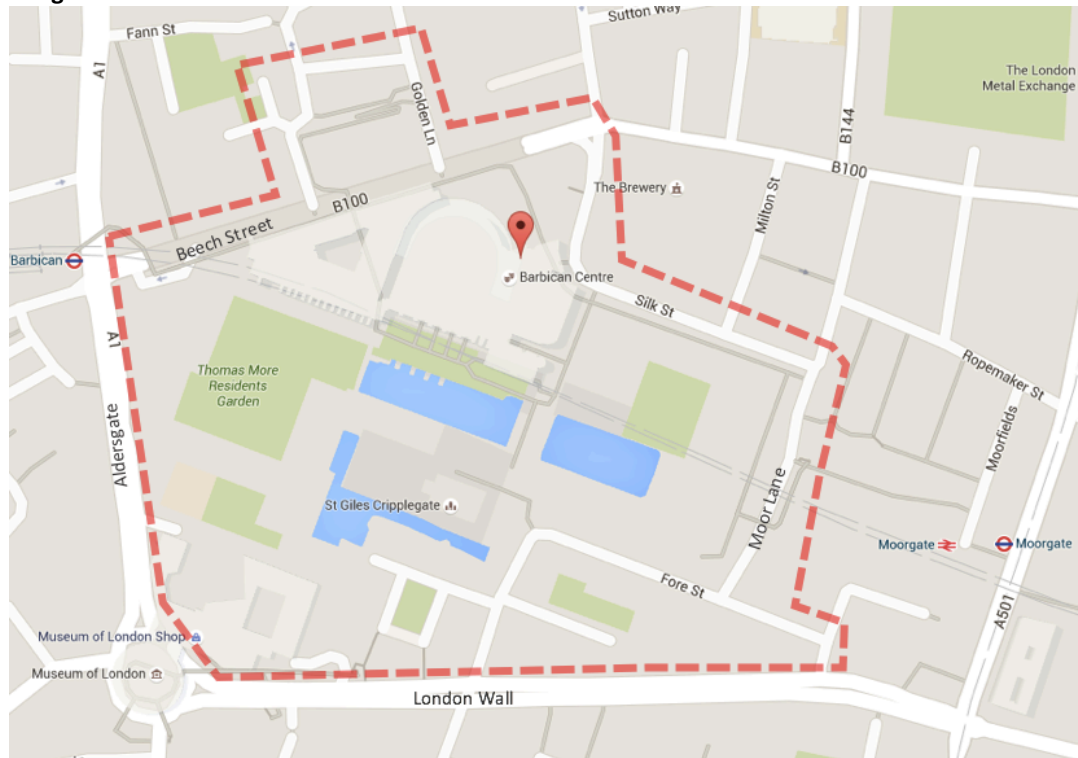
The proposed LEN area will have two elements to it:

1. An inner core area where physical changes and restrictions will be introduced to reduce traffic flows and restrict access for non ULEVs. This inner core will cover the Barbican area (Beech Street/Golden Lane/Silk Street/Moor Lane/Fore Street).
2. An outer area of influence surrounding the core area incorporating the Barts and the Guildhall areas. Businesses and organisations in this wider area include Barts Hospital and City of London Corporation Guildhall.



Image 3: Overview map of the LEN area

Image 4: Core LEN area



Summary of air quality monitoring and/or modelling data.

Image 5(a) & (b): TfL estimates for NO₂ concentrations for City of London in 2010 and in 2020 (no ULEZ)

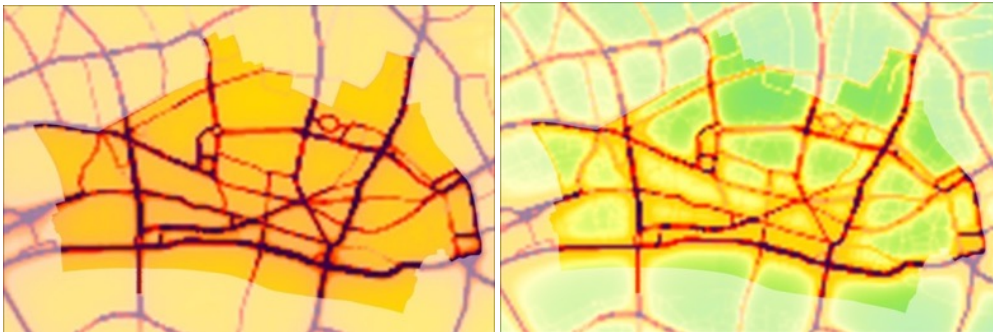


Image 5 (c): TfL estimate for NO₂ concentrations for City of London in 2020 (with ULEZ)



Source: TfL 2015 - Interim LAEI 2010

The City of London has a comprehensive network of fixed continuous monitoring stations and project based sites. There is a continuous monitoring station in Beech Street at the junction of Aldersgate Street which records levels of PM₁₀ and NO₂. The below chart shows that annual average NO₂ concentrations in Beech Street exceeds air quality objectives every

year by a significant amount and only the Walbrook Wharf site on Upper Thames Street (TfL red route) is worse.

