



Report to Scrutiny

Item Number:

Contains Confidential or Exempt Information

No

Subject of Report:	Air Quality and Pollution Update
Meeting:	Scrutiny Review Panel 4: Transport 27 July 2017
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Cabinet Responsibility:	CLr Bassam Mahfouz (Transport, Environment and Leisure)
Director Responsibility:	Lucy Taylor, Executive Director, Regeneration and Housing
Brief:	To consider the information provided on transport related air pollution in the borough and make recommendations accordingly.
Recommendations:	The Panel is recommended to: <ul style="list-style-type: none">- consider and comment on the information provided on transport related air pollution in the borough;- seek feedback from the Panel Members who visited the various hotspot locations on 4 July 2017; and- make suggestions for further improvements appropriately.

1. Air Quality and Pollution

This report provides an update on air quality in the London Borough of Ealing, with particular focus on pollution sources related to transport and sets out a range of actions available to the council to reduce air pollution from transport and improve air quality across the borough.

The main pollutants of concern and their sources

The character of air pollution in London has changed dramatically over the last sixty years. Through a variety of regulatory controls on fuels and emissions, together with many advances in emissions control technologies, large reductions have been achieved in the levels of several pollutants that were previously of concern, such as smoke from coal burning, sulphur dioxide and some other toxic pollutants including benzene. However, alongside these significant achievements in reducing air pollution, *particulate matter* and *nitrogen dioxide* remain at levels where their effects on health and the natural environment require ongoing intervention at national, regional and local levels¹.

The term *particulate matter* includes a wide range of solid and liquid substances, including material of both human and natural origin, such as transport (diesel-powered road vehicle and train emissions, brake and tyre dust), bonfire smoke, mineral dust, sea salt and pollen. Some particulate pollution arises from chemical reactions that occur in the atmosphere, especially during smog episodes. Particulate matter is classified by particle size – those smaller than 10 microns (millionths of a metre) are referred to as PM₁₀; PM_{2.5} (also known as *fine* particulate matter) consists of particles smaller than 2.5 microns. PM₁₀ and PM_{2.5} represent sizes that can penetrate the human respiratory system, PM₁₀ beyond the larynx and PM_{2.5} deeper into the lungs.

Though local industrial sources have in the past led to severely increased particulate levels in the area of Acton Goods Yard in Horn Lane, the national Air Quality Objectives for PM₁₀ were met in Ealing borough again in 2016. However, particulates are still responsible for several pollution episodes a year across the London region under certain weather conditions, when High or Very High pollution indices are recorded at roadside locations in the borough.

The World Health Organisation (WHO) advises² that small particulate pollution has health impacts even at very low concentrations – indeed no threshold has been identified below which no damage to health is observed and therefore the WHO's 2005 guideline limits aim to achieve the lowest concentrations possible. Therefore although formal compliance with both UK PM₁₀ Objectives for this pollutant has now been achieved in the borough for the past two years, the health effects from even low levels are such that continuing effort to control this pollutant must remain a priority.

Nitrogen dioxide (NO₂) is a respiratory irritant gas that is produced, along with nitric oxide³ (NO) by most fuel combustion processes, principally from diesel-powered road

¹ Carbon dioxide and other 'greenhouse gases' are not included as pollutants of concern for the purposes of this report, as they are not associated with direct health impacts and are subject to controls under separate climate change legislation.

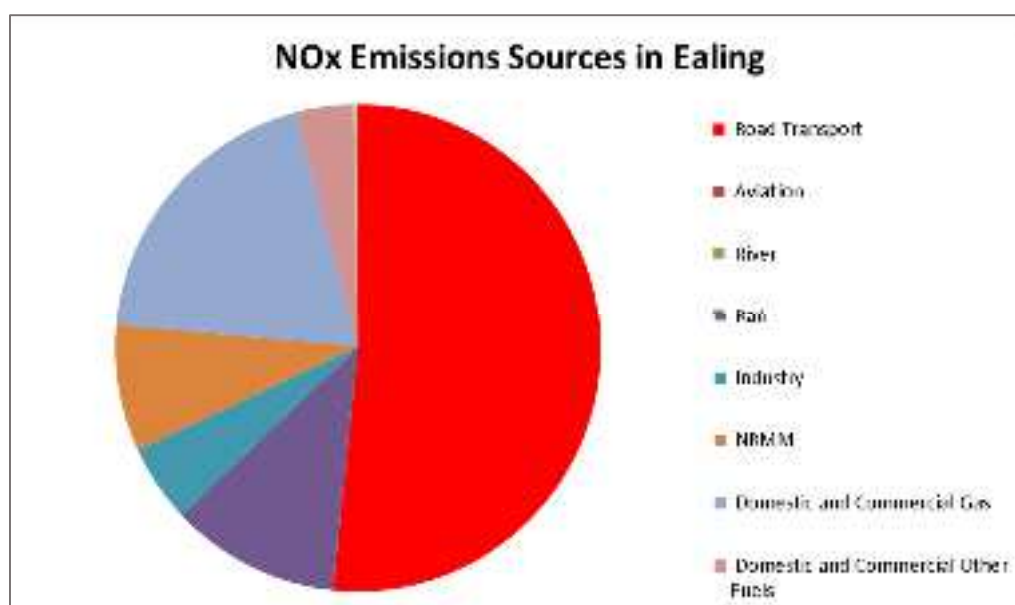
² <http://www.who.int/mediacentre/factsheets/fs313/en/>

³ The total concentration of nitrogen oxides (NO₂ and NO) is referred to as NO_x.

vehicles and trains, gas boilers and non-road mobile machinery, as well as aircraft and electricity generation. NO₂ also contributes to the formation in the atmosphere of other pollutants such as particulate matter and ozone.

Mainly as a result of the emissions of NO_x from diesel-powered road vehicles, the national and EU air quality standards for nitrogen dioxide are still a long way from being met in many parts of Greater London and in urban areas across the UK. This includes parts of Ealing borough, where reducing nitrogen dioxide pollution remains a serious challenge. The chart below illustrates that diesel emissions from road vehicles, off-road plant (NRMM) and diesel trains together make up the main source of this pollutant in the borough.

