Low Emission Neighbourhoods

Guidance note

Low Emission Neighbourhoods

1. Introduction

A Low Emission Neighbourhood (LEN) is an area-based scheme that includes a package of measures focused on reducing emissions (and promoting sustainable living more generally). A LEN is delivered by a borough with support from Transport for London (TfL), the Greater London Authority (GLA) and the local community.

This note summarises TfL's current thinking regarding LENs and it will be updated as the concept develops and more evidence, examples and tools become available. It is provided to stakeholders to help them develop and deliver LENs and TfL welcomes any feedback or support from stakeholders to help improve the LEN concept. For boroughs intending to apply for funding to develop a LEN through the Mayor's Air Quality Fund (MAQF), this note should be read in conjunction with the MAQF guidance[1].

LENs will be focused on areas of high exposure to high pollution which can be reduced through local measures, and locations with high trip generation and the potential to reduce emissions in the wider road network. They are less suited to areas where the high pollution levels are restricted to a single road, especially if through-traffic is a large source of emissions, as the package of measures would do little to address this source.

For further details on this note contact LowEmissionNeighbourhoods@tfl.gov.uk

2. Background

TfL's Transport Emissions Roadmap (TERM) examines ways to reduce CO_2 and air pollution from ground-based transport. One of the proposed measures in this document is a programme of LENs to tackle local air quality hotspots.

Neighbourhoods will not be solely restricted to residential areas, but are likely to focus around busy streets and urban spaces where air pollutant concentrations and public exposure are highest. The term 'neighbourhoods' was used to highlight the need for local community involvement (residents, businesses and regular visitors) and support in developing a LEN to ensure it is successful. A LEN should be a partnership between the local community, businesses and the local authority to jointly identify and deliver a common set of goals.

While the prime driver for a LEN is a reduction in concentrations and exposure to air pollutants, a transformation in the urban environment and the way the area operates is crucial to success.

3. Objectives of a LEN

LENs have the following objectives:

- Reduced transport emissions, leading to improved air quality and climate change mitigation, and reduced negative impact on health

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[1] Available via www.london.gov.uk/air-quality-fund

- Increased human physical activity and health, through encouragement of more walking and cycling

- Reduced road traffic casualties through overall reduction in vehicle kilometres and alterations to traffic management

- More efficient use of limited road space, urban regeneration and improved local economy

In order to meet these objectives LENs require action in the following areas:

- Reducing overall vehicle kilometres

- Encouraging the uptake of low-emission vehicles

- Improvements to the urban realm

The following four key principles of LENs are considered important for success:

- **Transformational** LENs must be visibly transformative with sufficient investment in designing and implementing measures. They must include funding for urban realm improvements, enabled by a reduction in motor vehicle dominance.

- **Evidence Based** Measures must be designed on a detailed understanding of how an area currently operates. This includes the land use, ownership and governance, delivery and servicing activity and travel behaviour

- **Effective** There must be a measurable impact on emissions using the best available evidence in assessment of their impact

- **Acceptable** The need for bold measures must be understood and supported by the local community so that tangible improvements in air quality can be realised and additional private sector investment can be attracted

Running through all of these principles is the need for community buy-in. For a LEN to work, effort is required by everyone and the LENs' transformative nature is intended to foster a sense of pride in those involved and be a significant 'prize' to be gained from the effort to make a LEN work.

LENs must be designed as a package with measurable impact on emissions. Ambitious and genuinely transformational schemes are required. They should not be used to fund existing business-as-usual work. The funding provided to a successful LEN area for upgrading the urban realm is the 'reward' for the area's commitments to reducing motorised transport emissions. It is likely that the financial case for public investment in a LEN will not rely solely on the emissions savings and will be supported by benefits such as the economic uplift following urban realm transformation. Such benefits are also likely to play an important part in increasing local support for changes proposed as part of a LEN.

Figure 1 illustrates the point that some changes are difficult for some communities to adopt, such as traffic restriction and reduced parking provision. But it is often the case that without these decisions being made, it is difficult to free up the space to