Image 6: Annual Average NO₂ concentrations 1999-2014

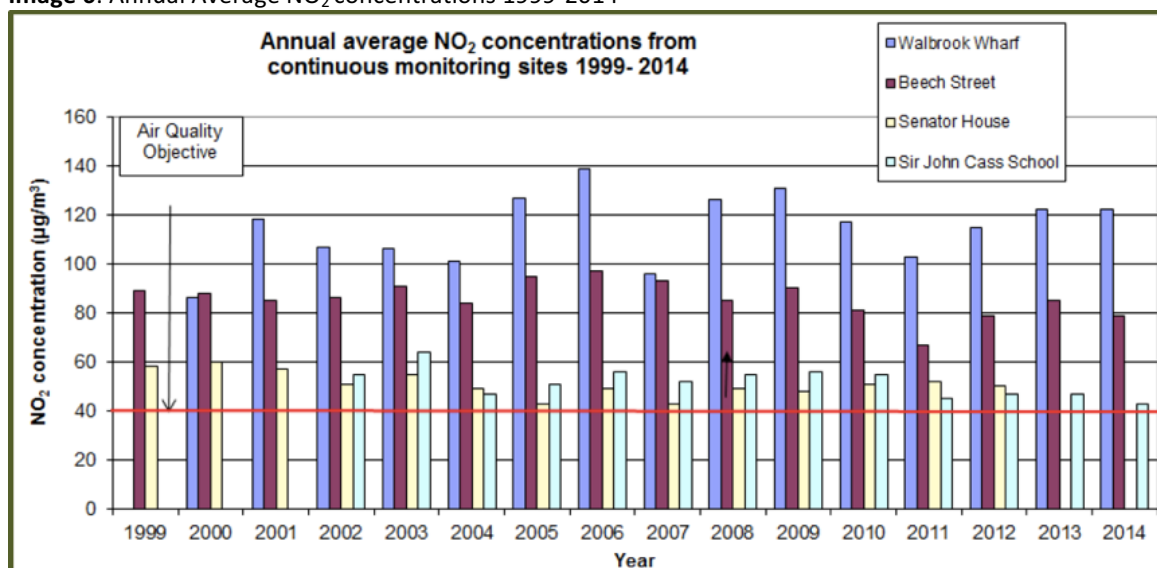
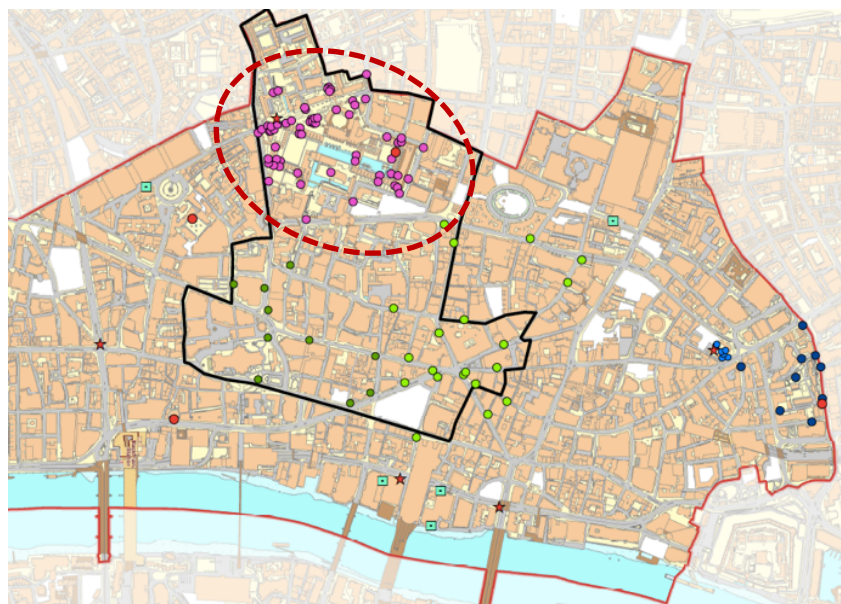


Figure 3.2: Annual Average Nitrogen Dioxide 1999 to 2014

Source: City of London Air Quality Strategy 2015

The below image shows the comprehensive network of monitored sites in the City of London.

Image 7: Site of continuous and project based NO₂ monitoring sites (pink spots are Science in City sites):



Barbican Science in the City project

As part of the Science in the City project residents were recruited to take part in measuring air pollution for NO₂ and PM_{2.5}. 69 sites were set up around the Barbican Estate and surrounding roads. The annual average reading for NO₂ at each site monitored around the Barbican are shown in the figure below. The sites shown in red represent concentrations measured at street level and were all above the EU target, the highest being Beech Street

covered roadway measuring an annual average of $94.89\mu\text{g}/\text{m}^3$ more than double (2.37) the annual limit.

Image 8: Annual average NO_2 concentrations at sites across the Barbican estate

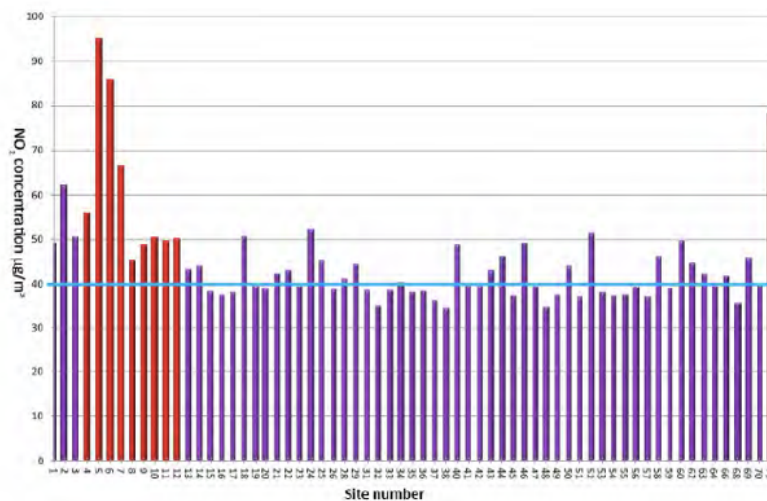


Figure 14: The annual average reading of NO_2 at each monitoring site in the Barbican between October 2013 and September 2014. Red bars show street level sites; site 5 is located in Beech Street tunnel and the blue line indicates the EU mean annual target of $40\mu\text{g}/\text{m}^3$

Source: Science in the City Report, Barbican Association and Mapping for Change 2015

(The full report of the Science in the City Project by Mapping for Change found in Appendix A)

Types of building usage in the LEN area

Business and finance are the key activities in the City of London. The Guildhall area is the HQ of the City of London Corporation/City of London Police plus business and finance companies. Two of the largest residential housing estates in the City are situated within the LEN – the Barbican Estate (4,000 residents) and the Golden Lane estate (1,500 residents).

