

LLAQM Borough Air Quality Action Matrix

1. Introduction

This Matrix outlines 38 actions for boroughs to consider delivering locally as part of their London Local Air Quality Management action planning obligations. This is not an exhaustive list, and the actions are not obligatory. It is a list of actions which utilise the levers that are under borough control which may be used to improve air quality. Where possible each action includes: examples/case studies, an assessment of the possible benefits, and a provisional assessment of high-level risks.

The actions have been assessed against the perceived ease of delivery and the possible magnitude of air quality benefits, and these scores are then multiplied to give a priority rating (the highest being 1 and the lowest 15). In reality, the ease of delivery and possible benefits will clearly vary very significantly from borough to borough and will depend on the characteristics of the individual projects; these ratings should therefore be viewed as an indicative guide only, and boroughs will obviously need to consider local conditions when assessing the potential ease and benefits of actions.

The Matrix actions are divided into 6 categories: Emissions from developments and buildings; Public health and awareness raising; Delivery servicing and freight; Borough fleet actions; Localised solutions; and Cleaner transport. This document begins with a Main Table, summarising the actions and their priority level ratings. Each action within this Main Table contains internal links which lead to more detailed information on the action.

The Matrix will be a living document; it will be refreshed every two years, at which time actions may be added, removed or modified.

2. Key

Ease of Delivery	Magnitude of Air Quality Benefits	Priority Level
Straightforward= 1	High = ①	<i>Ease of Delivery x Magnitude of AQ Benefits = Priority Level Score</i>
Medium = 2-4	Medium = ②	High = 1- 5
Most Difficult = 5	Low = ③	Medium = 6-10
		Low = 11- 15

3. Main Table

Theme	Action #	Measure (click on the internal links below to find more detail on each measure)	Ease of Delivery	Magnitude of Air Quality Benefits	Priority Level
Emissions from developments and buildings	1	Ensuring emissions from construction are minimised	2	n/a (Benefits potentially significant but unquantifiable)	2
Emissions from developments and buildings	2	Ensuring enforcement of Non Road Mobile Machinery (NRMM) air quality policies	2	n/a (Benefits potentially significant but unquantifiable)	2
Emissions from developments and buildings	3	Enforcing CHP and biomass air quality policies	2	n/a (Benefits potentially significant but unquantifiable)	2
Emissions from developments and buildings	4	Enforcing Air Quality Neutral policies	2	n/a (Benefits potentially significant but unquantifiable)	2
Emissions from	5	Ensuring adequate, appropriate, and well located green space and infrastructure is included in new developments	2	n/a (Benefits potentially	2

Theme	Action #	Measure (click on the internal links below to find more detail on each measure)	Ease of Delivery	Magnitude of Air Quality Benefits	Priority Level
developments and buildings				significant but unquantifiable)	
Emissions from developments and buildings	6	Ensuring that Smoke Control Zones are appropriately identified and fully promoted and enforced	2	2	4
Emissions from developments and buildings	7	Promoting and delivering energy efficiency retrofitting projects in workplaces and homes using the GLA RE:NEW and RE:FIT programmes to replace old boilers /top-up loft insulation in combination with other energy conservation measures.	3	1	3
Public health and awareness raising	8	Ensure that Directors of Public Health (DsPHs) have been fully briefed on the scale of the problem in your local authority area; what is being done, and what is needed. A briefing should be provided.	1	n/a (Benefits potentially significant but unquantifiable)	1
Public health and awareness raising	9	Public Health Teams should be supporting engagement with local stakeholders (businesses, schools, community groups and healthcare providers). They should be asked for their support via the DsPH when projects are being developed.	2	n/a (Benefits potentially significant but unquantifiable)	2
Public health and awareness raising	10	Director of Public Health to have responsibility for ensuring their Joint Strategic Needs Assessment (JSNA) has up to date information on air quality impacts on the population	1	n/a (Benefits potentially significant but unquantifiable)	1

Theme	Action #	Measure (click on the internal links below to find more detail on each measure)	Ease of Delivery	Magnitude of Air Quality Benefits	Priority Level
Public health and awareness raising	11	Strengthening co-ordination with Public Health by ensuring that at least one Consultant-grade public health specialist within the borough has air quality responsibilities outlined in their job profile (as part of a wider role, not a dedicated air quality post)	2	n/a (Benefits potentially significant but unquantifiable)	2
Public health and awareness raising	12	Director of Public Health to sign off Statutory Annual Status Reports and all new Air Quality Action Plans	1	n/a (Benefits potentially significant but unquantifiable)	1
Public health and awareness raising	13	Ensure that the Head of Transport has been fully briefed on the Public Health duties and the fact that all directors (not just Director of Public Health) are responsible for delivering them, as well as on air quality opportunities and risks related to transport in the borough. Provide a briefing which can be disseminated amongst the Transport team.	1	n/a (Benefits potentially significant but unquantifiable)	1
Public health and awareness raising	14	Engagement with businesses	2	3	6
Public health and awareness raising	15	Promotion of availability of airTEXT	3	3	9
Public health and awareness	16	Encourage schools to join the TfL STARS accredited travel planning programme by providing information on the benefits to schools and supporting the	2	2	4

Theme	Action #	Measure (click on the internal links below to find more detail on each measure)	Ease of Delivery	Magnitude of Air Quality Benefits	Priority Level
raising		implementation of such a programme			
Public health and awareness raising	17	Air quality at schools	2	3	6
Delivery servicing and freight	18	Update local authority Procurement policies to include a requirement for suppliers with large fleets to have attained silver Fleet Operator Recognition Scheme (FORS) accreditation	1	3	3
Delivery servicing and freight	19	Update Procurement policies to ensure sustainable logistical measures are implemented (and include requirements for preferentially scoring bidders based on their sustainability criteria)	2	3	6
Delivery servicing and freight	20	Re-organisation of freight to support consolidation (or micro-consolidation) of deliveries, by setting up or participating in new logistics facilities, and/or requiring that council suppliers participate in these	3	3	9
Delivery servicing and freight	21	Virtual Loading Bays and priority loading for ultra-low emission delivery vehicles	4	1	4
Borough fleet actions	22	Join the Fleet Operator Recognition Scheme (FORS) for the borough's own fleet and obtain Gold accreditation	2	2	4
Borough fleet actions	23	Increasing the number of hydrogen, electric, hybrid, bio-methane and cleaner vehicles in the boroughs' fleet	4	3	12

Theme	Action #	Measure (click on the internal links below to find more detail on each measure)	Ease of Delivery	Magnitude of Air Quality Benefits	Priority Level
Borough fleet actions	24	Accelerate uptake of new Euro VI vehicles in borough fleet	4	3	12
Borough fleet actions	25	Smarter Driver Training for drivers of vehicles in Borough Own Fleet i.e. through training of fuel efficient driving and providing regular re-training of staff	1	3	3
Localised solutions	26	Green Infrastructure	2	2	4
Localised solutions	27	Low Emission Neighbourhoods (LENs)	4	1	4
Cleaner transport	28	Discouraging unnecessary idling by taxis, coaches and other vehicles (e.g. through anti-idling campaigns or enforcement activity)	2	2	4
Cleaner transport	29	Speed control measures e.g. lowering the legal speed limit to 20mph in built up residential areas	4	2	8
Cleaner transport	30	Increasing the proportion of electric, hydrogen and ultra low emission vehicles in Car Clubs	2	2	4
Cleaner transport	31	Very Important Pedestrian Days (e.g. no vehicles on certain roads on a Sunday) and similar initiatives	2	2	4
Cleaner transport	32	Free or discounted parking charges at existing parking meters for zero emission cars	2	2	4
Cleaner transport	33	Free or discounted residential parking permits for zero emission cars	2	3	6

Theme	Action #	Measure (click on the internal links below to find more detail on each measure)	Ease of Delivery	Magnitude of Air Quality Benefits	Priority Level
Cleaner transport	34	Surcharge on diesel vehicles below Euro 6 standards for Resident and Controlled Parking Zone permits	2	3	6
Cleaner transport	35	Installation of residential electric charge points	3	1	3
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)	2	2	4
Cleaner transport	37	Reallocation of road space; reducing parking at 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	3	2	6
Cleaner transport	38	Provision of infrastructure to support walking and cycling	4	1	4

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Theme	Emissions from developments and buildings
Action	1. Ensuring emissions from construction are minimised
Examples	<p>During construction, developers and contractors should follow the guidance set out in The Control of Dust and Emissions during Construction and Demolition SPG: carry out an Air Quality and Dust Risk Assessment, submit an Air Quality and Dust Management Plan for the construction, implement mitigation measures and carry out site monitoring.</p> <p>Construction logistics plans are also required for larger developments, and enforcement is required to ensure that they are implemented.</p> <p>Some boroughs have construction liaison/working groups which involves local residents who could report/feedback on air quality issues arising from construction.</p> <p>The GLA is producing a Template Air Quality SPG to make it easy for boroughs to ensure that this and other air quality priorities are placed within local Planning policy.</p>
Web Links	https://www.london.gov.uk/sites/default/files/Dust%20and%20Emissions%20SPG%2008%20July%202014_0.pdf
General Benefits	<ul style="list-style-type: none"> • Minimise exposure of residents near developments. • Avoids unnecessary emissions from construction sites.
Emissions & Concentrations	A reduction will be achieved compared with the situation without the policy. Reduction depends on the amount of development and their ambition in going beyond compliance.
Awareness Raising Benefits	Encourages planners, developers and local authorities to think about air quality through every stage of the development and construction process.
Risks	Difficulty ensuring policies are being followed during construction activities. Enforcement is required.
Cost (to Borough)	Low-Medium (staff resource is required)
Inner, Outer, Central or All of the Above	All
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	n/a
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	2
Priority Justification	All measures relating to planning are considered straightforward to implement with very low risks. However, there are reasonably significant resource implications to enforce these policies. Direct emissions and concentrations are difficult to quantify and are considered not applicable.