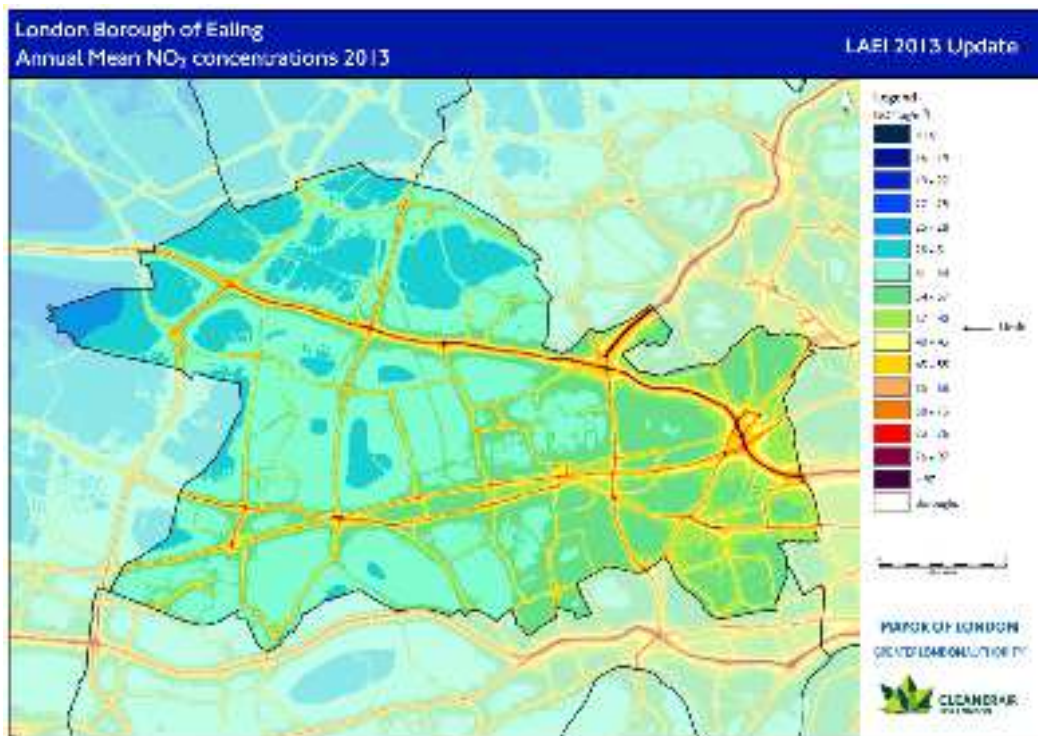
Figure 1. Sources of pollution from nitrogen oxides (from the London Atmospheric Emissions Inventory 2013)



The main roads in the borough, including the A40 (Western Avenue), A406 (North Circular Road), the A4020 (Uxbridge Road) and the roads that connect them, continue to be major sources of pollution from vehicles and result in corridors of increased nitrogen dioxide and, to some extent, particulate concentrations. As a consequence, a proportion of Ealing's residents who live, walk or cycle along these roads are at risk of exposure to air quality that does not meet the national Air Quality Objectives or EU limit values for nitrogen dioxide.

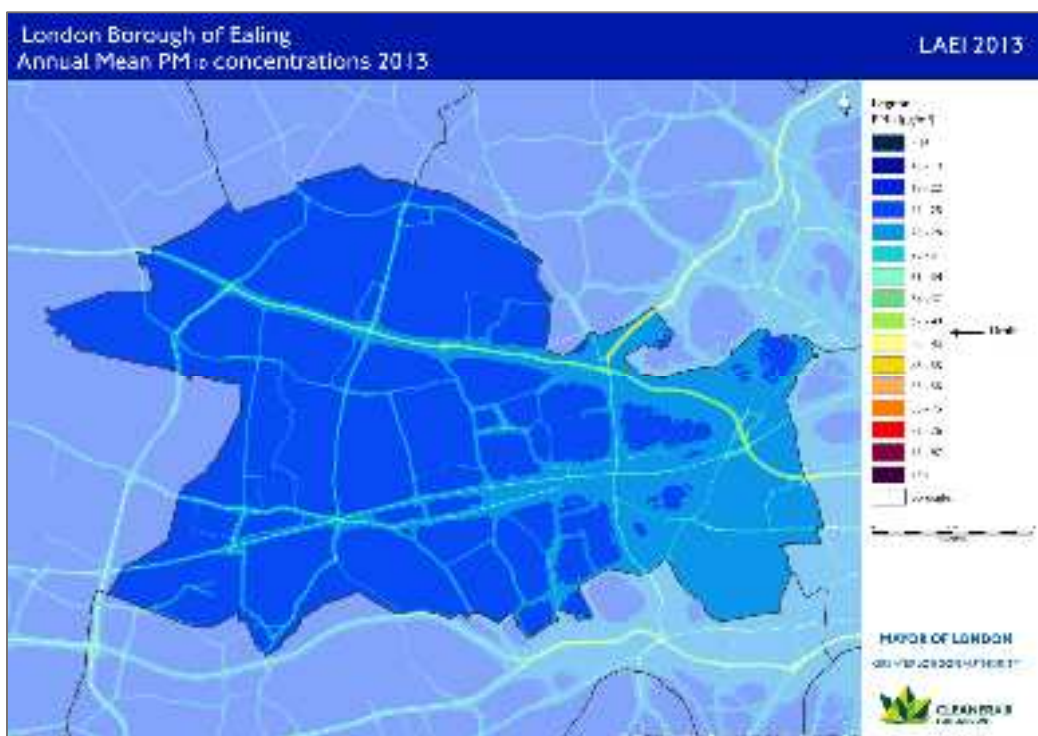
Because of the many combined sources of air pollution that exist in a large urban area, Ealing borough shares an increased background (baseline) level or concentration of air pollutants such as nitrogen dioxide and particulate matter with other parts of Greater London. As illustrated in the map below, these background concentrations increase towards Inner and Central London, so that the eastern part of the borough experiences higher pollutant levels away from roads than do similar locations in the western part. The map also shows that increased background concentrations also have the effect of increasing the severity of pollution impacts from the road network, so that locations at a greater distance from the road also risk exceeding the 40 µg m⁻³ Air Quality Objective level.

Figure 2. Modelled annual mean nitrogen dioxide concentrations for 2013 (from the *London Atmospheric Emissions Inventory*, Mayor of London/GLA, April 2017)



A similar pattern of increased background concentrations can be seen in the map below for PM₁₀.