Image 9: Distribution of residential properties in the City of London

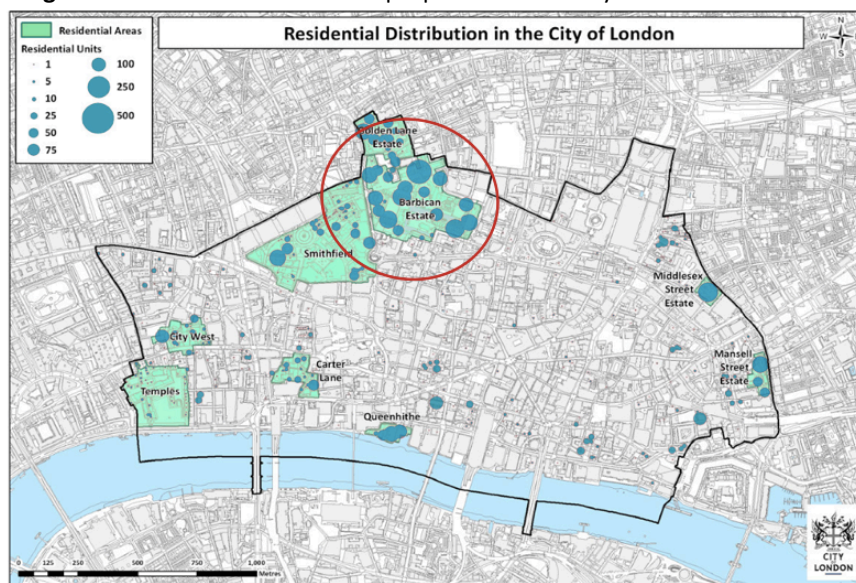
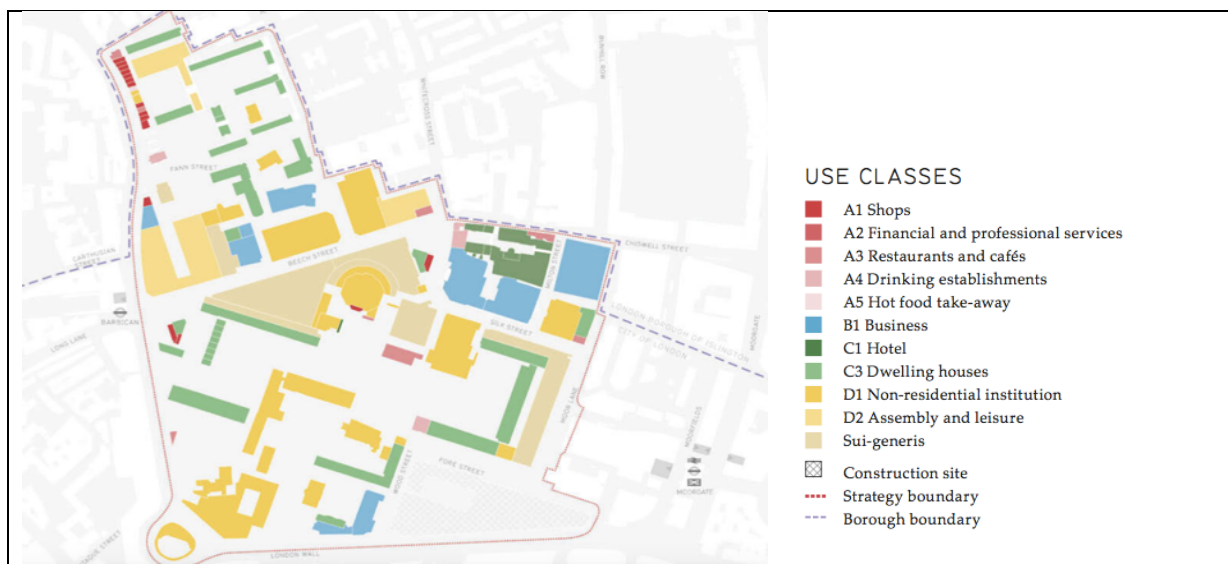


Image 10: Land use classes in the Barbican area



Approximate numbers of people exposed to current pollution levels

As of 2014 there were 414,600 people employed in the City of London¹ with approximately 40,000 of these people working within the wider LEN area and another 6,000 living as residents within the LEN area. Currently on average over 700 pedestrians an hour use Beech Street.²

The numbers using these stations in the LEN area in 2014/15³ are as follows:

- Barbican - 11.4 million persons entry/exit per annum
- Moorgate – 35.3 million persons entry/exit per annum

With the opening of Crossrail stations at Smithfield/Farringdon and Moorgate/Liverpool Street the numbers of pedestrians moving through the area is expected to increase dramatically.

Other notable destination and trip attractors in the LEN area include:

- Barbican Centre (largest performing arts centre in Europe; 1.1 million visitors in 2013)⁴
- Museum of London (1.2 million visitors in 2014)⁵
- Prior Weston Primary School & Children’s Centres (470 students aged 3-11) in Islington
- Guildhall School of Music and Drama (Higher education college with 800 students)
- City of London School for Girls (Secondary school with 700 students aged 7 to 18)
- St Bartholomew’s Hospital - a specialist cancer care treatment and cardiac centre with 250 cardiac beds and 52 critical care beds with approximately 3,000 staff based here.

¹ <https://www.cityoflondon.gov.uk/business/economic-research-and-information/statistics/Pages/research-faqs.aspx>

² Space Syntax study for Barbican and Golden Lane Area Strategy

³ <http://orr.gov.uk/statistics/published-stats/station-usage-estimates>

⁴ Barbican Centre Annual Report 2013

⁵ Association of leading visitor attractions 2014, alva.org.uk

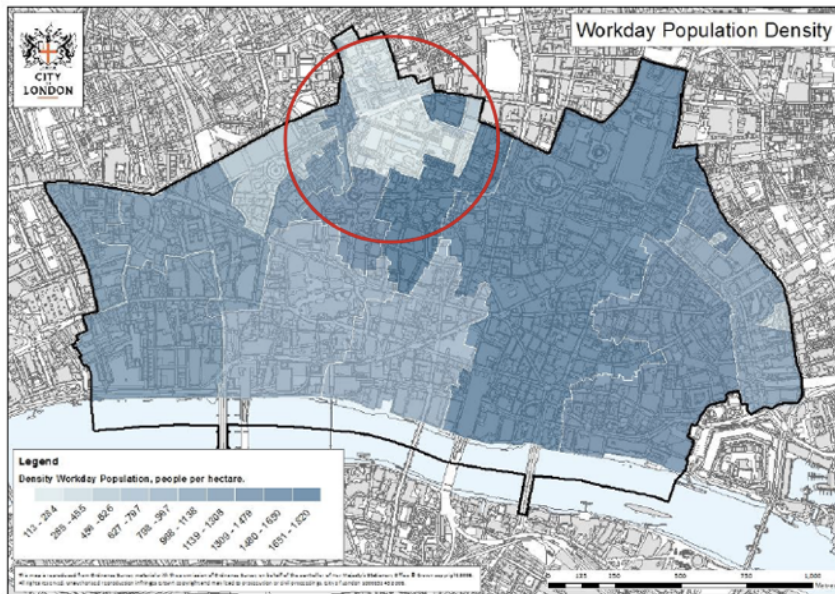
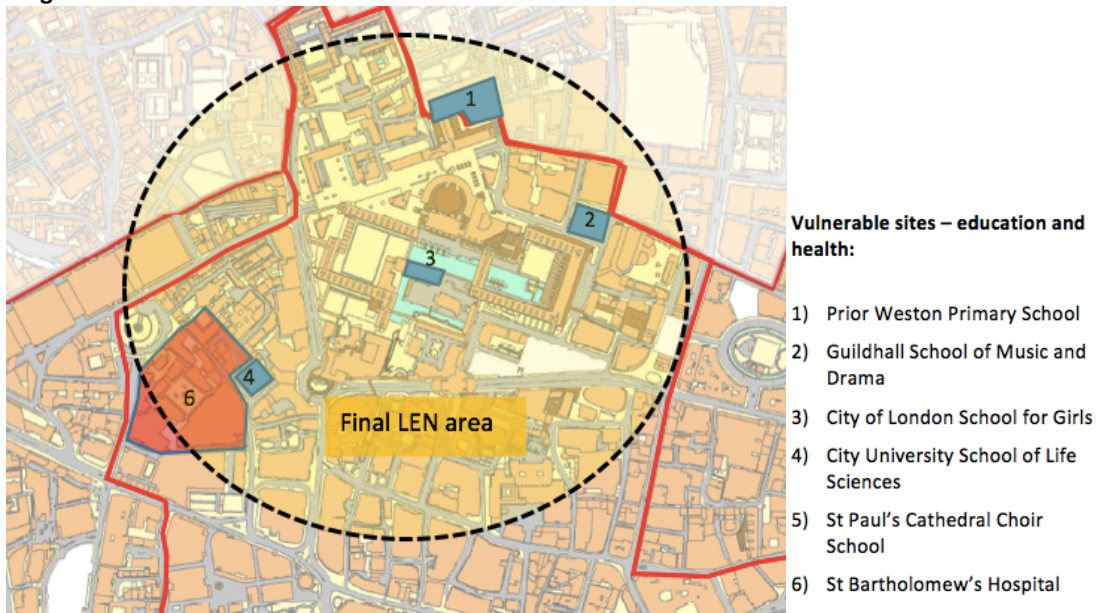