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Theme	1. Emissions from Developments and Buildings
Action	2. Ensuring enforcement of Non Road Mobile Machinery (NRMM) air quality policies
Examples	<p>During construction, developers and contractors should follow the guidance set out in The Control of Dust and Emissions during Construction and Demolition SPG: use non-road mobile machinery (NRMM) that complies with the new Ultra Low Emissions Zone (ULEZ) according to the period of construction and the location.</p> <p>Clear emission limits, lists of equipment, and guidance will be provided by the GLA, making this simple to enforce at the borough level.</p>
Web Links	https://www.london.gov.uk/sites/default/files/Dust%20and%20Emissions%20SPG%208%20July%202014_0.pdf
General Benefits	<ul style="list-style-type: none"> • Minimise exposure of residents near developments from the onset. • Avoids unnecessary emissions from construction sites.
Emissions & Concentrations	<p>Replacing an average size piece of NRMM equipment ($37 \leq kW < 75$) meeting Stage II emission standards operating for the whole year by same size equipment meeting Stage IIIA emission standards would reduce NO_x emissions by 33%, with no change in PM_{10} emissions.</p> <p>Replacing an average size piece of NRMM equipment ($37 \leq kW < 75$) meeting Stage II emission standards operating for the whole year by same size equipment meeting Stage IIIB emission standards would reduce NO_x and PM_{10} emissions by 53% and 94% respectively.</p>
Awareness Raising Benefits	<ul style="list-style-type: none"> • Encourages awareness of this little known but significant emissions source.
Risks	<ul style="list-style-type: none"> • Difficulty ensuring policies are being followed during construction activities.
Cost (to Borough)	Low-Medium some enforcement required, tools are being developed by the GLA to assist
Inner, Outer, Central or All of the Above	All - tighter standards for central and inner
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	n/a
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	2
Priority Justification	All measures relating to planning are considered straightforward to implement with very low risks. However, there are reasonably significant resource implications to enforce these policies. Direct emissions and concentrations are difficult to quantify and are considered not applicable.

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Theme	1. Emissions from Developments and Buildings
Action	3. Enforcing CHP and biomass air quality policies
Examples	<p>Developers should select plant that meets the standards for emissions from combined heat and power and biomass plants set out in the Sustainable Design and Construction SPG (Appendix 7) and use ultra-low NO_x boilers.</p> <p>The GLA is producing a Template Air Quality SPG to make it easy for boroughs to ensure that this and other air quality priorities are placed within local Planning policy.</p>
Web Links	https://www.london.gov.uk/sites/default/files/Sustainable%20Design%20%26%20Construction%20SPG.pdf
General Benefits	<ul style="list-style-type: none"> Minimise exposure to residents of new developments and helps to prevent onsite energy generation from becoming a major new source of emissions in London.
Emissions & Concentrations	<p>Use of equipment meeting GLA emission standards for APEC A band (0.7 g/kWh) for gas-fired (spark ignition) CHP plant rather than the RHI emission standards would reduce NO_x emissions by 30%.</p> <p>If the GLA emission standards for APEC B/C band (0.3 g/kWh) are used, it would reduce NO_x emissions by 70%.</p> <p>Replacing biomass boilers using 72GJ per year meeting RHI emission standards by equipment meeting GLA emission standards for properties in APEC A band would reduce NO_x and PM₁₀ emissions by 33%.</p> <p>If the GLA emission standards for APEC B/C band are used, it would reduce NO_x and PM₁₀ emissions by 53% and 80% respectively compared with the RHI emission limits.</p>
Awareness Raising Benefits	<ul style="list-style-type: none"> Encourages planners, developers and local authorities to think about air quality through every stage of the development process.
Risks	<ul style="list-style-type: none"> Lack of effective planning enforcement can limit effectiveness.
Cost (to Borough)	Low-Medium (staff resource is required)
Inner, Outer, Central or All of the Above	All
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	n/a
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	2
Priority Justification	All measures relating to planning are considered straightforward to implement with very low risks. However, there are reasonably significant resource implications to enforce these policies. Direct emissions and concentrations are difficult to quantify and are considered not applicable.

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Theme	1. Emissions from Developments and Buildings	
Action	4. Enforcing Air Quality Neutral policies	
Examples	<p>Sustainable Design and Construction SPG (air quality neutral guidance, Appendices 5 & 6 of the SPG).</p> <p>Developers are to design their schemes so that they are at least 'air quality neutral', meeting the minimum emission benchmarks for buildings' operation and transport. If the benchmarks are not met after mitigation measures have been implemented, the developer will be required to off-set emissions off-site.</p> <p>The GLA is producing a Template Air Quality SPG to make it easy for boroughs to ensure that this and other air quality priorities are placed within local Planning policy.</p>	
Web Links	<p>https://www.london.gov.uk/sites/default/files/Sustainable%20Design%20%26%20Construction%20SPG.pdf</p> <p>https://www.london.gov.uk/sites/default/files/GLA%20AQ%20Neutral%20Policy%20Final%20Report%20J1605%20290513.pdf</p>	
General Benefits	<ul style="list-style-type: none"> • Minimise exposure to residents of new developments from the onset. • Can provide a revenue stream for borough air quality projects. 	
Emissions & Concentrations	A reduction will be achieved compared with situation without the policy. Reduction depends on the amount of development and their ambition in going beyond compliance.	
Awareness Raising Benefits	<ul style="list-style-type: none"> • Encourages planners, developers and local authorities to think about air quality through every stage of the development process. 	
Risks	<ul style="list-style-type: none"> • Some boroughs where air quality is not a major issue may feel that policies are not relevant. 	
Cost (to Borough)	Low-Medium (staff resource is required)	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	n/a	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	2	
Priority Justification	All measures relating to planning are considered straightforward to implement with very low risks. However, there are reasonably significant resource implications to enforce these policies. Direct emissions and concentrations are difficult to quantify and are considered not applicable.	

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Theme	1. Emissions from Developments and Buildings	
Action	5. Ensuring adequate, appropriate, and well located green space and infrastructure is included in new developments	
Examples	<p>Green space on new developments can provide a range of important functions. It can for example provide a way to set the building back from the kerbside thereby reducing exposure of occupants. Other green infrastructure such as trees, hedges and green walls can also provide a barrier between roads and new developments.</p> <p>When providing green amenity space on new developments, air quality should be considered, and these areas should be set back from pollution sources. For example, roof gardens or play areas away from main roads should be strongly encouraged in areas of poor air quality. Air quality officers should work closely with Parks officers on major planning applications to ensure that opportunities are maximised.</p>	
Web Links	n/a	
General Benefits	<ul style="list-style-type: none"> Numerous co-benefits from green infrastructure such as climate change adaptation, sustainable urban drainage, reduction of the urban heat island effect, biodiversity and quality of life. 	
Emissions & Concentrations	It is not possible to quantify this measure. But a number of studies have suggested that green infrastructure can play significant role in reducing exposure to pollution.	
Awareness Raising Benefits	<ul style="list-style-type: none"> Very visible so the benefits in terms of awareness are significant. 	
Risks	<ul style="list-style-type: none"> As responsibility for green space sits primarily with Parks it may not be prioritised as an air quality issue and resource-constraints may limit joint working. 	
Cost (to Borough)	Low-Medium (staff resource is required)	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	LT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	n/a	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	2	
Priority Justification	All measures relating to planning are considered straightforward to implement with very low risks. However, there are reasonably significant resource implications to enforce these policies. Direct emissions and concentrations are difficult to quantify and are considered not applicable.	

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Theme	1. Emissions from Developments and Buildings
Action	6. Ensuring that Smoke Control Zones are fully promoted and enforced
Examples	<p>Brighton and Hove City Council: The council introduced a project which was designed to increase public awareness of the environmental impacts of solid-fuel combustion and the provisions of the Clean Air Act (CAA) (Beattie & Laxen, 2013). The main problem with the project for raising awareness of wood burning was the "cottage scale" of the local solid-fuel industry. Most installers and fuel suppliers are small businesses and many have other business interests. The industry is also highly seasonal. These factors made it more difficult to engage effectively with the industry. The projects promoting smoke control zones produce material which could be very reproducible and lessons learnt are likely to apply to many local authorities where small-scale solid-fuel use is increasing. As a result of this project, awareness has increased and a smoke control area map has been provided on Brighton and Hove's website.</p> <p>Wandsworth Council: In 2012 the council passed a new smoke control order for the borough, designed to make the policies clearer and easier to follow http://www.wandsworth.gov.uk/news/article/11046/new_smoke_control_order</p>
Web Links	<p>http://uk-air.defra.gov.uk/assets/documents/reports/cat05/1306261052_Examples_of_Air_Quality_Action_Plan_Measures_J1255_25June13.pdf</p> <p>http://ww3.brighton-hove.gov.uk/index.cfm?request=c1261934&node=20601</p>
General Benefits	<ul style="list-style-type: none"> Projects promoting smoke control zones produce material which could be very reproducible and lessons learnt are likely to apply to many local authorities where small-scale solid-fuel use is increasing.
Emissions & Concentrations	To assess the potential benefit, the impact of all coal and oil emissions from domestic combustion (from the 2015 LAEI projection) have been considered. If these emissions were removed, NO _x and PM ₁₀ emissions from domestic combustion would be reduced by 1.5% and 2.9% respectively.
Awareness Raising Benefits	<ul style="list-style-type: none"> Potential to produce documents that could be used for local authorities to lead by example.
Risks	<ul style="list-style-type: none"> Most installers and fuel suppliers are small businesses. The industry is usually highly seasonal. This makes it more difficult to engage effectively with the industry (Beattie & Laxen, 2013). Projects are likely to have had more influence on particulate concentrations rather than those of nitrogen dioxide (Beattie & Laxen, 2013).
Cost (to Borough)	Low - The smoke controlled wood burning project in Brighton and Hove was awarded a grant of £15,000 (Beattie & Laxen).
Inner, Outer, Central or All of the Above	All
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	2
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	4
Priority Justification	Effective delivery will require enforcement, which can be resource-intensive. Air quality impacts could be low to moderate. This results in a priority scoring of 4.

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Theme	1. Emissions from Developments and Buildings
Action	7. Promoting and delivering energy efficiency retrofitting projects in workplaces and homes using the GLA RE:NEW and RE:FIT programmes to replace old boilers /top-up loft insulation in combination with other energy conservation measures.
Examples	Both programmes are tried and tested and have delivered substantial carbon and energy savings in London. London Borough of Hackney: Residential and commercial boiler emissions make up about 39% of emissions of oxides of nitrogen in Hackney (Hackney Council). Hackney Council and Hackney Homes operate over 18,000 domestic and commercial boilers and CHP plants in the borough, replacing about 700 individual boilers every year. Standard boilers and CHP plants emit significantly more nitrogen dioxide than low nitrogen dioxide burning models. The Council, and Hackney Homes will therefore ensure that, for all new buildings and during replacement works: <ul style="list-style-type: none"> • Standard gas fired boilers meet a 40mg/kWh NO_x emissions standard where available. • New and replacement CHP plants, gas engines, etc. will not result in a worsening of local air quality or lead to the failure of EU air quality objectives and will conform with Greater London Authority guidance for CHP emissions.
Web Links	https://consultation.hackney.gov.uk/chief-executives-office/air-quality-action-plan-2014-2018/supporting_documents/Air%20Quality%20Action%20Plan%20%20Consultation https://www.london.gov.uk/priorities/environment/energy/re-new-home-energy-efficiency
General Benefits	<ul style="list-style-type: none"> • Energy savings related with updating boiler efficiency. • Cost savings as a result of energy savings. • Direct funding schemes where consumers don't have to weigh up several years of repayments and are not restricted in the measures to implement due to the financial package being offered, would accelerate action.
Emissions & Concentrations	Boiler scrappage scheme, responsible for over 12,000 boiler replacements in London, saved 15.6t/y NO _x .
Awareness Raising Benefits	<ul style="list-style-type: none"> • Will raise awareness about the connection between gas boilers and air quality, as well as about the benefits of updating boilers and encouraging more people to do so.
Risks	<ul style="list-style-type: none"> • People are unlikely to want to make the effort of organising replacing a boiler that they believe is working 'fine'. Large incentives will probably be needed for the public to be inclined to update their boilers.
Cost (to Borough)	None – Zero costs to local authorities expected (Par Hill Research Ltd, 2013)
Inner, Outer, Central or All of the Above	All
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	3
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	1
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	3
Priority Justification	Delivery of these tried and tested initiatives is relatively straightforward, however, it does require borough time-resource, and the responsibility for a project such as this falls outside the remit of the air quality team so it has been awarded an ease score of 3. However it would be very valuable to ensure that energy project leads and AQ staff are joined up to maximise the benefits and exposure of such a scheme. The emissions benefits can be very significant, hence the benefits score of 1.