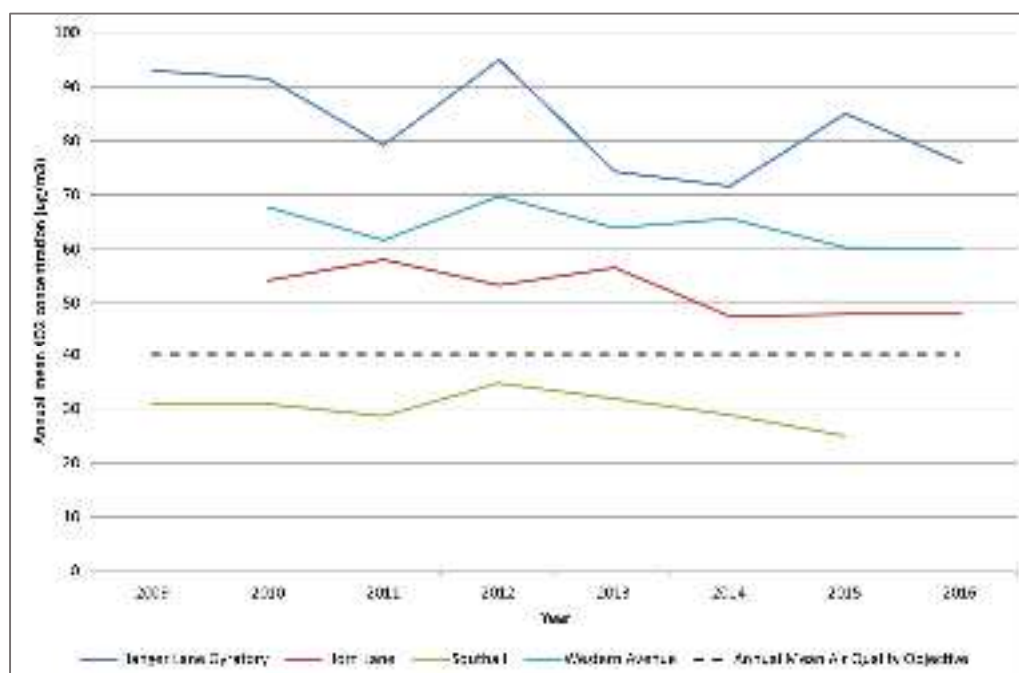
Figure 3. Modelled annual mean PM₁₀ concentrations for 2013 (from the *London Atmospheric Emissions Inventory*, Mayor of London/GLA, April 2017)



Trends in pollutant levels at current locations of poorer air quality

The network of pollution monitors operated by local authorities across London indicates that nitrogen dioxide concentrations are decreasing only slowly or have levelled off in many areas. This is also the case in Ealing borough, where the results of the automatic monitoring of this pollutant in the chart below show that the annual Air Quality Objective concentration for nitrogen dioxide of $40 \mu\text{g m}^{-3}$ continued to be exceeded at all monitoring stations close to busy roads in 2016. Both the Hanger Lane Gyratory and Western Avenue (Acton) monitoring stations recorded concentrations more than 1.5 times the objective in 2016.

Figure 4. Trends in annual mean NO_2 concentrations at automatic monitoring stations



Similar concentrations over $60 \mu\text{g m}^{-3}$ were measured using the non-automatic diffusion tube method at several residential locations close to the A40 in Perivale and Acton, in South Ealing Road, Ealing and in Spring Bridge Road, Ealing. Additionally, the hourly Air Quality Objective for nitrogen dioxide continues to be exceeded at Hanger Lane Gyratory. (For further detail of levels across the borough, please see the summary table of monitoring results given in the Appendix.)

The GLA's Air Quality Focus Areas

To assist London local authorities in prioritising their actions to improve air quality, the GLA in consultation with borough air quality officers has identified 187 Air Quality Focus Areas across Greater London. These are locations that not only exceed the EU annual mean limit value for nitrogen dioxide but are also locations with high human exposure, for example in residential areas. It is not intended to be an exhaustive list of London's hotspot locations, but indicates where the GLA believes the problem to be. The council will need to review how it can give effect to the priority indicated for these areas and in particular through the transport-related measures described below.

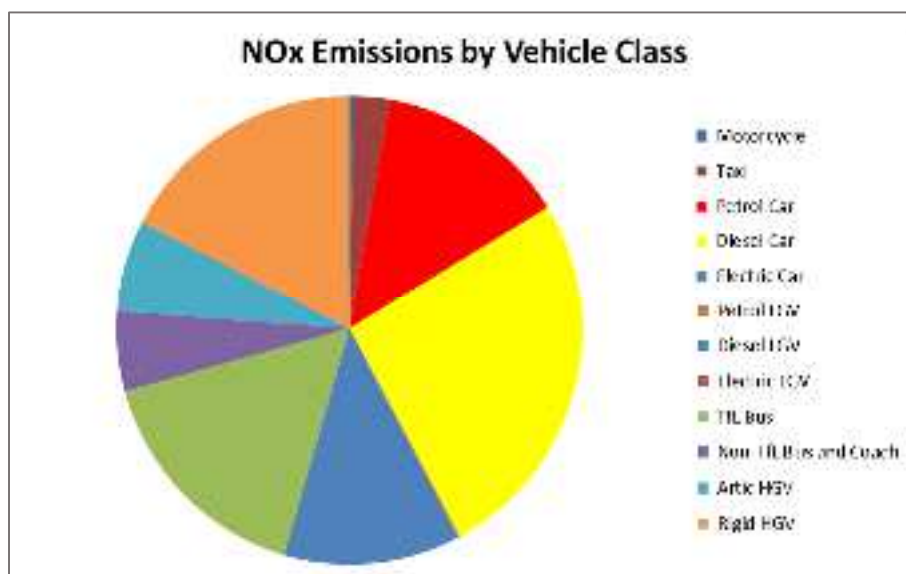
Figure 5. Map of nitrogen dioxide annual mean concentrations in the London Borough of Ealing, with the GLA Air Quality Focus Area (revised December 2016)



A review of actions available to local authorities to reduce from emissions from transport

Nitrogen dioxide pollution remains the major challenge for a large part of the borough, especially in east of the borough and in areas close to major roads and other locations where traffic is subject to congestion or to local effects such as large numbers of bus movements or 'street canyon' effects. The chart below shows the major contribution to vehicle emissions from various classes of diesel vehicles.