Image 11: Workday population density in the City of London

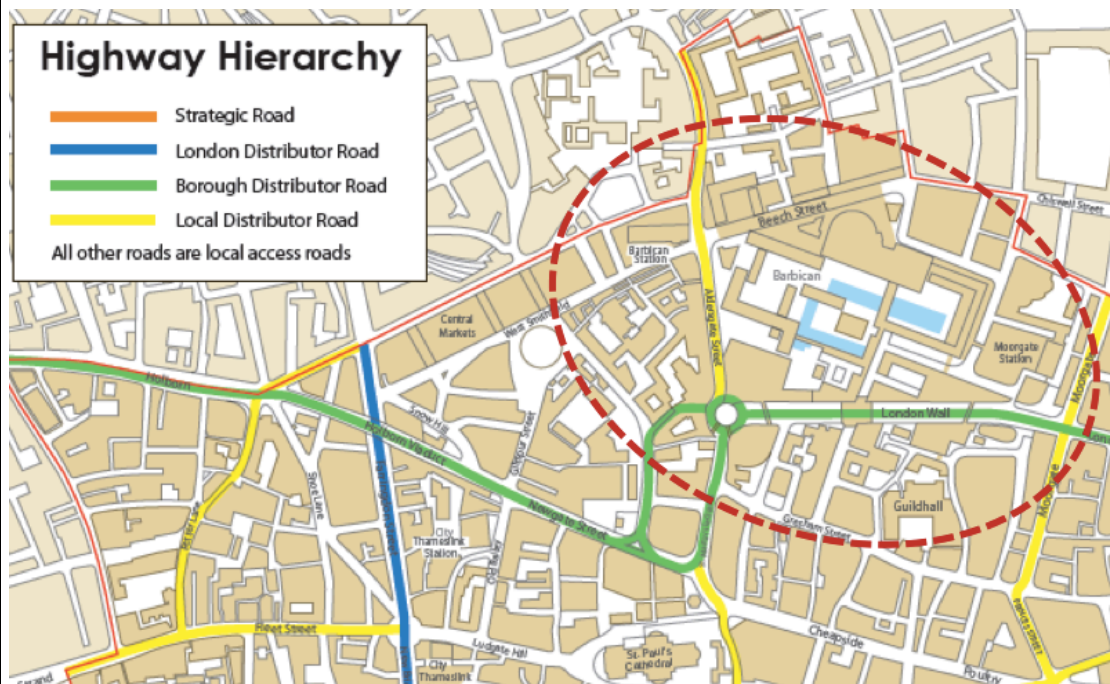
Image 12: Education and health sites in the LEN area



Street Types in the area

The most significant traffic route bisecting the LEN is a Borough Distributor Route east-west along London Wall. Aldersgate Street is a key north south route (Local Distributor Road) through the LEN area. Beech Street is a non-classified road but with over 10,000 vehicle movements a day it is the fourth busiest east-west route in the City of London.

Image 13: City of London Highway Hierarchy



Current air quality issues and pollution sources in the LEN area

Source apportionment analysis undertaken by TfL into the sources of NO₂ and PM₁₀ pollution in the City of London are shown below including estimates for future years 2020 and 2025 post ULEZ introduction.

Image 14: NO₂ Source Apportionment – City of London

| | Nox - tonnes | | | Nox - percentage of total | | | Nox - percentage of road transport | | |
|-----------------------|------------------|-------------------|-------------------|---------------------------|-------------------|-------------------|------------------------------------|-------------------|-------------------|
| | 2010 Baseline | 2020 with ULEZ | 2025 with ULEZ | 2010 Baseline | 2020 with ULEZ | 2025 with ULEZ | 2010 Baseline | 2020 with ULEZ | 2025 with ULEZ |
| TfL Bus | 73 | 8 | 8 | 15% | 3% | 3% | 32% | 12% | 14% |
| Taxi | 28 | 14 | 9 | 6% | 5% | 3% | 12% | 21% | 14% |
| Diesel Car | 24 | 15 | 15 | 5% | 6% | 6% | 11% | 21% | 25% |
| Petrol Car | 15 | 4 | 3 | 3% | 2% | 1% | 6% | 6% | 5% |
| Van and Minibus | 22 | 12 | 11 | 5% | 4% | 4% | 10% | 17% | 18% |
| HGV | 43 | 9 | 9 | 9% | 4% | 3% | 19% | 14% | 15% |
| Non-TfL Bus and Coach | 23 | 6 | 5 | 5% | 2% | 2% | 10% | 9% | 8% |
| Aviation | 6 | 10 | 10 | 1% | 4% | 4% | | | |
| Diesel Rail | 0 | 0 | 0 | 0% | 0% | 0% | | | |
| River | 33 | 33 | 33 | 7% | 13% | 13% | | | |
| Gas - Domestic | 8 | 5 | 5 | 2% | 2% | 2% | | | |
| Gas - Non-Domestic | 168 | 117 | 117 | 35% | 45% | 46% | | | |
| Industry | - | - | - | 0% | 0% | 0% | | | |
| Motorcycle | 2 | 1 | 1 | 0% | 0% | 0% | | | |
| NRMM | 29 | 26 | 27 | 6% | 10% | 11% | | | |
| Other | 1 | 1 | 1 | 0% | 0% | 0% | | | |