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Theme	2. Public Health and Awareness Raising	
Action	8. Ensure that Directors of Public Health (DPHs) have been fully briefed on the scale of the problem in your local authority area; what is being done, and what is needed. A briefing should be provided.	
Examples	n/a	
Web Links	http://uk-air.defra.gov.uk/assets/documents/reports/cat05/1306261052_Examples_of_Air_Quality_Action_Plan_Measures_J1255_25June13.pdf	
General Benefits	<ul style="list-style-type: none"> • Helps to ensure DPHs are fully informed of the scale of the problem and that this has been documented. • Helps to ensure that DPHs take responsibility for delivery on air quality, and are supporting and advocating the air quality work programme. • Low resource (only requires a briefing). 	
Emissions & Concentrations	Any reduction in emissions and concentrations resulting from this measure would be indirect and unquantifiable, but enhanced co-ordination will benefit all air quality initiatives.	
Awareness Raising Benefits	<ul style="list-style-type: none"> • Helps to encourage greater visibility of air quality within local authority public health teams. 	
Risks	<ul style="list-style-type: none"> • No risks associated with this measure. 	
Cost (to Borough)	Low	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	ST	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	1	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	n/a	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	1	
Priority Justification	The direct emissions and concentrations are difficult to quantify and are considered not applicable.	

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Theme	2. Public Health and Awareness Raising	
Action	9. Public Health should be supporting engagement with local stakeholders (businesses, schools, community groups and healthcare providers). They should be asked for their support via the DPH when projects are being developed.	
Examples	<p>The City of London Corporation: Joint Health and Wellbeing Strategy has identified improving air quality as a key priority to improve the health and wellbeing of City residents and workers. The City Corporations aim of strengthening coordination between air quality and Public Health has been addressed by including public health in the revised Air Quality strategy 2015 – 2020. In addition to implementing policies to improve local air quality, the 2015 strategy also outlines a number of measures to reduce the impact of current levels of air pollution on public health.</p>	
Web Links	http://uk-air.defra.gov.uk/assets/documents/reports/cat05/1306261052_Examples_of_Air_Quality_Action_Plan_Measures_J1255_25June13.pdf	
General Benefits	<ul style="list-style-type: none"> • Ensures enhanced co-ordination and use of all available communication channels. • Inclusion of public health can lend significant weight to campaigns and communications. 	
Emissions & Concentrations	Any reduction in emissions and concentrations resulting from this measure would be indirect and unquantifiable, but enhanced co-ordination will benefit all air quality initiatives.	
Awareness Raising Benefits	<ul style="list-style-type: none"> • Benefits may be seen as a result of awareness of the impact of poor air quality on health. • Possibility of increased support for measures to improve air quality. 	
Risks	<ul style="list-style-type: none"> • No significant risks associated with this measure. 	
Cost (to Borough)	Low	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	ST	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	n/a	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	2	
Priority Justification	The direct emissions and concentrations are difficult to quantify and are considered not applicable.	

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Theme	2. Public Health and Awareness Raising	
Action	10. DPHs to have responsibility for ensuring their Joint Strategic Needs Assessment (JSNA) has up to date information on air quality impacts on the population	
Examples	<p>Sixteen boroughs have incorporated air quality as a “key theme” in their JSNAs, including Camden, Islington, Brent, Bromley, Ealing, Greenwich, City of London and Hackney, Haringey, Lewisham, Merton, Tower Hamlets, Waltham Forest, Westminster, Richmond upon Thames and Hounslow.</p> <p>Seven boroughs have mentioned air quality in their JSNA but not as a key theme: Hammersmith and Fulham, RBKC, Barking and Dagenham, Harrow, Wandsworth, Barnet and Kingston upon Thames.</p> <p>Based on the most recent JSNAs available online (as of 2/02/15), ten boroughs have little or no mention of air quality in their JSNAs, including Lambeth, Southwark, Bexley, Croydon, Enfield, Havering, Hillingdon, Newham, Redbridge and Sutton. This could be due to air quality issues being incorporated in a separate report or the attitude that air quality is considered on its own in the LAQM review process, however this measure aims to integrate air quality in one streamlined JSNA procedure.</p>	
Web Links	http://www.lewishamsna.org.uk/health-inequalities/air-quality	
General Benefits	<ul style="list-style-type: none"> • Improvements in understanding of public health challenges and opportunities. • Financial savings to NHS. • Minimal cost. 	
Emissions & Concentrations	Any reduction in emissions and concentrations resulting from this measure would be indirect and unquantifiable, but enhanced co-ordination will benefit all air quality initiatives.	
Awareness Raising Benefits	<ul style="list-style-type: none"> • Public Health and local health providers are a trusted voice on the issue - messages are likely to have more impact coming from them. 	
Risks	<ul style="list-style-type: none"> • No risks associated with this measure. 	
Cost (to Borough)	Low	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	ST	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	1	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	n/a	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	1	
Priority Justification	The direct emissions and concentrations are difficult to quantify and are considered not applicable.	

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Theme	2. Public Health and Awareness Raising
Action	11. Strengthening co-ordination with Public Health by ensuring that at least one Consultant-grade public health specialist within the borough has air quality responsibilities outlined in their job profile (as part of a wider role, not a dedicated air quality post).
Examples	London Borough of Islington: The Evidence Hub is a partnership between the local NHS and Islington Council and forms their Joint Strategic Needs Assessment. It brings together information held across different organisations into one accessible place. This interactive tool provides an example of involving Public Health specialists in the production of information on air quality, and outlining air quality responsibilities in their job profile.
Web Links	http://www.camden.gov.uk/ccm/content/social-care-and-health/health-in-camden/joint-strategic-needs-assessment-2012/chapter-22---Air-Quality/ http://www.islington.gov.uk/publicrecords/library/Environmental-protection/Information/Factsheets/2012-2013/(2013-01-31)-Air-Quality-Factsheet.pdf
General Benefits	<ul style="list-style-type: none"> • Helps to ensure that air quality is prioritised and that work on this agenda is recognised and rewarded within public health teams. • Relatively low cost – the requirements could be added to an existing position (rather than requiring a dedicated post) • Helps to ensure that public health outcomes are met. Not only the air quality outcome but many of the measures to improve air quality are also proven to be effective in delivering a range of public health benefits in addition to air quality.
Emissions & Concentrations	Any reduction in emissions and concentrations resulting from this measure would be indirect and unquantifiable, but enhanced co-ordination will benefit all air quality initiatives.
Awareness Raising Benefits	<ul style="list-style-type: none"> • Public Health and local health providers are a trusted voice of the issue - messages are likely to have more impact coming from them.
Risks	<ul style="list-style-type: none"> • Ineffective engagement with Director of Public Health could lead to air quality being seen as onerous burden rather than a real Public Health issue, introducing delays in air quality work.
Cost (to Borough)	Low
Inner, Outer, Central or All of the Above	All
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	ST
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	n/a
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	2
Priority Justification	The direct emissions and concentrations are difficult to quantify and are considered not applicable.

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Theme	2. Public Health and Awareness Raising	
Action	12. Director of Public Health to sign off Statutory Annual Status Reports and all new Air Quality Action Plans	
Examples	When Annual Status Reports and Air Quality Action Plans are finalised they should be formally signed off by the DPH, to ensure that the DPH is taking ownership of air quality issues.	
Web Links	n/a	
General Benefits	<ul style="list-style-type: none"> Helps to ensure DPHs take formal responsibility for delivery of air quality improvements. 	
Emissions & Concentrations	Any reduction in emissions and concentrations resulting from this measure would be indirect and unquantifiable, but enhanced co-ordination will benefit all air quality initiatives.	
Awareness Raising Benefits	<ul style="list-style-type: none"> Adds additional health focus to these documents. 	
Risks	<ul style="list-style-type: none"> No major risks, although it will require an additional amount of officer time and may slightly delay publication of these reports. 	
Cost (to Borough)	Low	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	ST	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	1	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	n/a	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	1	
Priority Justification	The direct emissions and concentrations are difficult to quantify and are considered not applicable.	

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Theme	2. Public Health and Awareness Raising	
Action	13. Ensure that the Head of Transport has been fully briefed on the Public Health duties and the fact that all directors (not just DPHs) are responsible for delivering them, as well as on air quality opportunities and risks related to transport in the borough. Provide a briefing which can be disseminated amongst the Transport team.	
Examples	n/a	
Web Links	n/a	
General Benefits	<ul style="list-style-type: none"> Helps to ensure enhanced coordination with transport and minimises the risk that opportunities to improve air quality within transport projects are missed. 	
Emissions & Concentrations	Any reduction in emissions and concentrations resulting from this measure would be indirect and unquantifiable, but enhanced co-ordination will benefit all air quality initiatives.	
Awareness Raising Benefits	<ul style="list-style-type: none"> Helps to ensure joined up communications on smarter travel and air quality initiatives. Helps to ensure air quality is considered when transport infrastructure projects are being developed. 	
Risks	<ul style="list-style-type: none"> No major risks 	
Cost (to Borough)	Low	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	ST	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	1	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	n/a	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	1	
Priority Justification	Straightforward to implement and although benefits are impossible to quantify they could be significant.	