Figure 6. Sources of nitrogen oxides by vehicle class (from the London Atmospheric Emissions Inventory 2013)



It is very clear that a move away from diesel will be key to the improvement of air quality in London and in Ealing Borough. A recent report highlighted the contribution of the different vehicle types to the nitrogen dioxide pollution on London's most polluted roads. (Groups 1 and 2 are applicable to the London Borough of Ealing.)

Road groupings by maximum NO ₂ concentration	Number of roads	Contribution to road NO _x emissions by vehicle type					
		Petrol car	Diesel car	TfL bus	Coach	Diesel van	HGV
Group 1 (40–55 µg/m ³)	196	9%	19%	16%	11%	24%	15%
Group 2 (55–65 µg/m ³)	22	8%	16%	20%	13%	22%	15%
Group 3 (>65 µg/m ³)	3	3%	7%	43%	27%	11%	6%

(Reproduced from *UP IN THE AIR - How to Solve London's Air Quality Crisis: Part 2*, 2016)⁴

The transition from diesel will require the take-up of a range of alternative technologies. The table below from a recent *Policy Exchange* report summarises the currently available technology options for cleaning up road transport.

	Time to deployment	Decarbonisation potential	Air quality potential	Consumer cost	Infrastructure requirements
Conventional vehicles (inc. non plug in hybrids)	Fast	Medium	Medium	Low	Low
Battery electric vehicles & plug in hybrids	Medium	High	High	Medium	High
Hydrogen fuel cell electric vehicles	Slow	High	High	High	High
Biofuels	Medium	Low	Low	Low	Low
Gaseous fuels	Fast	Low	High	Low	Low
Modal shift	Varies	Medium	High	Low	Varies
Mobility as a service (e.g. car sharing)	Fast	Medium	Medium	Low	Low
Autonomous vehicles	Slow	Uncertain	Uncertain	High	High

(Reproduced from *Driving Down Emissions How to clean up road transport?*, 2017)⁴.

⁴ See Background Papers list for full details of these publications.

Transport measures proposed within the London Borough of Ealing's draft Air Quality Action Plan 2017-2022

The council has recently held a public consultation on its draft Air Quality Action Plan. Results of this exercise are currently in the process of being reviewed and a final plan will be produced for publication taking account of the representations received. Some of the proposed measures related to transport within the action plan are reproduced below for the Panel's consideration and comment.

1. *Discouraging unnecessary idling by taxis and other vehicles (e.g. through anti-idling campaigns or fines).*

Currently it is an offence to leave a vehicle engine idling unnecessarily whilst parked (under the Road Traffic (Vehicle Emissions) (Fixed Penalty) (England) regulations 2002). How proactively this legislation is enforced is a matter for the local authority in question. In Ealing borough, there will be some anti-idling signs in Horn Lane (as part of a wider project to improve air quality in that area) and at Haven Green it is written into bus contracts that they shouldn't be idling. It is proposed that the street enforcement teams are approached about including anti-idling on their rounds. It is considered at present not to be cost effective to include Fixed Penalty Notices, but instead just to raise awareness of idling.

2. *Speed Control Measures*

Research on the direct air quality impacts of lowering speed limits to 20 mph seem to indicate that concentrations will neither rise nor fall dramatically. The main benefits of 20 mph zones are considered to be related to road safety and enhancing cyclist and pedestrian experience and hence encouraging modal shift to more active travel. In Ealing, there are already a number of 20 mph area wide speed limits in operation and there are aspirations to extend these further.

3. *Increasing the proportion of electric and hydrogen vehicles and low emission vehicles in Car Clubs*

Car club members have access to a car when you need one, but without the inconvenience and cost of owning one. They can reduce congestion, reduce parking pressure, reduce pollution and encourage other sustainable transport modes. Ealing has 91 Car Club bays across the borough and 3 companies operating them. There is already a target in Ealing to incorporate Electric Vehicles into the Car Club fleet and this is being progressed. The GLA is also working towards overcoming the challenges of introducing EVs into car club fleets (namely charging infrastructure, ensuring the reliability of finding a vehicle fully charged, and supporting customers to be confident in driving and recharging EVs).

4. *Free or nominal parking charges at existing parking meters for zero emission cars.*

This provides a significant incentive for people to choose zero or low emission vehicles, especially where parking charges are high. This could be implemented in a relatively simple and low cost way (by providing exemption permits). This policy could be time

limited. This measure is currently under discussion regarding the feasibility of being taken forward.

5. *Free or low cost residential parking permits for zero emission cars.*

Islington have had a tiered parking permit system since 2008 where parking is completely free for EVs. Other boroughs also offer free or very low cost residents parking permits to EVs. This could be used as part of a package of measures to help drive the uptake of EVs. This measure is currently under discussion regarding the feasibility of being taken forward.

6. *Surcharge on diesel vehicles below Euro 6 standards for Residents and Controlled Parking Zone permits.*

This has been successfully implemented by Islington as part of a wider parking strategy based on emissions of vehicles. This measure is currently under discussion regarding the feasibility of being taken forward.

7. *Installation of residential electric charging points.*

There are complexities involved in installing residents charge points but they are also crucial in stimulating the uptake of cleaner vehicles because in London two thirds of households do not have access to off street parking. Recharging at home, at night seems to be natural recharging behaviour for plug in drivers. Westminster is talking the following approach to resident charge point installation, which is proving to be very effective:

- Use visitor parking bays, rather than residential bays, where possible. This minimises local resistance, although it does have an impact on council revenues;
- When a ratio of 3 cars to 1 charge point is reached, look at installing an additional residential EV bay on the street; and
- Use an app based booking system which restricts the amount of time a resident can spend in a residential EV bay. Following the allotted time, the vehicle must move to a standard residential bay.

In Ealing, residential charging points are being implemented as part of new developments. There is 75% funding available from the Office for Low Emission Vehicles (OLEV) which is subject to a maximum cap.

8. *Installation of rapid chargers to help enable the take up of electric taxis, cabs and commercial vehicles (in partnership with TfL and/ or OLEV).*

Rapid chargers enable batteries to be charged much more quickly, enabling longer journeys without the need for lengthy recharging stops. The government is committed to building a national charge point infrastructure and funding has been made available for this. In Ealing there are charging points at 3 car parks which are managed by Source London. Options for taxis, and commercial vehicles are currently under consideration.