Source: TfL 2015 LAEI

| Total PM10 - exhaust, tyre and brake | PM10 - tonnes | | | PM10 - percentage of total | | | PM10 - percentage of road transport | | |
|--------------------------------------|---------------|-----------|-----------|----------------------------|-----------|-----------|-------------------------------------|-----------|-----------|
| | 2010 | 2020 | 2025 | 2010 | 2020 | 2025 | 2010 | 2020 | 2025 |
| | Baseline | with ULEZ | with ULEZ | Baseline | with ULEZ | with ULEZ | Baseline | with ULEZ | with ULEZ |
| TfL Bus | 1.63 | 1.46 | 1.46 | 5% | 6% | 6% | 10% | 13% | 13% |
| Taxi | 3.46 | 1.91 | 1.52 | 11% | 7% | 6% | 21% | 17% | 14% |
| Diesel Car | 2.61 | 1.77 | 2.17 | 8% | 7% | 8% | 16% | 16% | 20% |
| Petrol Car | 2.79 | 2.49 | 2.21 | 9% | 10% | 8% | 17% | 22% | 20% |
| Van and Minibus | 3.15 | 1.75 | 1.81 | 10% | 7% | 7% | 19% | 16% | 16% |
| HGV | 2.40 | 1.53 | 1.55 | 7% | 6% | 6% | 14% | 14% | 14% |
| Non-TfL Bus and Coach | 0.74 | 0.38 | 0.37 | 2% | 1% | 1% | 4% | 3% | 3% |
| Aviation | 0.03 | 0.05 | 0.05 | 0% | 0% | 0% | | | |
| Diesel Rail | 0.01 | 0.01 | 0.01 | 0% | 0% | 0% | | | |
| River | 1.11 | 1.11 | 1.11 | 3% | 4% | 4% | | | |
| Gas - Domestic | 0.06 | 0.05 | 0.05 | 0% | 0% | 0% | | | |
| Gas - Non-Domestic | 2.70 | 1.89 | 1.89 | 8% | 7% | 7% | | | |
| Industry | - | - | - | 0% | 0% | 0% | | | |
| Motorcycle | 0.56 | 0.43 | 0.43 | 2% | 2% | 2% | | | |
| NRMM | 2.92 | 3.01 | 3.19 | 9% | 12% | 12% | | | |
| Other | 0.67 | 0.68 | 0.71 | 2% | 3% | 3% | | | |
| Resuspension | 7.44 | 7.44 | 7.55 | 23% | 29% | 29% | | | |

Source: TfL 2015 LAEI

Image 15: PM10 Source Apportionment – City of London

Table 1: Vehicle types using Beech Street

| Vehicle type | No. of Vehicles | % of total |
|-----------------|-----------------|--------------|
| Motorcycle | 663 | 6.5 |
| Pedal cycle | 1733 | 17.1 |
| Car | 2421 | 23.9 |
| Taxi | 2907 | 28.7* |
| LGV | 1688 | 16.7 |
| OGV1 | 204 | 2 |
| OGV2 | 23 | 0.2 |
| Bus/coach | 161 | 1.6 |
| Cycle hire bike | 334 | 3.3 |
| Total | 10,134 | 100 |

Source: City of London Traffic Composition Survey 2014

* Central London Cycle Census⁶ suggested that up to 35% of all traffic on Beech Street was taxis

Key air quality sources:

- Non-domestic gas – expected to be 45% of source of NO_x in the City in 2020 with ULEZ
- Taxis – 29-35% of traffic on Beech Street are taxis with 43% cruising for trade⁷.
- Freight and delivery traffic – vans and HGVs predicted to generate 31% of NO_x generated by road transport in 2020 with ULEZ.
- NRMM & Construction sources – there are several large construction sites within the LEN and demolition and diesel generators contribute 10% of NO_x in the City by 2020 with ULEZ.
- Diesel cars – predicted to generate 31% of NO_x generated by road transport in 2020 with ULEZ.

For further information on the location choice and area data refer to Appendix B – LEN Area Background Information

⁶ TfL Cycle Census 2013

⁷ Barbican Taxi Study 2012

2. Measures

(1) Low Emissions Neighbourhood - Communications Strategy

Development of a communications and behaviour change strategy with the aim of educating and raising awareness of air pollution and provide real-time air pollution monitoring information to the local community, residents and workers.

Cost: £40,000 (Source LEN £40,000)

Estimated air quality benefits:

- Raises awareness of air pollution causes amongst 6,000 residents and 40,000 workers
- Enables 46,000 people to reduce their exposure

Other benefits: Conduit for consultation work

(2) Establish a Zero Emissions Network

- Direct work with organisations in area to support them to reduce their emissions.
- Incentivise active travel and zero emission vehicles & taxis for business purposes.
- Replacement or upgrade older polluting boilers and generators.
- Air Quality Champions will be nominated from each organisation.
- Annual Zero Emissions Festival in the City.

£90,000 (£50,000 from LEN, £20,000 sponsorship, £20,000 revenue)

- The City Fringe ZEN has been shown to reduce NO_x emissions by 95kg per annum.⁸

Improve community cohesion. CO2 reduction.

(3) TfL buses engagement

Working with TfL to undertake a city-wide review of bus movements in the LEN area and get local buses converted to ULEV.

£15,000 (Staff time)

- Removal of 160+ diesel bus movements through Beech Street per 12-hour weekday period

Financial revenue savings for TfL

(4) City Freight Forum

The LEN area will act as a pilot area for the City Freight Forum to focus new ideas and activities.

£30,000 (£10,000 from LEN, rest LIP)

- 225 Large goods vehicles and 1700 light goods vehicles pass through Beech Street

⁸ LB Hackney ZEN progress report 2015

during each 12-hour weekday period.

- Without action freight predicted to generate 31% of NO_x from road transport in the City by 2020.

Road safety - HGVs and vulnerable road users such as pedestrians and cyclists

(5) Planning guidance & policies

- All gas boilers in new commercial developments required to have a NO_x rating of <20mgNO_x/kWh by 2020.
- New Delivery & Servicing Plan guidance requiring provision of local consolidation, re-timing of deliveries and assessment of air quality impacts.
- All new construction sites in the LEN area to use local Construction Consolidation Centre to minimise deliveries to site.
- All new developments with > 1000m² floor space or >10 residential units will need to be air quality neutral with a view to being air quality positive by 2020.

£30,000 (£20,000 from LEN, rest staff time)

- 35% of NO_x emissions in the City of London are from commercial gas boilers and 6% are from domestic gas boilers therefore it is imperative that these sources are tackled.

CO₂ emissions reductions.

(6) NRMM minimum standards & pilot project

- Develop new best practice on use of standby generators and require all buildings in the LEN to adhere to the guidance.
- Establish a pilot scheme to set a threshold of minimum Stage V for non-road mobile machinery – requirement for all sites within LEN.

£30,000 (£15,000 from LEN, rest staff time)

- LAEI 2010 estimates that Non-Road Mobile Machinery (NRMM) used on construction sites was responsible for 6% of NO_x emissions and 9% of PM₁₀ emissions in the City.