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Theme	2. Public Health and Awareness Raising
Action	14. Engagement with businesses
Examples	<p>The City of London Corporation: has been working with businesses on their CityAir campaign to develop a list of simple, effective actions that can be taken by companies to help improve air quality in the Square Mile. Businesses have been encouraged to take small steps to reduce emissions of pollutants associated with buildings and transport. This has included changing the transport choice of employees, and reducing emissions associated with deliveries and heating and cooling of buildings</p> <p>Zero Emissions Network (ZEN): Hackney, Islington and Tower Hamlets are among some of the London boroughs that are part of an innovative scheme designed to improve air quality and business efficiency within the 'ZEN' target area. The ZEN members are local businesses working together to make the area a better place to visit, work and do business, by improving local air quality, and supporting active travel whilst reducing energy and transport costs.</p> <p>Using collection services rather than deliveries: Large numbers of vehicle movements in London occur from personal deliveries to offices and homes. A business engagement campaign could include awareness raising about the impact of this, and the availability of other options (such as Duddle, Collect+ etc.)</p>
Web Links	<p>http://www.cleanerairforlondon.org.uk/zen</p> <p>http://www.islington.gov.uk/services/parks-environment/sus_pollute/air_quality/Pages/Zero-Emissions-Network.aspx</p>
General Benefits	<ul style="list-style-type: none"> • Can be low cost to boroughs as they can use existing communication channels and relationships with BIDs and businesses. • Exposure reduction for staff as well as emissions reductions. • Provides an opportunity to engage with businesses about the development and implementation of their Delivery and Servicing Management Plan. For example, encouraging the businesses in an area to co-ordinate their deliveries and collections more efficiently, and adopt collective and/or collaborative procurement practices.
Emissions & Concentrations	Difficult to quantify the impacts but a campaign such as CityAir will have an impact from a combination of specific measures, as listed in http://www.cityoflondon.gov.uk/business/environmental-health/environmental-protection/air-quality/Documents/improving-air-quality-city-of-london-businesses-summary-guide.pdf .
Awareness Raising Benefits	<ul style="list-style-type: none"> • Increases support for measures to improve air quality.
Risks	<ul style="list-style-type: none"> • Businesses might see the measure as an added cost and might struggle to see the benefits. Clear communication will be key to explain the benefits to businesses, in terms of health benefits to employees associated with air quality improvements, business reputation and no financial loss.
Cost (to Borough)	Medium
Inner, Outer, Central or All of the Above	All
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	ST
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	3
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	6
Priority Justification	Depending on the scale of the project of course, this type of scheme is considered relatively straightforward to deliver. The magnitude of air quality benefits are considered to be low, as measures tend to raise awareness of issues rather than causing a significant direct reduction in emissions and concentrations. This results in an average priority rating of 6.

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Theme	2. Public Health and Awareness Raising
Action	15. Promotion of availability of <i>air</i>TEXT
Examples	<i>air</i>TEXT: <i>air</i> TEXT is a tool that provides forecasts of air quality, UV, grass pollen and maximum and minimum temperatures for Greater London and Slough. The information is given for each Borough. Forecasts are provided for the present day and the following two days. The forecasts of air quality are performed using CERC's <i>air</i> TEXT air pollution forecasting and alert system. The concentrations of four pollutants are calculated: nitrogen dioxide (NO ₂), particulates (PM ₁₀ and PM _{2.5}) and ozone (O ₃). From the concentrations the daily air quality index (DAQI) of each pollutant is derived.
Web Links	http://www.airtext.info/
General Benefits	<ul style="list-style-type: none"> • Minimal cost to boroughs as can use existing commercial channels. • Exposure Reduction. • With different messaging, schemes such as <i>air</i>TEXT have the potential to reduce emissions. At the moment the messaging is simply the national health advice.
Emissions & Concentrations	Likely to reduce emissions and concentrations in the short term e.g. only on days when high pollution alerts are given.
Awareness Raising Benefits	<ul style="list-style-type: none"> • Increases support for measures to improve air quality.
Risks	<ul style="list-style-type: none"> • No major risks to boroughs, however, to increase sign ups significantly requires committed, targeted and consistent action which can be difficult to resource. • There is a risk that an over-focus on high pollution days downplays the need to improve air quality more generally. i.e. - "it's not a high pollution day, so air quality must be ok".
Cost (to Borough)	Low – use existing communication channels
Inner, Outer, Central or All of the Above	All
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	ST
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	3
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	3
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	9
Priority Justification	Although it is simple to add <i>air</i> TEXT promotion to existing borough communications, this measure has been given a medium ease rating because it has historically proven very difficult to substantially increase sign ups without significant investment.

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Theme	2. Public Health and Awareness Raising
Action	16. Encourage schools to join the TfL STARS accredited travel planning programme by providing information on the benefits to schools and supporting the implementation of such a programme
Examples	<p>TfL STARS (Sustainable Travel: Active Responsible Safe): 40% of London schools are 'STARS' (1,248 primary and secondary schools across all London boroughs, up 16% from 2012). STARS schools are implementing safer and sustainable travel initiatives, resulting in reductions in car use and increases in walking and cycling on the journey to school as well as more responsible use of public transport. Schools earn accreditation, achieving a higher level of accreditation based on the number of travel initiatives and their effectiveness in delivering a move away from car use.</p> <p>London Borough of Richmond Upon Thames: Richmond upon Thames' Air Quality Action Plan sets out travel awareness campaigns to promote a diversity of travel choice such as 'National Bike Week'; 'Transport Week'; 'Richmond Walking Week' and the 'Walk to School' initiative (London Borough of Richmond upon Thames, 2013). The borough hosted the launch for West London of 'Walkit.com', to promote walking as a sustainable transport mode and help protect walkers from routes with high air pollution. The West London Air Quality Cluster Group commissioned Walkit.com, with a grant from Transport for London, to produce air pollution-aware walking routes for West London.</p>
Web Links	https://stars.tfl.gov.uk/PublicPages/about.aspx
General Benefits	<ul style="list-style-type: none"> Increases awareness of air quality as an issue and can increase support for measures to improve air quality and public health, e.g. smarter travel and reduced idling.
Emissions & Concentrations	<p>The programme saves about 22 million vehicle kms (vkms) annually between 8.00-9.00am. Total 44m vkms per year.</p> <p>This is a mean saving of roughly 8,000 tonnes of CO₂ per annum, taking into account 3-4 year lag until mode shift is realised (information from TfL).</p> <p>Calculations undertaken determined that this can be estimated as an equivalent saving of around 51.5 t/yr. of NO_x. Based on the statement on TfL's website that 45% of London schools are currently enrolled in the STARS scheme, savings of around 114.4 t/yr. could be achieved NO_x if all schools in London became involved.</p>
Awareness Raising Benefits	<ul style="list-style-type: none"> Since 2004, the STARS Accreditation scheme has seen an 8% reduction in car use as part of the school journey, with some schools achieving a 6% increases in walking and 2% increases in cycling. Gold and Silver STARS schools = 11 per cent decrease in car use on average. This scheme has huge potential for reducing exposure in areas near schools.
Risks	<ul style="list-style-type: none"> Independent schools, despite being eligible to join the STARS campaign, are not subject to borough influence and can be difficult to target with such schemes. However, independent schools should be targeted as evidence suggest that they are significantly more likely to drive to school, and have larger catchment areas so the drive is often likely to be longer.
Cost (to Borough)	Low
Inner, Outer, Central or All of the Above	All
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	ST
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	2
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	4
Priority Justification	Encouraging schools to join to accredited travel planning programme will be straightforward. The magnitude of air quality benefits are considered to be medium, if the scheme is rolled out on a large scale. This results in a relatively high priority rating.

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Theme	2. Public Health and Awareness Raising	
Action	17. Air quality in schools (Action TBC – awaiting approval)	
Examples	<p>There are 1,148 schools in London within 150m of roads carrying 10,000 vehicles a day.</p> <p>Boroughs will be encouraged to work with the GLA and TfL (and through its STARS accredited programme) to encourage the development of air quality school plans. The plans will contain suggestions for an action plan implemented in selected schools with recommendations to improve air quality such as devising anti-idling campaigns as well as considering exposure on journeys to and from school. Funding for this work will be available from the next round of the Mayor's Air Quality Fund to be launched in May 2015, with funding available to boroughs for work with schools from April 2016.</p>	
Web Links	TBC	
General Benefits	<ul style="list-style-type: none"> Increases awareness of air quality as an issue and can increase support for measures to improve air quality and public health, e.g. smarter travel and reduced idling. 	
Emissions & Concentrations	Modelling for a main road showed that 70% of the NO _x concentration at roadside is due to traffic on the main road and 30% of PM ₁₀ concentration is due to traffic on the main road. Walking along less busy routes would significantly reduce exposure.	
Awareness Raising Benefits	<ul style="list-style-type: none"> This scheme has huge potential for reducing exposure on the way to school and near schools. 	
Risks	<ul style="list-style-type: none"> Poor uptake by schools because they do not wish their establishment to be associated, publicly, with poor air quality. Lack of commitment from boroughs/borough link officers. 	
Cost (to Borough)	Minimal	
Inner, Outer, Central or All of the Above	All, mainly central and inner	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	ST	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	3	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	6	
Priority Justification	AQ benefits are likely to be low as it will only affect a short duration of exposure and will depend on the number of people that are affected.	

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Theme	3. Delivery Servicing & Freight	
Action	18. Update of local authority Procurement policies to include a requirement for suppliers with large fleets to have attained silver FORS accreditation	
Examples	<p>FORS is an over-arching scheme that encompasses all aspects of safety, fuel efficiency, economical operations and vehicle emissions. FORS is a voluntary scheme that helps improve operators' performance in each of these areas.</p> <p>John Lewis deliveries: The John Lewis Partnership has seen many benefits from their association with FORs. One of the biggest benefits was the knowledge transfer which means there is always an opportunity for the company to learn and share with other operators. It's estimated that John Lewis achieved annual fuel savings of around 6% and significant associated CO₂ savings due to the process. John Lewis estimated that in 2013 they made fuel savings equivalent to around £500,000 through the use of telematics and an estimated saving of £80,000 a year in accident repair costs by directing more maintenance in-house.</p>	
Web Links	http://archive.defra.gov.uk/sustainable/government/documents/full-document.pdf http://www.fors-online.org.uk/cms/case-studies/case-study-directory/john-lewis-fors-gold/	
General Benefits	<ul style="list-style-type: none"> • Minimal cost. • Easy to audit and monitor. • Covers safety, efficiency and environmental and air quality. 	
Emissions & Concentrations	<p>Modelling for a main road showed that removing all LGV emissions, as an approximation of the impact of encouraging zero emissions last mile deliveries, would reduce NO_x and PM₁₀ emissions by 18% and 30% respectively. NO₂ and PM₁₀ concentrations would decrease by 11% and 12% respectively.</p>	
Awareness Raising Benefits	<ul style="list-style-type: none"> • Councils can be seen to be leading by example and may influence other councils and businesses to do the same. 	
Risks	<ul style="list-style-type: none"> • May create a barrier for companies wishing to bid for contracts, especially smaller companies. However, this can be mitigated by providing a progression scale. For example, requiring that they meet FORs Bronze within 90 days and Silver within 180 days of being awarded the contract. 	
Cost (to Borough)	Low	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	1	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	3	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	3	
Priority Justification	<p>Ensuring procurement policies include certain accreditation is considered relatively straightforward. There will be limited air quality benefits due to the change only affecting a small proportion of all vehicles in the borough.</p>	