9. *Reallocation of Road Space; reducing parking in accessible destinations and/ or restricting parking on congested high streets and busy roads to improve bus journey times, cycling experience and reduce emissions caused by congested traffic.*

The Local Implementation Plan includes a number of specific schemes which work towards reallocation of road space, for example the Sudbury Village scheme. This is a tri-borough scheme (Ealing, Harrow and Brent) encompassing two stations (Sudbury Hill and Sudbury Hill Harrow Station) and the parade of shops to the south. A series of interventions such as realignment of the carriageways, rationalisation of parking, and relocation of bus stops means the project will enable a greater sense of space, ease congestion, improve access for all users, but especially pedestrians and cyclists. Likewise, the ongoing project at Ealing Broadway enhances pedestrian and cycle routes from surrounding areas to the station and improves cycle parking among a range of other improvements. These sorts of schemes will continue to be identified and implemented through the LIP, and reported via LLAQM to the GLA, as well as through LIP processes.

10. *Provision of Infrastructure to support Walking and Cycling*

One of the central themes of the Local Implementation Plan is the encouragement of Walking and Cycling. With regards to walking, key actions for the council are to encourage more walking through school and workplace travel planning, implement improvements of pedestrian facilities through multimodal corridors, particularly in and around town centres, and incorporate walking routes into major schemes e.g. improving town centres, station access etc. In relation to cycling, the key actions for the Council include introducing significant cycle infrastructure developed as part of the 'Mini-Holland' bid, promoting the on-road cycle training programme, installing new secure cycle parking stands near stations and town centres and introducing cycling hubs to promote and support cycling in strategic locations throughout the borough. There are also plans to expand the off-road cycle route network, encourage more cycling through school and workplace travel planning, and broader education and awareness campaigns and promote a campaign with the health professionals to provide travel advice to health residents with health issues become more active.

School Air Quality Audits

The three primary schools in the borough listed below have been offered air quality audits under a scheme announced by the Mayor of London in January 2017.

Christ the Saviour Church of England Primary School, Ealing
Ark Byron Primary Academy, Acton⁵
Ark Priory Primary Academy, Acton

The schools were among the 50 London primary schools located in boroughs exceeding the annual Air Quality Objective for nitrogen dioxide. The aim of the audits will be to identify the most effective local solutions to improve air quality and reduce exposure by understanding the travel behaviour of parents/carers and children, and assessing the quality of walking routes.

⁵ The two Ark academies in Acton were awarded a joint audit.

Examples of solutions suggested by the GLA include running 'no idling' campaigns around the schools, installing green infrastructure e.g. trees to shield walking routes or more significant changes to road layouts. It is anticipated that by engaging with the borough and school community, the audits will also increase awareness about local air pollution. Boroughs will be able to work with schools to implement recommendations from the audits changes and to access the funding the Mayor has provided to boroughs to support local improvements to the transport network and tackle pollution in line with the Mayor's Healthy Streets Vision over the next five years.

Proposed Cleaner Transport Measures

(Extracted from the London Borough of Ealing's draft Air Quality Action Plan 2017-2022 – Table of Actions)

Action category	Action ID	Action description	Responsibility	Cost (to Borough)	Expected emissions/ concentrations benefit	Timescale for implementation	How implementation will be monitored	Further information
Cleaner transport	28	Discouraging unnecessary idling by taxis, coaches and other vehicles (e.g. through anti-idling campaigns or enforcement activity)	Transport and street enforcement with Regulatory Services	Low to Medium (depending on staff time for enforcement)	Low	2017 to look at feasibility of using street enforcement teams to provide information (not fixed penalty notices)	Public awareness of idling	Signage already in Acton Goods Yard entrance with more to be provided soon in Horn Lane. Future signage may include health messages.
Cleaner transport	30	Increasing the proportion of electric, hydrogen and ultra-low emission vehicles in Car Clubs	Transport/ Parking	Very Low to Low	Low	2017	Number of EV car club cars in the borough	WestTrans is already working on increasing EV fleet within car clubs.
Cleaner transport	30a	Increase the introduction and use of Car Clubs across the borough	Parking and Transport	Low	Low	Ongoing	Number of new car club cars/bays and no. members	Increase the car club cars/bays, members and trial different models (as per the draft WestTrans Car Club Strategy)
Cleaner transport	32	Free or discounted parking charges at existing parking meters for zero emission cars	Parking Services	Unknown	Low	n/a at present	n/a	Measure currently under discussion regarding the feasibility
Cleaner transport	33	Free or discounted residential parking permits for zero emission cars	Parking Services	Unknown	Low	n/a at present	n/a	Measure currently under discussion regarding the feasibility
Cleaner transport	34	Surcharge on diesel vehicles below Euro 6 standards for Resident and Controlled Parking Zone permits	Parking Services	Unknown	Low	n/a at present	n/a	Measure currently under discussion regarding the feasibility
Cleaner transport	35	Installation of residential electric charge points including within developments	Planning and Transport, Highways and Parking	Low to High (OLEV funding for 75%, 25% and officer time	Low to Medium depending on uptake	Short to medium term	Number of EV charge points installed in residential areas	Mainly installed as part of new developments and Ealing currently looking at signing up a

Action category	Action ID	Action description	Responsibility	Cost (to Borough)	Expected emissions/concentrations benefit	Timescale for implementation	How implementation will be monitored	Further information
				can come from LIP). Up to £25k per charge point + electricity costs, but private funding may be an option				provider. Difficulty is in designating parking for EVs. Strategy for EV Charge points in Ealing in next 12 months.
Cleaner transport	36	Installation of rapid chargers to help enable the take up of electric taxis, cabs and commercial vehicles (in partnership with TfL and/or OLEV)	Transport, Highways and Parking	High £35k per charge point + electricity costs, each	Low to Medium depending on uptake	Short to medium	Number of rapid chargers installed for commercial vehicles	
Cleaner transport	37	Reprioritisation of road space; reducing parking at some destinations and or restricting parking on congested high streets and A roads to improve bus journey times, cycling experience, and reduce emissions caused by congested traffic	Transport, Highways and Parking	Medium to High	Low to Medium	Ongoing	Number of relevant major schemes implemented	Often a balance between bus priority and cycling.
Cleaner transport	38	Provision of infrastructure to support walking and cycling	Transport, Highways and Parking	Low to High	Low to Medium depending on level of implementation	Ongoing	Walking mode share (as per target in LIP) Cycling mode share (as per target in LIP)	LIP encourages walking and cycling at its core and in particular has very strong policies and measures for encouraging cycling. Targets exceeded in both walking and cycling mode.