provide benefits such as urban realm transformation, reducing the dominance of motor vehicles and ultimately realising the benefits sought, such as improvements in air quality and local economic uplift.
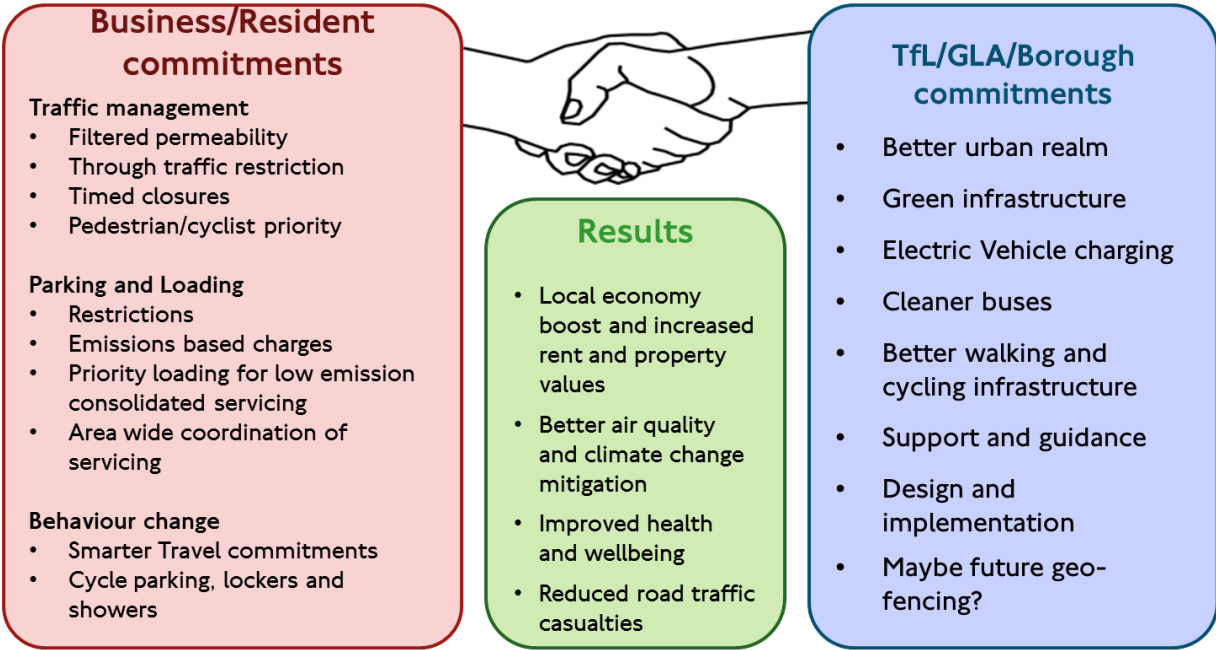

Figure 1: Illustration of the LEN concept

4. Area selection

When identifying the location and boundaries of a potential LEN, the following criteria should be met:

Is the area polluted or a source of significant emissions?
While LENs are likely to involve significant urban realm alterations to lock in the benefits of air quality improvement measures, LEN funding should not be used to improve the urban realm in areas without high emissions or at areas without the ability to influence emissions.

Areas of high pollution, in particular noticeable NO2 concentrations or sources of high greenhouse gas (GHG) emissions, can be defined by looking at the London Atmospheric Emissions Inventory (LAEI), available online via the GLA Datastore[2].

LENs should also cover areas with high public exposure to pollution, ie areas of high population or high activity (or may be in the future in the case of a development area). Previous work by TfL to identify Air Quality Focus Areas can be used as a basis for this. Local knowledge and professional judgement can identify these.

Other factors
A potential LEN area should meet at least one of the following conditions:

- The area includes or is part of an Opportunity Area, as identified in the London Plan, as there are likely to be significant changes (and funding opportunities) in these areas over the coming years

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[2] http://data.london.gov.uk

- Significant local plans for large scale redevelopment. Existing plans for major public realm and/or traffic reduction schemes, either borough or TfL led, that may be able to benefit from LEN complementary measures. This could include for example, a Road Modernisation Plan project, or a borough major scheme of equivalent scale

- There is an opportunity for

  - Significant reductions in traffic, emissions or exposure to air pollution

  - A desire and/or need for improved air quality, road casualties and urban realm

  - An active local community (commercial and/or residential), or a clear commitment from the local authority to foster an active local community through a potential LEN project

- The area is the start and/or end point of a large number of journeys (as the impact of that LEN would be felt far beyond its boundaries). This could include major destinations near the roads mentioned above, such as business districts and shopping centres. It would also include other sources of vehicles, such as industrial parks

Size and boundaries

Local circumstances will determine the size and boundary of a LEN. While a LEN may include major arterial roads with a high proportion of through-traffic, a LEN is unlikely to significantly impact this traffic, which could be better addressed through wider measures. However, boroughs should undertake engagement with relevant TfL teams if the TLRN forms part of or is adjacent to a LEN.