Reduction in CO₂ emissions and noise pollution.

(7) No Idling Zone

Invoke the use the City of London's own local legislative powers to introduce a 'No Idling Zone' over the LEN area.

£60,000 (£20,000 from LEN the rest from CIL)

- Idling engines is associated with localised air pollution and can be a particularly significant problem at specific locations where there is coach parking.

It will discourage illegal parking and waiting. Reduction in CO₂ emissions and noise pollution

(8) Beech Street access restrictions – no through traffic or ULEVs only options

Substantially reducing through traffic along Beech Street by eliminating all through traffic, reducing traffic volume and/ or allowing access for ULEVs only (still allowing cycles). Geo-fencing could be used to ensure ZEC vehicles operate in this mode when travelling through. Access for residents, deliveries and visitors to the Barbican Centre car park entrances in Beech Street will be maintained.

£350,000 (£250,000 from LEN, £100,000 from LIP & CIL)

- The objective of the scheme is to reduce overall traffic flows and incentivise taxi drivers to switch to zero emission capable taxis earlier than they would do otherwise. 3,000 taxi movements are recorded in a 12-hour weekday period in Beech Street. This measure would remove all emissions associated with these vehicles. Also reduce exposure of up to 8,000 pedestrians a day that use Beech Street.
- Implementing this scheme in full would reduce the total emissions rate for NO_x and PM₁₀ in Beech Street from:
 - **NO_x = reduction from 0.294 g/km/s to 0.061 g/km/s**
 - **PM₁₀ = reduction from 0.022 g/km/s to 0.002 g/km/s**

It will greatly improve the urban realm in Beech Street enabling improvements to make it a more attractive gateway to the Barbican Centre. Much more pleasant and safer environment for pedestrians and cyclists.

(9) ULEV only loading bays at certain times

Introduction of ULEV priority loading bays and waiting/loading restrictions. This proposal will depend upon the availability of ULEV LGVs.

£40,000 (£0 from LEN, £40,000 from LIP)

- LGVs & HGVs are the source of 30% of NO_x emissions from traffic and they are the source of 38% of PM₁₀ emissions from traffic in the City.

Raises awareness of ULEVs for commercial purposes. Reduction in noise and CO₂ emissions

(10) Barbican Wayfinding strategy

Pedestrians and visitors currently walking indirect routes alongside heavily trafficked roads instead of alternative routes that avoid exposure to air pollution from traffic sources.

£200,000 (£0 from LEN, £200,000 from Area Enhancement Strategy)

- Enable 1 million+ visitors and residents per annum to reduce their exposure to air pollution by avoiding busier routes.

More liveable neighbourhood. Improved visitor experience. Improved public health by encouraging and facilitating walking

(11) Residents EV charging and cycle parking

Barbican and Golden Lane estate residents have expressed strong demand for both additional secure cycle parking and electric vehicle charging points for the limited number of residents that still own their own private vehicle and park it on site.

£100,000 (£20,000 from LEN, £80,000 from LIP)

- At last count the Barbican Estate Manager had over 300 residents on a waiting list for an electric vehicle charging point.

Additional secure cycle parking will reduce theft and crime. CO2 reductions. Improved public health by supporting cycling

(12) Greening programme

The LEN project will look at options for greening streets within the area particularly the area to the north of Beech Street and along Golden Lane.

£200,000 (£20,000 from LEN, £180,000 from Area Enhancement strategy)

- The green infrastructure will result in improved air quality particularly for particulate matter and we will choose specific species that are beneficial for air quality.

Shade provision mitigates against impacts of climate changes. New green space offers places for people to relax and children to play. Helps in reducing surface water run off and leads to improvements in biodiversity

(13) Off Street rapid EV charging hubs

Provision of electric vehicle charging infrastructure to cater for zero emission capable taxis and electric commercial vehicles in off street car parks. They will be a mix of 22kw and possibly 50kw to cater for the different types of users and vehicles that will require charging.

£120,000 (£20,000 from LEN, £100,000 from OLEV/TfL)

- Essential to support the transition from ICE vehicles to ULEVs. The primary audience for the EV hubs will be taxis and LGVs and together these two types of vehicle are the source of 60% of PM10 emissions from traffic sources in the City.

Climate change mitigation. Noise pollution.

(14) Area wide Delivery & Servicing Plan

Aim is to get understanding of the number and type of deliveries taking place in the area and then look at how they can be reduced through consolidation, retiming and re-modelling. The DSP will first look at the three key public sector organisations operating in the area - the Barbican Centre, St Barts NHS hospital and the City of London Guildhall.

£90,000 (£75,000 from LEN, £15,000 from LIP)

- LGVs & HGVs are the source of 30% of NOX emissions from traffic and they are the source of 38% of PM10 emissions from traffic in the City.

Potential cost savings to businesses participating. Reduced congestion and traffic volumes and reduction in noise pollution. Improved safety for cyclists and pedestrians.

(15) Micro consolidation centre & last mile deliveries scheme

Establish a micro consolidation centre in Barbican car park where deliveries for businesses and organisations within the LEN area could be dropped off or picked up. There would be a zero emission last mile delivery service using either an electric van or tricycle linked to the area wide delivery & servicing plan.

£250,000 (£150,000 from LEN, £100,000 from CIL & LIP)

- Evidence from the North London boroughs consolidation centre has seen a 57% reduction in the number of vehicle trips being made to council sites which has resulted in a 69% reduction in distance travelled and 71% reduction in NOX emissions.

Reduced traffic congestion and vehicle flows. Improved safety for cyclists and pedestrians.

(16) Cycle Quietways

Proposals for two Cycling Quietway routes to be implemented through the LEN area as part of the Mayor of London's Central London Cycle Grid programme.

£150,000 (£0 LEN, £150,000 Cycling funds)

- By providing attractive and safe cycle routes we are encouraging additional cycle trips that may have previously been made by car or taxi.

Improved cyclist safety and creates more liveable neighbourhoods. Improvements in public health

(17) ZEC Only Taxi ranks

Only Zero Emission Capable taxis allowed to use the taxi rank in Silk Street. A dedicated EV charging point would also be installed at the taxi rank. Assuming this pilot rank is successful it will be rolled out to other taxi ranks in the City of London.

£75,000 (£50,000 from LEN, £25,000 from LIP)

- Taxis are a primary cause of NOX emissions within the City of London area - incentivising taxis to make the transition to zero emission capable vehicles by giving ULEVs priority at taxi ranks is a key way of reducing these emissions.