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Theme	3. Delivery Servicing & Freight	
Action	19. Update of Procurement policies to ensure sustainable logistical measures are implemented (and include requirements for preferentially scoring bidders based on their sustainable criteria)	
Examples	Camden council: has a sustainable procurement risk assessment that must be completed for all major procurements and where a contract will include use of vehicles bidders are subject to specific air quality and fuel efficiency requirements that are inserted into the contract specification.	
Web Links	http://www.tfl.gov.uk/corporate/publications-and-reports/freight	
General Benefits	<ul style="list-style-type: none"> Unites all delivery services under one sustainability plan that ensures that the most sustainable transport options are always considered. 	
Emissions & Concentrations	Modelling for a main road showed that removing all LGV emissions, as an approximation of the impact of encouraging zero emission last mile deliveries, would reduce NO _x and PM ₁₀ emissions by 18% and 30% respectively. NO ₂ and PM ₁₀ Concentrations would decrease by 11% and 12% respectively.	
Awareness Raising Benefits	<ul style="list-style-type: none"> Setting an example for other boroughs and local businesses - being seen to be "practicing what you preach". Boroughs also have very significant annual spend on good and services, so can influence suppliers. 	
Risks	<ul style="list-style-type: none"> Businesses may be unwilling to switch to other modes of delivery. Key stakeholders on the commercial side needed as a driving force. Can be challenging to enforce/monitor. Increased cost quotes if it is seen as costly or inconvenient by suppliers. 	
Cost (to Borough)	Low	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	3	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	6	
Priority Justification	Revising procurement policies to effect significant change in supplier's fleets can be challenging, especially in resource constrained times, and monitoring is also challenging. There will be limited air quality benefits due to the change only affecting a small proportion of all vehicles in the borough. However, the benefits in terms of leading by example are significant.	

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Theme	3. Delivery Servicing & Freight	
Action	20. Re-organisation of freight to support consolidation (or micro-consolidation) of deliveries, by setting up or participating in new logistics facilities, and/or requiring that council suppliers participate in these.	
Examples	<p>Delivering Goods By Cycle Freight: Better Bankside in Southwark is a new, next-day cycle freight service in conjunction with London Bike Hub.</p> <p>Inner-city Night Delivery (Forkert, S. & Eichhorn) can be a way in which consolidation or micro-consolidation is implemented. It is the delivery to retailers and shops in the inner city area during the night hours when the city is usually less congested and inactive. In several cities such as Barcelona or Dublin, successful experiences with trials on night delivery with micro-consolidation have been found, replacing a (higher) number of vehicles operating during day time by a (fewer) number of vehicles operating during night time.</p> <p>There are many factors that need to be considered before embarking on a night time delivery project, because noise nuisance is a very significant issue. The London Lorry Control Scheme, which limits the movements of larger vehicles at night time to prevent noise pollution, must also be considered. http://www.tfl.gov.uk/info-for/freight/moving-freight-efficiently/operating-restrictions/london-lorry-control-scheme</p> <p>Camden, Enfield, Waltham Forest (January 2014-April 2015) and Islington (November 2014 onwards) are delivering a Mayor's Air Quality Fund and EU-funded consolidation project which is consolidating cleaning and stationery products that are being delivered to council premises.</p> <p>Gnewt Cargo: Goods arrive during the evening out-of-hours, sorted and then delivered first thing in the morning using electric vehicles.</p>	
Web Links	http://www.betterbankside.co.uk/cycledelivery http://www.niches-transport.org/fileadmin/archive/Deliverables/D4.3b_5.8_b_PolicyNotes/14683_pn7_night_delivery_ok_low.pdf http://www.lamiloproject.eu/london-camden/	
General Benefits	<ul style="list-style-type: none"> • May reduce the number of vans/cars on the roads. • May reduce costs in the longer term. • Offers more flexibility to businesses in how and when they can get goods delivered. • Reduces delays for the logistics service providers. 	
Emissions & Concentrations	Modelling for a main road showed that spreading HGV movements, and therefore emissions, across the day and night to reduce the impact of congested peak traffic flows would reduce NO _x and PM ₁₀ emissions by 12% and 5% respectively. NO ₂ and PM ₁₀ Concentrations would decrease by 7% and 4% respectively. This measure was only effective in reducing concentrations if HGVs are freed from congestion so they can travel at faster average speeds.	
Awareness Raising Benefits	<ul style="list-style-type: none"> • Sets an example for procurement consolidation that other boroughs can follow and can raise awareness if, for example, messages are advertised on the side of low emission council vehicles 	
Risks	<ul style="list-style-type: none"> • Boroughs expecting organisations to voluntarily use the centres. As the London Boroughs Consolidation Centre has shown - the main driver for making things happen is the procurement process. Without stipulating the use of a consolidation centre in a contract and enforcing it on the ground by refusing to accept deliveries that are made elsewhere, delivery companies are unlikely to use such a centre on a voluntary basis. A delivery company needs sufficient volume, or a contractual requirement, to make it financially viable for them to use such a centre. • Won't be sufficient volume for them to become cost-neutral (or cost-positive) facilities and will end up relying on expensive public subsidies. 	
Cost (to Borough)	Low	
Inner, Outer, Central or All of the Above	Central and Inner	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	3	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	3	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	9	
Priority Justification	Vary from fairly easy (adding a requirement into procurement policies) to very challenging (setting up your own consolidation project). Limited air quality benefits due to only affecting a small proportion of all vehicles in the borough. However, the benefits in terms of leading by example are significant, and if the centres can be expanded to include a larger number of organisations and products the magnitude	

	of air quality benefits could increase to a High.
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Theme	3. Delivery Servicing & Freight
Action	21. Virtual Loading Bays and priority loading for ultra-low emission delivery vehicles.
Examples	<p>Virtual Loading Bays allow the user to book kerb space online for loading and unloading at a particular time and place. This pre-booked space becomes a 'Virtual Parking Bay'. This allows drivers to load and unload in close proximity to their delivery point without causing congestion and without the risk of receiving a PCN. Using GPS and sensory technology this initiative could go even further and could designate loading bays as priority access for ultra-low emission delivery vehicles.</p> <p>Westminster (SKM Colin Buchanan, 2011): Activ8VPS undertook a twelve month proof of concept with Westminster City Council as to the operational impact of Virtual Loading Bays (VLBs) on enforcement and the impact and ease of use for the freight delivery companies. The modelling and economic analysis indicates that the introduction of a virtual loading bay system in Westminster would provide substantial economic benefits of around £1.7m a year.</p>
Web Links	http://www.activ8vps.com/
General Benefits	The benefit would arise from reducing the levels of illegal parking by goods vehicles during the busy peak periods, thus reducing levels of congestion. The results are based on empirical data provided by Westminster, showing where and when Penalty Charge Notices were issued over a year. The main benefits of virtual loading bays would be on major roads and there may be potentially negligible impacts on streets where fewer parking offences occur. In addition, not all streets that do have high numbers of issued PCNs to goods vehicles will benefit from reduced congestion due to the introduction of VLBs. For example, a number of cul de sacs serving the West End are used by goods vehicles delivering to the area where their removal or transfer to VLB will not impact on general traffic movements.
Emissions & Concentrations	<p>Enables companies to efficiently plan multiple drop-offs thereby reducing CO₂ emissions.</p> <p>Encourages take-up of electric vehicles (EVs) by the delivery industry by providing bookable EV bays and journey analytics.</p> <p>Overall cleaner, smarter cities through intelligent traffic management.</p>
Awareness Raising Benefits	<ul style="list-style-type: none"> • Significant scope to influence fleet vehicles purchasing decisions.
Risks	<ul style="list-style-type: none"> • Complicated project that would need funding and technical expertise to deliver. • May meet with initial resistance from delivery companies.
Cost (to Borough)	Medium
Inner, Outer, Central or All of the Above	Mainly Inner and Central
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	4
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	1
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	4
Priority Justification	While this is a complicated project to initiate, the benefits are numerous, as the Westminster pilot demonstrates.

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Theme	4. Borough Fleet Actions	
Action	22. Join the Fleet Operator Recognition Scheme (FORS) for the borough's own fleet and obtain Gold accreditation	
Examples	<p>FORS is an over-arching scheme that encompasses all aspects of safety, fuel efficiency, economical operations and vehicle emissions. FORS is a voluntary scheme that helps improve operators' performance in each of these areas.</p> <p>As of January 2015 only 15 boroughs have been FORS-accredited.</p> <p>FORS gave City of London Corporation the platform to monitor, manage and improve fleet efficiency. The City Corporation has completed the annual FORS audits for Silver and Gold. The City Corporation was commended, via the Green Fleet Awards 2010 and 2014, for improving the environmental performance of the fleet.</p>	
Web Links	http://www.fors-online.org.uk/cms/ http://www.fors-online.org.uk/cms/case-studies/case-study-directory/city-of-london-gold-fors/	
General Benefits	<ul style="list-style-type: none"> • Likely to reduce running costs and emissions. • City of London found that examples of areas where they could potentially fall foul of regulations were provided so that they could work together to identify improvements that could be implemented easily. • In many cases, the issues found had solutions that were relatively straight-forward, such as introducing more frequent checks on driver licences and vehicle records. 	
Emissions & Concentrations	<ul style="list-style-type: none"> • FORS estimate an 11% saving in fuel and emissions for scheme members. • City of London found between the financial years 2008/9 and 2009/10, there was a 16% reduction in emissions of CO₂, a 32% reduction in emissions of NO_x, and a 45% reduction in emissions of PM₁₀ (City of London AQS, 2011). This equates to 155 kg CO₂, 1150 kg NO_x and 61kg PM₁₀. 	
Awareness Raising Benefits	<ul style="list-style-type: none"> • Local authorities lead by example. • City of London found that FORS was really helpful in raising the profile of their work internally as news of their FORS accreditation went up to senior official and councillor level. As well as promoting the importance of best practice within freight, it also helped them demonstrate that the resources they have are essential and are being put to good use. 	
Risks	<ul style="list-style-type: none"> • No major risks other than costs to improve fleet maintenance, however these are likely to result in savings from less repair work needed in future. • Transport is considered a complicated sector and it takes commitment from staff at all levels to make sure that changes are effective in the long-term. • Some boroughs do not have expertise in-house to deliver this and would require additional resources and support. 	
Cost (to Borough)	Low	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	2	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	4	
Priority Justification	There are significant benefits to joining the scheme, especially in terms of leading by example. This results in a relatively high priority rating of 4.	