APPENDIX Summary table of results for 2010 to 2016 from the London Borough of Ealing's nitrogen dioxide monitoring network

Site ID (2016)	Site address	Annual Mean Concentration ($\mu\text{g.m}^{-3}$)						
		2010 ^c	2011 ^c	2012 ^c	2013 ^c	2014 ^c	2015 ^c	2016 ^c
EA6	Hanger Lane Gyrotory Air Quality Monitoring Station	91.5	79.2	95.0	74.3	70.8	85	76
EA8	Horn Lane Air Quality Monitoring Station	54.2	58.1	53.4	56.6	47.6	48	48
EI1	Western Avenue Air Quality Monitoring Station, Acton	67.7	61.7	69.8	63.9	65.7	60.3	60.1
EA01	31 Castlebar Road, Ealing, W5 2DJ	57.3	38.1	36.8	30.8	30.7	30.2	31.6
EA02	1-4 Peal Gardens, West Ealing, W13 OBA	39.1	38.8	36.0	31.1	31.6	34.0	32.6
EA03	2 Horsenden Lane South, Greenford, UB6 8AB	60.1	61.9	61.4	53.1	61.7	64.3	61.0
EA04	1-11 Clover House, Gilbert White Close, Perivale, UB6 7FH	N/A	N/A	N/A	N/A	21.7	23.3	22.8
EA05	41 Manor Road, West Ealing, W13 OJA	39.9	35.1	35.2	29.6	29.4	30.9	31.6
EA06	1 Kirn Road, West Ealing, W13 0UB	57.9	52.1	51.4	46.8	48.9	50.1	47.9
EA07	12 Balfour Road, West Ealing, W13 9TN	35.9	29.3	29.8	26.9	26.1	26.2	25.6
EA08	40 Church Road, Hanwell, W7 1DL	41.9	36.0	38.3	30.1	28.1	35.4	36.4
EA09	Brent Lodge Park, Church Road, Hanwell, W7 3BP	29.4	27.2	28.9	23.5	23.5	24.7	23.8
EA10	74a Greenford Avenue, Hanwell, W7 3QS	N/A	N/A	N/A	36.5	37.4	36.4	36.2
EA11	6 Boston Gardens, Boston Road, Hanwell, W7 2AN	39.5	37.1	36.5	33.1	32.4	33.5	34.2
EA12	200 Uxbridge Road, Hanwell, W7 3TB	N/A	N/A	N/A	52.6	54.5	49.5	49.8
EA13 ⁶	2 St Marys Avenue South, Southall, UB2 4LS	42.8	30.2	28.9	25.1	25.0	25.6	31.9
EA14	55 King Street, Southall, UB2 4DQ	N/A	63.3	56.3	47.3	47.9	48.6	48.9
EA15	18 Western Road, Southall, UB2 5DU	N/A	38.6	41.9	36.4	36.3	36.7	36.6
EA16	150 Brent Road, Southall, UB2 5LD	N/A	42.8	41.0	37.6	39.5	40.3	38.5
EA17	2 Merrick Road, Southall, UB2 4AU	45.7	43.1	38.4	32.6	30.5	31.9	33.4
EA18	Martin Court, Southbridge Way, Southall, UB2 4QW	N/A	42.3	38.6	33.2	34.1	35.1	36.7
EA19	16 Beaconsfield Road, Southall, UB1 1DW	N/A	N/A	N/A	39.6	37.6	36.8	36.3
EA20	Hambrough Primary School, South Road, Southall, UB1 1SF	53.7	47.2	44.9	41.1	39.2	37.1	39.3
EA21	11 The Broadway, Southall, UB1 3PX	66.4	69.3	60.9	55.2	54.2	53.5	52.7
EA22	3 Greenford Avenue, Southall, UB1 2AA	39.2	38.8	36.8	29.2	30.7	32.6	34.9
EA23	25 Lady Margaret Road, Southall, UB1 2RA	N/A	N/A	N/A	N/A	N/A	N/A	48.0
EA24	Clubhouse, Spike Bridges Park, West Avenue, Southall, UB1 2AR	N/A	N/A	N/A	30.4	21.7	25.0	25.7

⁶ Location changed in 2016.