A successful LEN will be dependent on the involvement of local people and businesses. It is therefore more appropriate to select an area defined by the community within it, such as an urban town centre, or a business park and its surrounding environment. Where the LEN includes an Air Quality Focus Area or existing compatible project, these boundaries can also be taken into account in defining the scope of the LEN.

5. Developing a LEN

Once a potential area for a LEN has been identified it is necessary to understand in as much detail as possible what currently happens within that area, or how it may function in the case of a development area, especially how and why people travel and goods are moved.

Identifying the size of different fleets and their associations with businesses and people living in the LEN will allow the most appropriate measures to be selected. Although the scope of these measures will depend on the local fleets and associated businesses and residents, the process can identify the maximum potential level of transformation and impact on emissions, urban realm and other elements, such as road safety.

As different LEN measures affect different fleets and trip types, it is useful to find as much detail as possible on the local traffic journeys and their purposes. Ideally, this would include data for trips broken down by vehicle type and purpose along with any further detail on journeys associated with specific large organisations and destinations. Some of this data will be available via TfL.

As well as gaining a detailed understanding of motor vehicle trips it is also important to understand:

- Pedestrian movement

- Cycling levels and routes

- Public transport connections and use

- Parking and loading activity

- Each businesses' approach to delivery and servicing, and their level of flexibility

In summary, the measures included in a LEN will be tailored to each area and understanding how an area functions a whole is critical to being able to design the most effective solutions. The following table summarises the steps that might be taken to develop a LEN. Seed funding should be used to gather the appropriate data.

Stage	Step	Action
Mapping the area and traffic	1	**Identify types of roads and their proportions** - Use the Street Types categories to map the potential LEN area, identify the proportion of each type. Mapping for boroughs that have agreed street types with TfL is available on request.

	2	**Identify local activities, and their proportions**
		
		- Consider the types of local activities in the area, including the dominant activity in each part of the LEN, key locations which are the origin/destination for large amounts of traffic, and vulnerable uses (such as schools and hospitals)
		
		- Consider what is the likely level of local support:
		
		    o How active are the local community (residential or commercial)?
		
		    o Are there any large and/or high profile community/business/stakeholder groups?
		
		    o What major issues have been raised in the past?
		
		    o What level of communication exists between the borough and locals/groups?
		
		    o How likely is political support for a LEN in this area?

		• Compile any further information on activities, for example
		
		    o Are there multiple or few owners of housing developments and commercial areas?
		
		    o Are there any key contacts, such as housing associations or management organisations, large retailers, Business Improvement Districts?

	3	**Identify relevant designations for the area (which may provide data or funding, or influence local and political support)**
		
		• Is all or part of the potential LEN area:
		
		    o An Air Quality Focus Area?
		
		    o An Air Quality Management Area?
		
		    o An Opportunity Area?
		
		    o Included in a Road Modernisation Project?
		
		    o A Mini-Holland?
		
		    o Other London or borough designation, such as a Liveable Neighbourhood?

Data collection and analysis	**4**	**Identify any existing survey data**
		
		• This could be from existing TfL or borough work, or other sources, such as planning applications, and could cover the following:
		
		• Air quality concentration data
		
		• Traffic data, including origin/destination data:
		
		    o 2011 census data includes locations of homes and workplaces and journey to work mode[3]
		
		    o Traffic data
		
		    o Journey origin/destination data (including cordon counts and Origin and Destination surveys
		
		    o London Transportation Studies (LTS) model data- existing extracted data or new data on key road links
		
		    o TRICS (Trip Rate Information Computer System), which has average trip rates for different types of developments
		
		    o Area servicing survey
		
		    o Local public transport stats
		
		• Identify locations of residential/commercial/retail/industrial

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[3] Data available from the ONS website http://www.nomisweb.co.uk/

		activities and proportion of each type
		• Other data:
		o Healthy Streets data
		o Pedestrian Environment Review System (PERS)audits
		o Any other relevant traffic, journey or emissions data
		o Any data on other issues which may be affected by the LEN, such as traffic accidents and casualties, accessibility, and improved urban realm
	5	**Use this to:**
		• Estimate the proportion of different types of traffic (such as through- traffic, journeys with their origin or destination in the area, and if possible by commercial and other types of traffic)
		• Identify main locations (eg specific companies, key destinations such as the high street or other retail area)
		• Consider existing public transport usage.
		• This information will give an indication of the limits of potential reductions in different types and sources of traffic
LEN measures	6	**Identify appropriate measures for each area, including specific measures for key roads (and/or key groups)**
		• At this step, it may be found that the available levers may be insufficient to cause an ambitious and transformative change, and that a LEN may not be the best approach for this area
		• Using the measures suggested in section six as a guide, develop a package of suitable measures for the LEN

6. Elements of a LEN

LENs need to be tailored to an individual area's circumstances. An understanding of the existing demands for travel and how the place currently operates is important in this.