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Theme	4. Borough Fleet Actions	
Action	23. Increasing the number of hydrogen, electric, hybrid, bio-methane and petrol vehicles in the Borough's fleet	
Examples	<p>The first step would be to join FORs (action 20, above) to assist with this. The second step (through the FORS programme) would be to undertake an audit of the current fleet. A recent assessment by TfL indicates that very few boroughs are using alternative fuels. When questioned about their achievements towards obtaining a completely "green" fleet, Islington stated that they are taking a comprehensive approach to reducing vehicle use. This includes promoting more sustainable staff travel, running a variety of alternative fuelled vehicles and piloting new vehicle technologies. Islington's website details the following specific initiatives:</p> <ul style="list-style-type: none"> • Running a fleet of electric cars, hybrid cars and LPG vehicles, with the electric fleet powered by renewable energy. • The Highways service runs an electric Modec van, which is silent and creates zero emissions. • Islington's entire diesel fleet has been running on UK sourced bio-diesel since 2006 and they are currently piloting a scheme using pure plant oils straight from the source on buses and refuse vehicles, which use less fuel and significantly reduce emissions. • The majority of Islington's refuse and recycling fleet is now Euro V using Selective Catalytic Reduction (SCR) to significantly reduce their emissions from the heaviest polluters in the fleet, and their waste transfer vehicles are running on a combination of LNG and bio-diesel. 	
Web Links	http://www.lowemissionhub.org/case-study/270/Oxford-bus-LEZ-(LES-LEZ) http://www.oxford.gov.uk/PageRender/decEH/OxfordLowEmissionZone.htm http://www.tfl.gov.uk/cdn/static/cms/documents/sasp-20140715-part-1-item09-update-on-green-vehicle-initiatives.pdf	
General Benefits	<ul style="list-style-type: none"> • Councils can pursue flexible action, which is tailored according to local circumstances, priorities and needs (Low Emission Strategies Partnership, 2011). • Local benefit: accelerate the adoption of established and readily available technologies. • Regional benefit: support adoption of innovative technologies. • National/ International benefit: Major initiatives with potential to shift markets for new fuels and technologies and to drive uptake and penetration. • Funding is often available to support uptake of new technologies within the fleet, e.g. from OLEV. 	
Emissions & Concentrations	Assessment of emissions determined that replacing 50 Euro V Refuse Collection Vehicles (RCV) with hybrid vehicles would reduce NO _x emissions by 20% (based on the 0.8 emission conversion factor available for buses on the NAEI).	
Awareness Raising Benefits	<ul style="list-style-type: none"> • Local authorities can lead by example. • Could be used as a demonstrator to other departments (and at public and business events). • Low emission vehicles complement other design and mitigation options, such as travel planning and the provision of public transport infrastructure, encouraging, for example, modal shift away from cars (Low Emission Strategy Partnership, 2010). 	
Risks	<ul style="list-style-type: none"> • Complex and different needs for each borough. • Capital costs can be very high (Moorcroft et al. 2009). However, boroughs can work with leasing companies to gain value for money for cleaner commercial vehicles, and funding may be available to assist (such as from OLEV). • Issues relating to the availability of refuelling infrastructure. • Issues relating to warranties. Boroughs should receive warranties from vehicle manufacturers about retrofitting existing vehicles and converting them to use cleaner fuels. 	
Cost (to Borough)	High	
Inner, Outer, Central or All of the Above	All, especially Inner	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	4	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	3	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	12	

Priority Justification

Changing vehicles in the fleet is challenging and can be costly, with a low magnitude of air quality benefits due to the change only affecting a small proportion of the borough's vehicles. This results in a low priority rating of 12.

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Theme	4. Borough Fleet Actions	
Action	24. Accelerate uptake of new Euro VI vehicles in Borough fleet	
Examples	<p>In 1992 the European Union introduced new emission standards (Euro standards) for vehicles. These have progressively tightened limits for the main atmospheric pollutants. For example the maximum emissions of PM from a new bus are 30 times less than that permitted twenty years ago.</p> <p>Euro VI has been the standard for heavy diesel vehicles since the end of 2013 and should reduce NO_x to a twentieth of the 1992 limits. For cars, Euro 6 came into force in September 2014 and is estimated to reduce the emissions of NO_x from diesel cars from 180mg/km to 80mg/km. There is currently no example of a local authority undertaking a wholesale change of its fleet to Euro VI.</p> <p>Oxford City Centre: A Low Emission Zone enforced by a Traffic Regulation Condition (TRC) entailed that buses entering Oxford City Centre need to be at least Euro V from 1 Jan 2014. Requirements were met prior to 2014 via a 'bus qualifying agreement' negotiated between Oxfordshire County Council and the bus companies with the City's support. All buses currently meet Euro V emission standard with the exception of those that are eligible for exemptions. The bus qualifying agreement has resulted in a 25% reduction in bus numbers on the high street. Some concerns have been raised about the impact of this measure, with hourly breaches of the NO₂ objective being found as a result of Oxford's cleaner buses (Low Emission Hub). It is unclear why the hourly breaches of NO₂ would occur, and other evidence suggests that this would not be the case.</p>	
Web Links	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239317/ultra-low-emission-vehicle-strategy.pdf http://www.airqualitynews.com/2014/11/27/oxford-lez-signals-air-quality-improvement/	
General Benefits	<ul style="list-style-type: none"> • Lower NO_x emissions from newer diesel vehicles. 	
Emissions & Concentrations	Assessment of emissions determined that replacing 50 Euro V Refuse Collection Vehicles (RCV) with Euro VI RCVs would reduce NO _x and PM ₁₀ emissions by 63% and 25%	
Awareness Raising Benefits	<ul style="list-style-type: none"> • Local authorities can lead by example. • Could be used as a demonstrator to other departments (and at public and business events). 	
Risks	<ul style="list-style-type: none"> • Capital costs can be very high (Moorcroft et al. 2009). Councils are therefore likely to want to spread the implementation of Euro VI over a longer period of time, rather than accelerating the process. • Simply switching to cleaner diesel does not help to address other issues, such as climate change. 	
Cost (to Borough)	High	
Inner, Outer, Central or All of the Above	All, especially Inner	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	4	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	3	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	12	
Priority Justification	Accelerating the uptake of Euro VI vehicles in the fleet is considered difficult due to the associated costs, with a low magnitude of air quality benefits due to the change only affecting a small proportion of the Borough's fleet. This results in a low priority rating of 12.	

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Theme	4. Borough Fleet Actions
Action	25. Smarter Driver Training for drivers of vehicles in Borough Own Fleet i.e. through training of fuel efficient driving and providing regular re-training of staff.
Examples	<p>London Borough of Merton: 'Smarter driver training' for staff has been designed to reduce emissions from Council activities in Merton (Beattie & Laxen, 2013). While the training did not directly assess the impact on emissions of NO_x or PM, reduced fuel consumption will usually lead to reduced air pollution emissions. The maximum predicted long term benefit for an individual driver was an estimated annual average saving of £1,140 on fuel and a reduction in 1,870kg of CO₂ emissions each year. 86% of drivers said they had possibly or definitely changed the way they drive since the training. 93% of drivers said they would possibly or definitely recommend the training to others. Some drivers felt that there could be wider benefits, as one smoother driver might improve the flow of nearby traffic.</p> <p>City of London Corporation: The Energy Savings Trust operates a Smarter Driving programme where people can be trained to achieve a reduction in fuel use using simple techniques (City of London, 2011). In 2010, external funding was obtained which enabled one hundred and forty staff at the City of London to undertake the training, with an average reduction in fuel consumption of 14%. If this fuel reduction is maintained it would lead to a further reduction of 113kg CO₂ and approximately 455kg NO_x and 11kg PM₁₀. TfL are developing a "Driver Passport" for professional drivers working on TfL contracts, and the passport will include details of all training courses that a driver has completed. A similar initiative could be used for borough staff.</p>
Web Links	<p>http://uk-air.defra.gov.uk/assets/documents/reports/cat05/1306261052_Examples_of_Air_Quality_Action_Plan_Measures_J1255_25June13.pdf</p> <p>http://www.cityoflondon.gov.uk/business/environmental-health/environmental-protection/air-quality/Documents/City%20of%20London%20Air%20Quality%20Strategy%20Jan%202012.pdf</p>
General Benefits	The general adoption of "driving style"-related eco-driving principles appears able to give rise to a reduction in fuel consumption of the order of 5 to 10%, (although the precise effects are very dependent upon the road type and the level of traffic) (Beattie & Laxen, 2013).
Emissions & Concentrations	In Merton the maximum predicted long term benefit for an individual driver was an estimated annual average saving of £1,140 on fuel and 1,870kg of CO ₂ emissions each year. In 2010, external funding was obtained which enabled one hundred and forty staff at the City of London to undertake the training, with an average reduction in fuel consumption of 14%. If this fuel reduction is maintained it would lead to a further reduction of 113kg CO ₂ and approximately 455kg NO _x and 11kg PM ₁₀ .
Awareness Raising Benefits	<ul style="list-style-type: none"> • Drivers are likely to change the way they drive following smarter driving training. • Drivers would be likely to recommend the training to others. • Less understanding of the impact of driving style on NO_x emissions than CO₂. No information relating to the potential benefits to NO_x emission of applying eco-driving principles to LGV and HGV vehicles. • Some studies have shown that eco-driving principles and the use of a gear-shift indicator can lead to increases in NO_x emissions in diesel cars (Moorcroft et al. 2010). • The benefits of the training do not last indefinitely. Staff should be re-trained approximately every two years. • There could be wider benefits, as one smoother driver might improve the flow of nearby traffic.
Risks	<ul style="list-style-type: none"> • Low – A £4000 grant covered all projects costs when this measure was implemented in Merton, and costs should be re-couped in fuel savings (Beattie & Laxen, 2013).
Cost (to Borough)	Low – A £4000 grant covered all projects costs when this measure was implemented in Merton, and costs should be re-couped in fuel savings (Beattie & Laxen, 2013).
Inner, Outer, Central or All of the Above	All
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	1
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	3
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	3