Raises awareness of ULEV taxis. Reduction in noise pollution

Discounted measures

| Measure | Description | Reason for discounting this measure |
|---------------------------------------|--|---|
| Daytime non-ULEV loading ban | Ban on loading and deliveries by non-ULEV vehicles during daytime hours. | Not enough commercial ULEVs are on the market and the impacts upon businesses could not be justified. |
| Barbican Centre car park restrictions | Barbican Centre car park – restrict to EVs and disabled only | Not acceptable to Barbican Centre. |

| | | |
|----------------------|--|--|
| Zero Emission Zone | Zero Emission Vehicles zone. | Lacked business, internal and political support. |
| ZEC taxi only pickup | Only ZEC taxis allowed to pickup in LEN area | Lacked business, internal and political support. |

- **For further description of LEN measures refer to Appendix C.**
- **Refer to Appendix D for visualisations of some of the LEN proposals.**
- **Refer to Appendix E for shortlisting process for LEN proposals, assessment against TfL criteria and the discounted schemes.**
- **Refer to Appendix F for information on how the air quality benefits of the measures were assessed.**
- **Refer to Appendix G for information on how the cost of the LEN measures and proposals were estimated.**
- **Refer to Appendix H for a project plan for the LEN programme.**
- **Refer to Appendix I for a risk assessment of the LEN measures.**

3. Benefits

The concept behind the City of London's LEN is that it will act as a test bed for a diverse range of air quality improvement interventions. The interventions will be piloted and assessed here before being rolled out to the rest of the City of London and then potentially the whole of Greater London. The proposals included in this bid are an ambitious, comprehensive and integrated suite of measures that seek to tackle all sources of emissions in the City ranging from building emissions, traffic sources and construction machinery.

The proposals complement each other to create a cohesive neighbourhood scheme with truly transformative measures that will result in a substantial improvement in air quality in the very heart of the Capital. The City of London believes that the proposals included in the bid are the right combination of behaviour change, incentivisation, restrictions and enforcement alongside the necessary infrastructure required to support a genuinely low emission neighbourhood.

The City of London's LEN project will not only have a beneficial impact on air quality in the Barbican area but also result in a more liveable neighbourhood with less traffic, improved public realm, safer places to cycle and walk, new green infrastructure and play facilities.

The most significant and transformative impact will be the reduction of traffic volumes and introduction of the ULEV and Access Only restrictions in Beech Street.

- Cumulative emissions reduction - Beech Street currently carries approximately 8,000 motorised vehicles during a 12-hour weekday period. Approximately 3,000 of these vehicles are black taxis. It is fair to assume that upon introduction of the access restrictions in form of a no through route or ULEVs only scheme almost all of these ICE black taxis will be excluded from using this street as a through route. So the minimum reduction in emissions will be equivalent to 3,000 black taxis per day. Implementing this scheme in full would reduce the total emissions rate for NO_x and PM₁₀ in Beech Street from:
 - **NO_x = reduction from 0.294 g/km/s to 0.061 g/km/s**
 - **PM₁₀ = reduction from 0.022 g/km/s to 0.002 g/km/s**
- Exposure reductions – Over 700 pedestrians an hour during 12 hour working weekday that use Beech Street will benefit from reduced exposure (over 8,000 pedestrians a day).
- Public health benefits – increased health and activity amongst vulnerable residents living in area and children at Prior Weston and City of London Girls School. Reduced mortality amongst vulnerable patients at Barts.
- Urban realm value uplifts – Golden Lane improvements and Beech Street currently have poor public realm and pedestrian environments. The combination of the area enhancement strategy schemes and LEN proposals will result in significant

improvement in pedestrian comfort levels and public realm experience.

- Road safety benefits – reduced traffic volumes and through traffic in the area will result in safer conditions for pedestrians and cyclists with resulting reductions in accident rates.
- Community cohesion – the provision of more green space, less traffic and pollution will encourage greater community cohesion and places to meet and stop and rest.
- Crime and theft – improved cycle parking will result in reduced crime and theft rates.

Refer to appendix F for further background information on measures.

4. Local Support

Engagement undertaken

The City of London has undertaken a series of engagement exercises including meeting with and in some cases presenting to the following stakeholders:

- Barbican Estate Residents Association (representing 4500 residents) annual committee meeting
- Barbican Estate Environment and Sustainability Committee Chair
- Lauderdale Tower Residents Association AGM
- Golden Lanes Estate Residents Association Chair
- Barts NHS Hospital – Associate Director of Sustainability and Patient Transport
- Barbican Centre
- Living Streets

Engagement via email has occurred with the following organisations:

- Prior Weston School
- Cheapside Business Improvement District

Internally within the City of London teams and departments:

- Transport Planning Team
- Network Manager
- Town Clerks Policy
- Barbican Cultural Hub Project Manager
- Waster Services Manager
- Barbican Estate Manager
- Barbican Estate Car Parks Manager
- Freight Officer
- Environmental Enhancement Team

The LEN project has been approved by:

- David Smith – Director of Markets and Consumer Protection
- Carolyn Dwyer – Director of Built Environment
- Steve Presland – Director of Transportation and Public Realm
- Nicholas Kenyon – Managing Director of the Barbican Centre

The Project Sponsor is Jon Avern, the Director of Consumer Protection and the Project Lead is Ruth Calderwood, Air Quality Lead at the City of London.

Political support

The following members have approved of the LEN bid and offered letters of support:

- Wendy Mead OBE, Chairman of the Port Health and Environmental Services Committee
- Joyce Nash OBE, Deputy Chairman of the Health & Wellbeing Board
- Michael Welbank MBE, Chairman of the Planning and Transportation Committee
- Jeremy Simons – Deputy Chairman of Port Health and Environmental Services Committee

- John Tomlinson – Chairman of the Barbican Board

The City of London Port Health and Environmental Services Committee has expressed strong support for the LEN bid and air quality has now been categorised as a key concern and has been added to the Corporate risk register as a key risk for the City of London.

Evidence of strong support

[Bart's Health NHS Trust](#)

Through the Mayors Air Quality Fund, the City Corporation has worked with Bart's Health NHS Trust on following [air quality projects](#):

- Protecting Patients – Clinicians at Bart's Health NHS Trust have been providing advice to vulnerable patients on how to reduce their exposure to air pollution.
- Breathing Spaces – air quality plants have been planted within the hospital grounds.
- Active Travel – working with Bart's Health staff to encourage them to leave their car at home and use other ways to get to work.
- Cleaner fleets, healthier streets – working with the main hospital fleet provider to reduce emissions from the fleet.

Discussions have been held with the Assistant Director of Facilities and Sustainability at Bart's Health NHS Trust. Barts health is keen to be involved in the LEN project and has provided a letter of support.