Site ID (2016)	Site address	Annual Mean Concentration ($\mu\text{g}\cdot\text{m}^{-3}$)						
		2010 ^c	2011 ^c	2012 ^c	2013 ^c	2014 ^c	2015 ^c	2016 ^c
EA25	205 Windmill Lane, Greenford, UB6 9DW	44.3	40.9	37.9	33.2	33.7	34.2	35.5
EA26	2 Shadwell Drive, Northolt, UB5 6DB	42.1	32.9	32.5	27.8	28.7	28.2	28.5
EA27	32 Irving Avenue, Northolt, UB5 5LX	N/A	N/A	29.9	22.6	23.8	24.8	24.1
EA28	213 Church Road, Northolt, UB5 5BE	N/A	45.3	44.6	42.1	41.7	42.5	42.5
EA29	31 Mandeville Road, Northolt, UB5 5HF	N/A	N/A	46.2	40.2	39.6	42.5	40.0
EA30	126 Petts Hill, Northolt, UB5 4NW	42.3	40.1	40.8	32.5	35.6	37.5	37.3
EA31	1504 Greenford Road, Greenford, UB6 0HR	52.0	39.5	38.6	33.5	34.4	34.5	33.9
EA32	79 Whitton Avenue East, Greenford, UB6 0QD	44.1	30.3	30.4	26.1	26.3	26.8	27.1
EA33	914 Greenford Road, Greenford, UB6 8QN	43.2	41.8	39.5	36.5	39.1	40.6	39.3
EA34	6 Karoline Gardens, Greenford, UB6 9JP	N/A	N/A	N/A	42.2	47.5	48.8	42.2
EA35	12 Blenheim Close, Greenford, UB6 8ET	48.3	39.9	43.2	38.6	36.6	39.4	39.0
EA36	19 Runnymede Gardens, Greenford, UB6 8SX	79.3	43.3	44.7	39.4	41.2	41.9	39.1
EA37	4 Thirlmere Avenue, Perivale, UB6 8EF	41.4	38.5	35.7	31.0	32.1	31.3	31.1
EA38	Oakley House, Oakley Avenue, Ealing, W5 3SB	N/A	33.6	32.3	28.6	26.3	27.6	29.5
EA39	158 South Ealing Road, Ealing, W5 4QL	N/A	N/A	N/A	57.3	60.3	62.4	62.1
EA40	213 Northfields Ave, West Ealing, W13 9QU	N/A	N/A	N/A	37.9	34.6	35.4	36.6
EA41	12 Bond Street, Ealing, W5 5AP	54.3	57.0	49.3	50.7	47.3	49.0	48.6
EA42	8 Spring Bridge Road, Ealing, W5 2AA	68.2	71.8	66.8	61.4	61.3	62.3	61.9
EA43	27 Haven Green, Ealing, W5 2NZ	42.7	39.6	38.7	32.5	33.0	32.6	33.6
EA44	21 Haven Lane, Ealing, W5 2HZ	40.1	41.4	36.8	33.8	32.4	35.2	35.4
EA45	41-42 Haven Green, Ealing, W5 2NX	N/A	60.8	52.1	48.4	51.4	49.4	48.0
EA46	64 Hanger Lane, Ealing, W5 2JH	N/A	42.7	44.4	38.7	39.4	38.4	39.5
EA47	Fernlea House, Hanger Lane, Ealing, W5 1EF (at AQMS) (Tri)	77.9	77.1	75.0	75.1	79.6	80.3	71.5
EA48	Fernlea House, Hanger Lane, Ealing, W5 1EF (at AQMS) (Tri)	78.6	80.6	81.7	74.3	81.6	79.1	74.8
EA49	Fernlea House, Hanger Lane, Ealing, W5 1EF (at AQMS) (Tri)	76.1	78.5	79.3	74.7	79.6	79.6	73.4
EA50	25 Waverley Gardens, Park Royal, NW10 7EX	49.6	54.9	51.8	49.7	50.0	52.6	49.8
EA51	3 Iveagh Terrace, Park Royal, NW10 7SY	49.5	44.5	45.0	40.6	40.9	41.1	39.6
EA52	Rainsford Court, Rainsford Road, Park Royal, NW10 7RJ	N/A	N/A	N/A	N/A	34.4	34.5	33.6
EA53	Wendover Court, Western Avenue, Acton, W3 0TG (ground floor)	67.4	38.9	56.0	59.3	56.0	56.4	55.7
EA54	322 & 324 Western Avenue, Acton, W3 OPL (at AQMS) (Tri)	72.4	77.8	73.8	68.2	70.5	69.9	62.1
EA55	322 & 324 Western Avenue, Acton, W3 OPL (at AQMS) (Tri)	67.9	72.8	75.1	66.7	70.0	68.1	57.7

Site ID (2016)	Site address	Annual Mean Concentration ($\mu\text{g}\cdot\text{m}^{-3}$)						
		2010 ^c	2011 ^c	2012 ^c	2013 ^c	2014 ^c	2015 ^c	2016 ^c
EA56	322 & 324 Western Avenue, Acton, W3 0PL (at AQMS) (Tri)	73.1	73.5	74.5	67.6	70.6	68.8	60.9
EA57	326 Western Avenue, Acton, W3 0PL	62.6	62.5	59.9	57.3	55.6	58.1	52.1
EA58	94 North Acton Road, Park Royal, NW10 7AY	42.9	39.8	38.9	34.2	35.5	38.0	38.1
EA59	1 Shaftesbury Gardens, Park Royal, NW10 6LJ	N/A	42.1	43.4	37.8	36.5	40.2	37.7
EA60	39 Old Oak Lane, Park Royal, NW10 6EJ	56.7	54.1	51.1	50.5	53.0	54.4	49.6
EA61	165 Wells House Road, Park Royal, NW10 6EA	43.4	39.9	36.7	39.8	41.3	45.7	40.5
EA62	4 St Andrews Road, Acton, W3 7NE	50.7	43.4	42.3	35.8	40.2	40.0	38.1
EA63	98 Western Avenue, Acton, W3 7TZ	57.1	51.4	51.8	48.2	50.8	49.8	49.9
EA64	6 Western Avenue, Acton, W3 7UD	79.8	70.4	70.8	69.2	77.4	82.5	75.3
EA65	71 Old Oak Common Lane (PO), Acton, W3 7DD	56.5	53.2	49.6	48.1	47.8	49.4	49.2
EA66	205 Old Oak Road, Acton, W3 7HH	76.9	59.7	55.2	58.6	57.4	60.7	58.9
EA67	17 The Vale, Acton, W3 7SH	N/A	50.1	49.5	44.3	40.3	41.4	40.9
EA68	Warple Way, Acton, W3 0RH	N/A	N/A	N/A	43.1	39.8	38.2	39.4
EA69	Old School House, East Acton Lane, Acton, W3 7HA	37.8	40.4	35.9	29.5	31.9	30.4	31.1
EA70	88 High Street, Acton, W3 6QX	N/A	N/A	54.7	56.2	56.9	55.5	56.0
EA71	15a Church Road, Acton, W3 8QE	39.6	32.9	39.5	30.6	36.4	33.7	35.1
EA72	182 High Street, Acton, W3 9NN	64.9	67.4	48.9	59.0	53.9	55.8	54.7
EA73	26 Hawkshead Road, Chiswick, W4 1AD	N/A	N/A	N/A	27.7	26.4	26.1	27.0
EA74	44 Acton Lane, Chiswick, W4 5ED	57.2	41.8	40.1	38.4	38.0	41.1	37.8
EA75	90 Bollo Lane, Chiswick, W4 5LX	N/A	N/A	N/A	N/A	33.5	35.2	34.9
EA76	122 Gunnersbury Lane, Acton, W3 9BA	51.1	38.1	37.6	33.5	33.4	32.2	33.1
EA77	15 Lantry Court, Lexden Road, Acton, W3 9PE	33.4	30.5	31.7	26.9	25.9	25.9	26.2
EA78	156 Horn Lane, Acton, W3 6PH	49.4	46.6	40.7	42.2	42.3	42.2	43.1
EA79	317 Horn Lane, Acton, W3 0BU (at AQMS) (Tri)	59.6	59.6	54.7	51.8	48.2	52.3	51.0
EA80	317 Horn Lane, Acton, W3 0BU (at AQMS) (Tri)	57.1	56.8	47.0	50.1	50.7	51.6	51.1
EA81	317 Horn Lane, Acton, W3 0BU (at AQMS) (Tri)	58.6	54.0	53.2	51.5	46.4	52.2	50.4
EA82	5 Leamington Park, Acton, W3 6TJ	47.5	48.6	46.6	41.9	40.9	43.7	43.7
EA83	Lyra Court, Portal Way, Acton, W3 6DB	N/A	N/A	N/A	N/A	43.1	47.8	47.5
EA84	36 Wales Farm Road, Acton, W3 6UE	52.9	48.5	44.8	44.7	43.2	45.6	43.9