Priority Justification	Implementing smarter driver training is considered straightforward, with a low magnitude of air quality benefits. This results in a relatively high priority rating of 3.
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Theme	5. Localised Solution	
Action	26. Green Infrastructure	
Examples	<p>A study by Imperial College London concluded that urban greening strategies designed to reduce particulates can be used as a supplementary approach to emissions reductions policies, but should be viewed in the context of their wider benefits.</p> <p>Examples of green infrastructure that could be delivered include:</p> <ul style="list-style-type: none"> • Pocket parks http://www.london.gov.uk/priorities/environment/greening-london/improving-londons-parks-green-spaces/pocket-parks • Planting of greenery that may improve air quality along main roads and town centres to reduce the impact of road traffic emissions (for example, hedgerows and trees such as ash, common alder, field maple, larch, Norway maple, scots pine and silver birch) • "Fresh air squares" - modular temporary parks that fit into parking spaces. 	
Web Links	https://www.tfl.gov.uk/cdn/static/cms/documents/role-gi-pmpollution.pdf http://www.parliament.uk/business/publications/research/briefing-papers/POST-PN-448/urban-green-infrastructure http://www.cityoflondon.gov.uk/business/environmental-health/environmental-protection/air-quality/Documents/City%20of%20London%20Air%20Quality%20Strategy%20Jan%202012.pdf	
General Benefits	<ul style="list-style-type: none"> • Possible reductions in pollution concentrations and exposure. • Reduction in flood risk as part of sustainable urban drainage systems. • Improvement of the perceptions of an urban area as aesthetically pleasing. • Amelioration of high summer temperatures caused by the urban heat island effect and climate change. • Biodiversity benefits. • Highly visible intervention that can communicate a range of other 'invisible' measures such as retrofitting buses. 	
Emissions & Concentrations	A study (Mackenzie et al 2012) has suggested that urban green infrastructure in street canyons can reduce NO _x and PM ₁₀ concentrations by up to 40% and 60% respectively	
Awareness Raising Benefits	<ul style="list-style-type: none"> • Changes in infrastructure are likely to make the public more aware of ways in which air quality can be improved and thus cause a behavioural shift. 	
Risks	<ul style="list-style-type: none"> • Maintenance of green infrastructure is essential to maximise its benefits e.g. while well-maintained green spaces can improve mental health, overgrown vegetation can have a negative impact by increasing the fear of crime (Forest Research, 2010) • The correct choice of species and location is very important in order to maximise air quality benefits. 	
Cost (to Borough)	Medium	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	ST	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	2	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	4	
Priority Justification	The benefits are uncertain but some studies suggest they are significant.	

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Theme	5. Localised Solution	
Action	27. Low Emission Neighbourhoods (LENs) as proposed by TfL's Transport Emission Road Map	
Examples	<p>TfL Transport Emissions Roadmap proposed tackling local air pollution hotspots using a package of targeted measures or locations, which might not necessarily have high local pollution, but have high trip generation and therefore ability to influence transport emissions in the wider area. This concept was termed "Low Emission Neighbourhood" (LENs). Since then, TfL have been working with stakeholders, including boroughs, to develop this concept further. A note on LENs will be distributed separately, providing guidance on how a LEN might be developed and implemented as well as how to build a successful business case to support its implementation.</p> <p>The basic concept is the chosen area is surveyed in detail to understand how it functions: the numbers, types, reason for trips, destination and origin or trips, and how full or occupied vehicles are. Strong measures are then put in place to coordinate and consolidate servicing, reduce vehicle use and encourage or mandate the use of cleaner vehicles. This can be achieved by agreement, through servicing plans and travel plans, or regulated through traffic restriction and parking and loading controls. The monetary emission savings from the measures alone are unlikely to be sufficient justify the cost of such scheme or gain local support, therefore LENs rely on being part of an urban realm transformation scheme and the associated wider benefits, such as local economic uplift and reduction in traffic casualties. LENs are intended to be retrofitted to existing area as well as influence the approach of sizable new development area. Building emissions should also be considered alongside traffic emissions.</p>	
Web Links	https://www.tfl.gov.uk/cdn/static/cms/documents/transport-emissions-roadmap.pdf	
General Benefits	<ul style="list-style-type: none"> • Significant emissions benefits in introducing measures as a package. • Community engagement (individuals and/or business community), as LENs are implemented in partnership with local community. 	
Emissions & Concentrations	In combining measures locally cumulative reductions will be achieved. There are some air quality "focus areas" which are primarily the result of through-traffic and so need to be addressed through London wide action, but local action can make some impact on these (all traffic starts somewhere). However, LENs are likely to have the biggest impact on locally caused hotspots.	
Awareness Raising Benefits	<ul style="list-style-type: none"> • Associating air quality with improvements to urban realm and movement could lead to further commitment to take action. 	
Risks	<ul style="list-style-type: none"> • Impact of LENs may be diluted by boroughs cherry picking the easiest measures. • LENs rely on borough and community involvement. • Longer timeframes for delivery and higher delivery risks. 	
Cost (to Borough)	High - but funding is available	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	4	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	1	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	4	
Priority Justification	Despite difficulties that may be associated with developing a LEN, this measure has the potential for large localised air quality benefits.	

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Theme	6. Cleaner Transport	
Action	28. Discouraging unnecessary idling by taxis and other vehicles (e.g. through anti-idling campaigns or on-the-spot fines)	
Examples	<p>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. These regulations reduce short-term high pollution episodes at transport interchanges, stands, ranks and parking areas (MAQS, 2010).</p> <p>The City of London Corporation: takes a proactive approach to dealing with idling vehicle engines. A three month publicity campaign was undertaken to educate people about the City of London's plans to issue fixed penalty notices (FPNs) to drivers who do not turn off their engines once requested to do so by an authorised officer. Police Community Support Officers (PCSOs) identified hotspots for idling and a highly focused approach was then taken, directly targeting businesses and coach and delivery companies and construction and demolition sites. The main finding of the project was that drivers turned off engines when asked and there was no need to issue FPNs. The number of reports of idling vehicles reduced as a result and the project was considered a success. Civil Enforcement Officers will speak to drivers with engines left running and signs are put up in hotspot areas. Air Quality Wardens also patrol the City streets asking drivers to turn engines off on Cleaner Air Action days.</p> <p>Westminster Council: From 1 May 2015 if a driver is asked to turn their engine off by a Marshall and refuses they could be issued with a Fixed Penalty Notice of £20. The fine will go up to £40 if not paid within 28 days.</p> <p>TfL has evidence that suggests that up to 12% of taxi time is spent on rank idling.</p>	
Web Links	http://www.london.gov.uk/sites/default/files/archives/Air_Quality_Strategy_v3.pdf http://uk-air.defra.gov.uk/assets/documents/reports/cat05/1306261052_Examples_of_Air_Quality_Action_Plan_Measures_J1255_25June13.pdf http://www.cityoflondon.gov.uk/business/environmental-health/environmental-protection/air-quality/Pages/idling-vehicle-engines.aspx https://www.westminster.gov.uk/idling-vehicles-0	
General Benefits	<ul style="list-style-type: none"> Public health improvements 	
Emissions & Concentrations	Pollutant concentrations were modelled at a receptor adjacent to a taxi idling for 9 hours per day in off-peak periods. Removing these idling emissions reduced NO _x and PM ₁₀ concentrations (due to traffic on this road) at this receptor by 7% and 14% respectively.	
Awareness Raising Benefits	<ul style="list-style-type: none"> Increases awareness when publicised as part of air quality awareness campaigns. 	
Risks	<ul style="list-style-type: none"> It is problematic to define 'unnecessary' idling and could lead to confrontation (Par Hill Ltd, 2012). 	
Cost (to Borough)	Medium - staff time on enforcement	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	2	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	4	
Priority Justification	Idling measures are relatively straightforward to implement and have the potential for fairly significant localised air quality benefits and is therefore given a high priority rating of 4.	

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Theme	6. Cleaner Transport
Action	29. Speed Control measures e.g. lowering the legal speed limit to 20mph in built up residential areas
Examples	<ul style="list-style-type: none"> • TfL: Nearly 25% of all London roads are now 20mph and boroughs such as Islington, Camden and the City of London have borough-wide 20mph limits on their roads (http://www.tfl.gov.uk/info-for/media/press-releases/2015/march/tfl-outlines-new-sites-for-potential-20mph-speed-limits). The Mayor of London and TfL outlined plans in March 2015 for 8 new pilots of 20mph speed limits on the TfL road network (TLRN) as part of continuing work to reduce road casualties and increase active travel. The first confirmed pilot location will be Commercial Street in Tower Hamlets where all roads will have 20mph speed limits from April 2015. The route could then be extended out to cover the wider "Shoreditch Triangle" and sections of the A10, in line with Hackney's 20mph borough-wide aspirations. The remaining seven pilots could then be introduced throughout 2015 and 2016 on a rolling basis. In the last financial year (2013/14), borough roads totalling more than 280km in length have had the limit introduced, through the Mayor's Local Implementation Plan funding to the boroughs. • Islington: Since March 2013, all roads borough-managed roads have had a 20mph speed limit in place. (http://www.islington.gov.uk/islington/news-events/news-releases/2014/10/Pages/PR5999.aspx). • Camden: On 16 December 2013, Camden implemented a borough-wide 20mph speed limit. The purpose of the limit is to improve road safety and give people greater confidence to walk and cycle. According the Royal Society for Prevention of Accidents (ROSPA), at 20mph there is a 2.5% chance of being fatally injured, compared with a 20% chance at 30mph. Useful information is provided on Camden's FAQ page at https://camden.gov.uk/ccm/content/transport-and-streets/traffic-management/faqs-about-a-borough-wide-20-mph-speed-limit/. <p>The most relevant research on 20 mph speed limits and emissions comes from Belgium where extensive 30 kph (18.5 mph) speed limits have been used (Association for European Transport and Contributors 2006). Their primary conclusion was that: "Results indicate that emissions of most classic pollutants should not be expected to rise or fall dramatically. Nevertheless VeTESS results indicate that some emissions such as PM exhaust from diesels may show a significant decrease, whereas MEET functions assume a moderate increase. Exposure of residents to one of the most toxic components of the urban air pollution mixture may therefore also decrease".</p> <p>The research on the direct air quality impacts of speed restrictions is complicated. The main benefits of 20MPH zones are considered to be related to road safety and enhancing cyclist and pedestrian experience.</p>
Web Links	<p>http://www.tfl.gov.uk/info-for/media/press-releases/2015/march/tfl-outlines-new-sites-for-potential-20mph-speed-limits</p> <p>http://www.islington.gov.uk/services/parking-roads/street_improvements/Pages/20mph_limit.aspx</p> <p>http://www.20splentyforus.org.uk/</p> <p>http://www.cityoflondon.gov.uk/business/environmental-health/environmental-protection/air-quality/Documents/speed-restriction-air-quality-report-2013-for-web.pdf</p>
General Benefits	<ul style="list-style-type: none"> • Likely to reduce danger for all road users. • Increases inclusion and access for those without cars and other motor vehicles. • Noise reduction. • Creates a commitment to sharing the roads more equitably. • Demonstrates the council's commitment to making streets safer and improving quality of life. • Slower traffic speeds can also help to create more pleasant and liveable streets. • Camden has found on average there has been a 54% reduction in collisions in 20mph zones, although many of these zones also include other safety measures to contribute to this improvement in road safety (http://camden.gov.uk/ccm/content/transport-and-streets/traffic-management/speed-limits.en).
Emissions & Concentrations	<p>Reducing the speed limit from 30mph to 20mph has been shown to have different effects on different types of car because of the way their engines operate.</p> <p>Studies by Imperial College London on behalf of the City of London determined that reducing the speed limit has been shown to increase NO_x emissions from petrol cars by around 11%, with a decrease in PM₁₀ emissions of 6% (Transport and Environmental Analysis Group, 2013). Reducing the speed limit has been shown to decrease NO_x and PM₁₀ emissions from diesel cars by around 5%.</p> <p>Given the higher contribution of diesel vehicles to emissions of NO_x, it is possible that this measure could achieve significant changes in concentrations.</p>
Awareness Raising Benefits	<ul style="list-style-type: none"> • Makes people think about the way driving can impact on emissions • Encourages a shift to walking and cycling