Measures involved in a LEN work in one of two ways. They can affect how traffic moves on a road, which in turn can affect whether people decide to either drive, walk, cycle, use another mode of transport, or avoid it altogether. These measures can include filtered permeability, with restricted access, widening or narrowing lanes, changing parking, introducing segregated cycle lanes, or shared road space for areas with low traffic.

A LEN can also affect the decisions that people who live and work in the area make. This can include businesses using procurement or travel planning to reduce emissions from deliveries or staff transport, community engagement on air quality issues, community travel planning, and working with schools.

Seeking to cut vehicle use and associated emissions by, for example, better coordination and consolidation of delivery and servicing and encouraging walking, cycling and public transport trips, has become an important part of the LEN concept. It requires significant planning, support and enthusiasm to implement. LENs will require continuing active support to achieve behaviour change following the introduction of any physical measures. Therefore a long-term plan should be put in place to ensure that the benefits of the LEN are maintained and enhanced after it is completed, through the continuous local engagement, maintenance and support.

Many types of measures will be universal and applicable to all types of roads, but may be carried out in different ways or to a different extent. For example, traffic management can reduce emissions in all cases, but the most effective type of traffic management may vary between road types and locations. The Roads Task Force Streets Type Matrix can help in choosing appropriate measures for each LEN.

Suggested interventions that should be considered for a LEN are outlined in the next section of this document.

The most effective measures will vary between LENs depending on the local area, such as the proportion of different activities, eg retail, industrial, offices and residential, and the types of roads and traffic in the area.

Neighbourhood commitments
Neighbourhood areas would need to commit to traffic management/restriction and behaviour change programmes which could include the following measures, subject to feasibility:

Traffic management: Introducing measures to remove through-traffic from roads. These could include filtered permeability schemes, timed road closures to all motorised traffic and permitted vehicle-only roads that restrict access to residents and vehicles for loading and servicing only. These measures could be put in place initially on a trial basis, using temporary barriers, and the impact on emissions could be monitored.

Parking management: Introducing smarter parking charging. This could include introducing a variable charge for residential permits according to emissions, with surcharges for older more polluting diesel vehicles. On-street parking charges could also vary according to vehicle emissions, with banding based on Euro standards. There is also potential to vary charging according to parking demand, using on-street sensors.

Localised Low Emission Zone: A voluntary agreement that businesses and key trip generators in the area will ensure all their vehicles meet the ULEZ standards (or higher for LENs within the ULEZ).

Freight and servicing: Introducing measures to reduce the impact of freight and servicing in the neighbourhood. This could include the following:

- **Freight planning**: A neighbourhood-wide delivery and servicing plan to cut overall freight movements and emissions. This would enable both a reduction in the individual freight and servicing requirements for each premise and allow for consolidation of deliveries across multiple premises. As part of this, premises could sign up to a neighbourhood-wide green procurement code, ensuring suppliers use best practice and low emission vehicles

- **Priority loading**: This would include either the implementation of a booking system for delivery and servicing trips, or provision of restricted loading bays

- **Restricted loading bays:** Exclusive use would be given to low or zero-emission commercial vehicles, or vehicles undertaking consolidated deliveries serving a number of premises

- **Delivery booking system:** This would allow a reduction in overall capacity for loading and servicing by encouraging the most efficient use of the remaining capacity. Priority booking could be given to low-emission vehicles or consolidated delivery vehicles to encourage uptake. Parking sensors could be used to monitor and enforce the use of these and support and/or guidance could be provided to freight operators to ensure this resulted in more efficient deliveries

- **Microconsolidation**: Introducing microconsolidation would greatly benefit low emission neighbourhoods. Use of electric vehicles or cycle freight for the last leg of the journey would enable zero-emission restrictions to be introduced while allowing for freight deliveries. Monitoring to ensure that there are overall benefits to consolidation and that emissions are not simply displaced will need to be undertaken

Travel planning: Engagement with employers and schools within a LEN is important to its success. Targeted travel planning, with a focus on reducing emissions, can help educate and engage the community as well as influencing behaviour.

Lack of awareness around air pollution and its causes can impact upon travel behaviour and supporting measures to help people travel more sustainably can help improve local support and buy in to the LEN concept. As part of this it is important that programmes are properly monitored and maintained to ensure their effectiveness.