Notes: Exceedances of the NO₂ annual mean Air Quality Objective of 40 $\mu\text{g}\cdot\text{m}^{-3}$ are shown in **bold**. N/A = no result available. Tri = triplicate diffusion tube
NO₂ annual means in excess of 60 $\mu\text{g}\cdot\text{m}^{-3}$, indicate a potential exceedance of the NO₂ hourly mean AQS objective and are shown in **bold and underlined**.

2. Legal Implications

Ealing Council has statutory local air quality management duties under Part IV of the Environment Act, 1995, and is required to have regard to statutory guidance issued under the Act in the discharge of its duties. Under s. 364 of the Greater London Authority Act 1999, local authorities in Greater London are required to have regard to the London air quality strategy (prepared by the Mayor) in exercising any function under Part IV of the Environment Act 1995. Since April 2016 the London Local Air Quality Management (LLAQM) regime has been in operation, whereby the Mayor of London now exercises devolved powers and oversight of London local authorities in relation to their air quality management functions.

3. Financial Implications

Air quality monitoring is supported by TfL LIP funding of £0.030m. Air quality improvement projects are funded through Air Quality Grants received from Defra and also via the Mayor's Air Quality Fund, £0.087m being awarded from the 2015/16 Air Quality Grant. The operational management functions for air quality are funded from the existing budget within Safer Communities.

4. Other Implications

Ealing's Air Quality Management programme provides direct links to five of the council's priorities for the borough:

<i>Prosperous</i>	by promoting sustainable business through resource efficiency and emissions reduction
<i>Healthier</i>	by reducing the exposure of residents, visitors and workers to harmful air pollutants and by promoting healthier travel choices
<i>Cleaner</i>	by reducing the impact of dust pollution on amenity
<i>Fairer</i>	by reducing inequalities through improving air quality at pollution 'hotspots' close to residential areas
<i>Accessible</i>	by helping to promote access to sustainable transport modes

5. Background Papers

1. *Air Quality and Pollution*, Report to Scrutiny Review Panel 1 – 2015/2016: Ealing 360 Degrees, 21 January 2016. Available online at the following [link](#).
2. *London Borough of Ealing Air Quality Annual Status Report for 2016*, 4 May 2017 (pending review by GLA prior to online publication).
3. *Transport solutions for cleaner air*, Kelly, F.J. and Zhu, J.T. *Science*, 20 May 2016: Vol. 352, Issue 6288, pp. 934-936. Available online at https://kclpure.kcl.ac.uk/portal/files/61054323/Air_pollution_and_transport_in_urban_environments_kelly.pdf.
4. *London Air Quality Network – Summary Report 2016*, Mittal, L. and Fuller, G., Environmental Research Group, King's College London, June 2017. Available online at https://www.londonair.org.uk/london/reports/2016_LAQN_Summary_Report.pdf.

5. *Driving down emissions – How to clean up road transport*, Howard, R., Rooney, M., Bengherbi, Z. and Charlesworth, D., Policy Exchange, London, 26 June 2017. Available online at <https://policyexchange.org.uk/wp-content/uploads/2017/06/Driving-down-emissions-How-to-clean-up-road-ransport.pdf>.
6. *A Breath of Fresh Air*, Ealing Transition Clean Air Strategy, 30 October 2016. Available online at <https://ealingtransition.files.wordpress.com/2016/11/a-breath-of-fresh-air1.pdf>.
7. *Understanding the Health Impacts of Air Pollution in London*, Report for Transport for London and the Greater London Authority, Walton, H., Dajnak, D., Beevers, S., Williams, M., Watkiss, P. and Hunt, A., Kings College London, 14 July 2015. Available online at https://beta.london.gov.uk/sites/default/files/hiainlondon_kings_report_14072015_final.pdf
8. *UP IN THE AIR - How to Solve London's Air Quality Crisis: Part 1*, Howard, R., Policy Exchange/Capital City Foundation/Kings College London, London, 30 November 2015. Available online at <http://www.policyexchange.org.uk/images/publications/up%20in%20the%20air.pdf>.
9. *UP IN THE AIR - How to Solve London's Air Quality Crisis: Part 2*, Howard, R., Beevers, S. and Dajnak, D., Policy Exchange/Capital City Foundation/Kings College London, 23 March 2016. Available online at <https://policyexchange.org.uk/wp-content/uploads/2016/09/up-in-the-air-part-2.pdf>.

Consultation

Name of Consultee	Department	Date Sent to Consultee	Date Response Received from Consultee	Comments Appear in Report Para:
Internal				
Director	Executive Director			
Lawyer	Director of Legal Services			
Finance Officer	Director of Finance			
Councillor	Cabinet Member for			
External				
A N Other	Voluntary Organisation			
Police, etc.				

Report History

Decision Type: EITHER: Key Decision [state the date it was first entered into the Forward Plan OR Non-key Decision OR For Information (delete as applicable)		Urgency item? Yes/No (delete as applicable) [Yes if it is a general or special urgency key decision which was not included in the Forward Plan with at least one month's notice] If yes, set out the reasons both why the item was not included and a decision cannot be deferred.	
Authorised by Cabinet Member:	Date Report Drafted:	Report Deadline:	Date Report Sent:
N/A	17.07.17	17.07.17	XX.XX.XX
Report No.:	Report Author and Contact for Queries:		
	John Freeman, Regulatory Services Officer		