Barbican Residents Association

The Barbican Residents Association and their Environmental Group are extremely engaged and proactive when it comes to air quality in the City. They have undertaken a number of projects such as the [Science in the City](#) project where they actively measured and monitored air pollution on their estate and produced the comprehensive report found and even produced a video that can be found on [Youtube](#) describing the project and the [outcomes](#). The residents have expressed strong support for access restrictions in Beech Street.

City of London officers presented the LEN bid proposals at the Annual General Meeting of the Barbican Residents Association. Afterwards a vote on whether to support the bid by resident's representatives was held and it was unanimously approved. A letter of support reflecting their support can be found in **Appendix J**.

Prior Weston School and Children's Centre

The Prior Weston School and Children's Centre in the London Borough of Islington has previously been involved in the [Cleaner Air for Schools](#) project and has expressed support for air quality improvement schemes to address pollution issues in the area.

Golden Lane Estate Residents Association

Golden Lane Estate Association Chair was supportive of the LEN proposals and would like to see public realm improvements to the Golden Lane area. Engagement with the Chair of the Group was held and he was supportive but unfortunately it proved difficult to obtain a letter of support from them because their annual meeting was held earlier in

the year and the letter of support can only be approved at a full meeting of residents.

Cheapside Business Improvement District (BID)

Cheapside BID has been very engaged with air quality issues, working with the Air Quality Team at the City to establish a network of NO2 monitoring sites in and around the Cheapside area. They are particularly keen on introducing green infrastructure and measures to help businesses reduce the environmental impacts of their deliveries and servicing.

Barbican Centre

In the Barbican Centre's response to the Area Strategy Review they expressed their keenness to see improvements to Beech Street particularly for the benefit of pedestrians and make it safer and more pleasant to access the centre from Barbican tube station.

Business Community in Barbican Area

As part of the Science in the City project the Barbican Residents Environment Group engaged directly with almost all businesses based in and around the Barbican Estate and there was generally strong support for measures to improve air quality in the area and to be good neighbours.

Living Streets London

Living Streets have expressed strong support for the LEN proposal and in particular want to see access restrictions and improvements to Beech Street. They have previously undertaken community street audits in this area and identified Beech Street as a problem location which needed addressing.

Cleaner Air in London

Simon Birkett the Director of Cleaner Air in London has expressed strong support and believes that the bid is visionary and could be easily replicated across London. A letter of support from Simon can be found in Appendix J.

What measures have the most support

The proposed restrictions for Beech Street covered roadway has the most support from residents and organisations in the area because it is universally recognised that air pollution here is very serious and conditions for pedestrians and visitors using this route are unpleasant as a result.

Do any organisations have objections or concerns about any proposals

Barbican Centre had concerns about the loading bay nearest to their entrance becoming ULEV only and their HGVs not being able to use Beech Street as an access and loading route. It was explained that Beech Street restrictions would not apply to vehicles accessing to their facilities and due to the nature of the vehicles requiring the loading bay immediately outside the Barbican (HGVs and lorries for the symphony orchestra and theatre sets) this would not be the site of the trial ULEV loading bay.

Letters of support can be found in Appendix J

5. Match Funding

The City of London is in the fortunate position of being able to rely a number of different sources of match funding which include, but are not limited to, the following:

- S106 and CIL funding – the City of London has built up a substantial pot of CIL funding that is available for both air quality and transport improvements and upgrades. The London Wall development is in the immediate vicinity of the core LEN area could also contribute S106 funding.
- £100k LIP funding has been allocated for air quality improvements and LEN in the years 2016/17, 2017/18, 2018/19 totalling £300k over the three-year lifetime of the project.
- Staff time – there are a number of dedicated staff that will be involved in the project – including officers based in Air Quality, Transportation, Freight and Facilities teams.
- The air quality team has revenue and capital funding available that can be spent on schemes related to the LEN project.
- Sponsorship – we will be looking to obtain sponsorship from businesses and organisations as part of the Zero Emissions Network project
- Area environmental enhancement schemes – the City of London has a rolling programme of Area Enhancement Projects and the [Barbican/Golden Lane area](#) is due to commence in the next 12 months. The wayfinding and greening proposals will be mainly funded from these funds.
- Cycle Vision/Quietways fund – two Quietway routes traverse the LEN area and implementation work will commence in the first year of the LEN project.

Refer to Appendix K for the costs breakdown and match funding sources

6. Monitoring and Evaluation

To understand the impacts the LEN proposals will have on air quality in the City and whether it should be rolled out across London there needs to be comprehensive and reliable monitoring. The City Corporation has been monitoring NO_x and PM10 in Beech street using continuous analysers for a number of years. This provides excellent baseline data for interventions along this road and monitoring will continue for the duration of the project. The City will also look to install a number of other continuous analysers at strategic points in the LEN area.

As part of the LEN project we are also proposing that additional NO_x diffusion tube monitoring be undertaken by Barbican residents as Part 2 of the Science in the City project. This will take place in each year throughout the project as shown in the project plan.

Additional measurements and monitoring will include pedestrian and cyclist counts on Beech Street and Quietway routes through the area over the period of the project (pre, during and post) as well as traffic flow counts, road traffic accident rates and childhood activity and play levels.

Further qualitative monitoring will include the number of businesses and organisations signed up to the Zero Emissions Network with active Delivery and Servicing Plans.

The success of the project will be based upon the following outcomes and targets being met by the end of the 3rd year (April 2019):

- 1) 80% of businesses/organisations within area signed up to the Zero Emissions Network**
- 2) 50% of organisations with more than 100 employees in LEN to have a DSP and be using a consolidation centre in some form.**
- 3) At least 25% less vehicular traffic volumes in the core LEN area – Beech Street/Silk Street/Golden Lane/Moor Lane/Fore Street.**
- 4) 20% increase in cyclists on roads within core area.**
- 5) 10% increase in walking activity amongst residents and schoolchildren in the LEN area.**
- 6) Annual average concentrations of NO₂ to be below 40µg/m³ across the core LEN area (Beech Street/Golden Lane/Silk Street/Moor Lane/Fore Street).**

Project Manager Assurance:

Jon Averts, Director of Consumer Protection and the Project Sponsor for the LEN bid has given his assurance that if the bid is successful the City of London will employ a dedicated Project Manager to lead on the project and they will be in position within 2 months of the successful bids being announced.

State Aid advice:

The City's Lead Solicitor has confirmed that they foresee no issues related to State Aid with the City of London's LEN bid proposals and they are legally compliant with it and any other legislative requirements.

APPENDICES:

- A. Barbican Science in the City Study**
- B. LEN area background data collection and analysis**
- C. LEN measures report**
- D. Visualisations**
- E. Measures shortlisting and criteria assessment work**
- F. Measures benefits calculation**
- G. Measures cost calculation**
- H. Project Plan**
- I. Risk assessment**
- J. Letters of support**
- K. Match funding sources**