Local authority commitments
To support a LEN, it is vital that the local authority provides infrastructure, financial support (including securing private investment) and guidance to ensure that there are wider benefits to a LEN. The local authorities should consider the following actions:

Walking, cycling and urban realm improvements: LENs would often involve changes to highway infrastructure to improve conditions for walking and cycling. The traffic management measures mentioned previously will contribute to this, but improvements to the urban realm will bring additional benefits to the local economy and encourage local support for LENs.

Infrastructure for low-emission vehicles: Infrastructure to support the uptake of electric vehicles, particularly freight vehicles and taxis would be required for a LEN. Wireless charging plates or rapid chargers could be installed in the priority loading bays to further support the use of electric freight vehicles.

Where a LEN includes a residential area, residential charging points and electric car club bays should be provided.

Taxi ranks: Where there are significant taxi movements in a proposed LEN, it could include a taxi rank to reduce the need for empty running while plying for hire. This could be combined with rapid charging or inductive charging to support the uptake of new zero-emission capable taxis.

Geofencing: Where an area has implemented LEN measures, it may be possible to support this through use of geofencing technology. The idea is to use GPS technology to switch hybrid vehicles (potentially including taxis, buses and cars) into electric mode, however, this technology is still subject to development and feasibility work for its application for public transport. Prioritising LEN areas for the implementation of geofencing would enhance potential emissions reduction benefits in a LEN.

Building emissions: Providing additional funding for retrofitting of buildings and boilers within a LEN would bring more benefits and provide further incentives for an area to become a LEN.

Green infrastructure: Green infrastructure, such as green walls, pop-up parks or photo catalytic materials could be installed to complement a LEN. These can have benefits, such as enhancing the urban realm, reducing the urban heat island effect (where urban landscapes can amplify summer night-time temperatures,), a small impact on air quality, and raising awareness as part of a package of measures.

Travel planning: Development, support and guidance to establish area-wide travel and delivery and servicing plan frameworks to maximise the coordination and efficiency of the road network and reduce motorised travel demand as far as possible.

7. Monitoring

A strong strategy to measure and monitor the impacts of the LEN measures is crucial to building the case for more LENs. In addition to the use of air quality monitors, robust before and after data collection and modelling of the impact of the measures on vehicle speeds, kilometres and fleet composition will be needed to evaluate which LEN measures have proved effective and provide valuable lessons learnt for future projects.

Monitoring the popularity of the LEN measures and the impact on the local economy is also important to ensure that LENs have local support and buy-in. It is vital they are viewed as a positive contribution to the area rather than an imposition.

Dedicated surveys should be carried out to establish a baseline and allow modelling of interventions. However, TfL has some data available that can be used to make high-level assessments.

Post-implementation monitoring should also be undertaken to ensure that benefits are realised and feed information into future LEN proposals.

As well as traffic data, the following should be collected to develop a robust view on additional benefits:

- Healthy streets indicator surveys

- Collision statistics for roads within the LEN

- PERS surveys

- Numbers of pedestrians and cyclists

- Rateable property values

- Residential property values

Modelling emissions benefits
For physical changes to road space:

- Traffic modelling in line with TfL Traffic Model Auditing Process TMAP

- Use of TfL Emissions Assessment Tool to convert traffic flow and composition changes into emissions changes

For complementary/softer measures:

- Identify which trip and vehicle types will be affected and express as a proportion of total traffic in the area

- Identify what the impact will be – ie reduction in trips or change in vehicle type

- Identify the likely uptake of measures – assumptions can be made based on previous case studies and whether measures are compulsory or voluntary

- From this a likely percentage reduction in emissions for each measure can be determined

- Apply this to LAEI emission figures to give a total impact on NOx, PM and CO_2

- TfL is developing an assessment tool to assist with this

Measuring other benefits
- TfL's Valuing Urban Realm Toolkit can be used to measure and monetise other benefits to a LEN. The toolkit requires the following data, some of which may be held by TfL planning. Planning departments for individual boroughs may also hold this data:

  o The number of current and projected pedestrians (moving and static) within each link and space

  o PERS ratings (pre- and post-improvement)

- The Health Economic Assessment Tool can also be used to measure health benefits of increased walking and cycling

- A qualitative assessment against the Mayor's Transport Strategy using the Strategic Assessment Framework should be carried out. While a positive benefit to cost ratio is a factor, the overall strategic case for the project should be the more important factor, in line with best practice around appraisals. The TfL business case development manual can provide further guidance in capturing costs and benefits and drawing up the strategic case