Risks	<ul style="list-style-type: none"> • Whether emissions increase or decrease as a result of speed control measures will depend on engine types (diesel or petrol) and engine size. In some circumstances, there may be no benefit. • The introduction of 20mph speed limits could actually increase stop-start driving conditions e.g. if speed bumps are introduced, which can increase emissions. • NO_x emission factors are higher for petrol vehicles over 20mph compared to 30mph; for diesel vehicles they are lower. However, as diesel vehicles have larger NO_x emissions, the benefits are considerable. • If other traffic calming measures are implemented in addition to lowering the speed limit to 20mph, then costs can also include project expenses, vehicle delay, traffic spill over, problems for emergency and service vehicles, driver frustration, and problems for cyclists and visually impaired pedestrians (http://www.vtpi.org/calming.pdf) • Can be difficult to enforce. • Backlash as a result of increased journey times.
Cost (to Borough)	<p>Medium - Implementing a 20mph zone in a single street is generally done at a cost of less than £2,000. This is based on costs from Bedford Borough Council, where the cost of publishing the order of speed control measures and doing the consultation was around £500, and signs were around £250 each (Bedford Borough Council (Mayor's Office)).</p> <p>The cost of implementing a borough-wide 20mph scheme in Camden was approximately £300k. Even the most conservative speed and accident reduction assumption (1mph = 6% less accidents) has an effect that could justify the cost of the scheme (https://camden.gov.uk/ccm/content/transport-and-streets/traffic-management/faqs-about-a-borough-wide-20-mph-speed-limit/)</p>
Inner, Outer, Central or All of the Above	All
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	4
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	2
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	8
Priority Justification	<p>Despite changes to infrastructure required and the slight uncertainty regarding the impacts of imposing 20mph speed limits on emissions, there is evidence that reducing speeds to 20mph will reduce emissions from diesel vehicles, which are the main contributors to NO_x in the city, and therefore a priority rating of 6 has been provided</p>

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Theme	6. Cleaner Transport
Action	30. Increasing the proportion of electric and hydrogen vehicles and low emission vehicles in Car Clubs
Examples	There is an on-street car club presence in 27 of the 33 London boroughs. Through the Car Club Strategy, an EV Working Group is being established to help overcome the challenges in introducing EVs into car club fleets (namely charging infrastructure, ensuring reliability of finding a vehicle fully charged, and supporting customers to be confident in driving and recharging EVs) – boroughs are encouraged to participate in this group. This may also help to facilitate better co-ordination of car clubs between boroughs.
Web Links	http://www.richmond.gov.uk/car_clubs http://www.zipcar.co.uk/london/find-cars
General Benefits	<ul style="list-style-type: none"> • A useful alternative to car ownership as drivers get all the convenience of a car without any of the hassle. • No cost of road tax, fuel, MOT or car servicing as the only cost is for membership and car hire.
Emissions & Concentrations	The car club fleet in London is almost 100% Euro 5 or Euro 6 compliant. (Steer Davies Gleave, 2014). In the general fleet, EVs have the potential to reduce NO ₂ concentrations by 1% at receptors on main roads with the highest exposure to road traffic emissions.
Awareness Raising Benefits	<ul style="list-style-type: none"> • Encouraging sharing car journeys.
Risks	<ul style="list-style-type: none"> • Reports into car club schemes in London illustrate the dilemma that operators face when selecting vehicles to use in urban areas and especially those affected by AQMAs such as London. There is a need to balance climate change (low carbon, fuel efficient), public health (low toxic emissions; notably nitrogen oxides and particulates) and whole life costs (depreciation or lease, insurance, maintenance and repairs) when selecting new cars) (Steer Davies Gleave, 2014). • May increase emissions as non-car drivers start to drive and car owners use car club as a second car. • Making a strong case for converting more residents' parking bays to car club bays. • Funding, management and ownership of charge points in on-street car club bays - spaces are only leased by the operators so will need borough investment and management (funding may come from OLEV, but this normally requires 25% match-funding)
Cost (to Borough)	Low
Inner, Outer, Central or All of the Above	All - mainly Inner
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	2
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	4
Priority Justification	The relatively straightforward implementation of car clubs and the moderate associated benefits result in a priority score of 4.

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Theme	6. Cleaner Transport
Action	31. Very Important Pedestrian Days (e.g. no vehicles on certain roads on a Sunday) and similar initiatives
Examples	<p>London Play Streets Initiative: closing streets to traffic so children can play. Hackney Council delivered the first play street in 2012, and now has 24 regular Play Streets http://www.londonplay.org.uk/play_streets/2/view</p> <p>Islington council has made it easier for residents to arrange temporary street closures as residents can now apply for their street to be closed for up to three hours. Application fees related to requests from residents wanting to close their street were removed, and residents now need to gain the support of neighbours for temporary play street closures.</p> <p>Hackney: A study undertaken on behalf of Hackney Council and Hackney Play Association found that in the 12-month period up until September 2014, estate play sessions were run in 29 locations reaching around 1,600 children and nearly 800 families. It enabled over 8,100 child-hours of physical activity and it is forecast that this figure is estimated to rise to 13,800 child-hours in the year from October 2014 (http://www.hackney.gov.uk/Assets/Documents/play-streets-evaluation-key-findings.pdf).</p> <p>Open Streets Initiative: Closing roads to traffic to encourage walking and cycling http://www.openstreetslondon.com/</p> <p>World Car Free Day: 22nd September each year is World Car Free Day, that aims to promote the improvement of mass transit, cycling and walking, and give communities a chance to see what their town or city could be like car-free.</p> <ul style="list-style-type: none"> • Regent Street, London: Summer Streets 2014 proved to be a major success with thousands of visitors lining Regent Street to participate in one of the biggest traffic free events of the summer. Each Sunday in July had a specific theme; Garden Party, Love Food, Love Fashion and Magnum's 25th Birthday, where traffic was prevented from travelling down the city centre road. • Summer Streets. 2015 will be the third year in which Regent Street is traffic free on Sundays throughout July. The streets will be open to plenty of family activities with food, live entertainment and exciting giveaways and special offers from Regent Street retailers.
Web Links	<p>https://www.toi.no/getfile.php/Publikasjoner/T%C3%98l%20rapporter/2011/1168-2011/1168-2011-sum.pdf</p> <p>http://www.standard.co.uk/news/free-parking-for-electric-cars-axed--for-being-too-successful-6898493.html</p> <p>http://www.parliament.uk/documents/post/postpn365_electricvehicles.pdf</p> <p>http://www.islington.gov.uk/services/parking-roads/electric-vehicles/Pages/default.aspx</p> <p>http://cityclimateleadershipawards.com/2014-pro</p>
General Benefits	<ul style="list-style-type: none"> • Reduces short term exposure to emissions . • In Hackney, uptake spread beyond the initial pattern of the more affluent parts to reach a broader demographic, including areas of disadvantage. • Can potentially lead to longer term behavioural changes and be used to test more permanent traffic management changes. • Likely to trigger significant interest from schools, early years settings and voluntary and community organisations in the idea of street play. • Can provide children with a safe environment in which to develop/learn cycling skills, and provides support for encouraging active travel.
Emissions & Concentrations	<p>Modelling for a main road showed that removing all vehicles from the road on Sundays would reduce NOx and PM10 emissions by 11%. NO2 and PM10 concentrations would be reduced by 7% and 6% respectively.</p> <p>The modelling shows that Vehicle Free Sundays have the potential to significantly decrease annual average concentrations of NO2 on busy polluted high streets in London. These results are, however, representative of a street without any vehicles travelling along it for at least one day per week over the whole year.</p>
Awareness Raising Benefits	<ul style="list-style-type: none"> • Very visible measure so has potential for significant awareness-raising benefits. • An event held at City Hall by London Play last year saw 100 people, ranging from residents to public health officials to highways managers and elected councillors, attend, showing the potential for this measure to raise awareness over a wide range of sectors (http://www.londonplay.org.uk/blog_entry/2668/news/london_play_in_the_news/london_play_in_the_news/london_council_boosts_street_play_initiative).
Risks	<ul style="list-style-type: none"> • May lead to displacement of traffic and emissions instead of overall reduction. • People without young children have expressed that they feel that the campaigns encouraging play are of no benefit to them and they feel marginalised in their own street. • Hackney Council received a total of 18 written objections to the Council between September 2012 and September 2014. However, this averaged at less than one objection per street scheme

	http://www.hackney.gov.uk/Assets/Documents/play-streets-evaluation-key-findings.pdf
Cost (to Borough)	Low
Inner, Outer, Central or All of the Above	All - mainly central and Inner
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	ST
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	2
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	4
Priority Justification	The ease rating is difficult to determine for a measure which could incorporate such a wide range of different applications (closing one street for one day is relatively easy, but closing a street or an area every Sunday would be challenging). The ease rating of 2 is therefore illustrative of a less ambitious project.

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Theme	6. Cleaner Transport
Action	32. Free or nominal parking charges at existing parking meters for zero emission cars
Examples	<p>Oslo: Free parking is provided for EVs at all public parking spaces. This has provided an incentive which has contributed (along with other measures) to an increase of 93% in the number of EVs on the road from 2012 - 2013. As of April 2014, the greater Oslo metropolitan area counted 11,293 EVs – nearly half of the country's 25,710 registered EVs. (http://cityclimateleadershipawards.com/2014-project-oslo-evs/)</p> <p>City of London Corporation: Between 2001 and 2008 City of London offered free parking for EVs. 500 free roadside parking permits and 539 free car park permits were issued to drivers of EVs. The scheme was popular. It increased the number of vehicles on the roads, albeit by a small number.</p>
Web Links	<p>https://www.toi.no/getfile.php/Publikasjoner/T%C3%98I%20rapporter/2011/1168-2011/1168-2011-sum.pdf</p> <p>http://www.standard.co.uk/news/free-parking-for-electric-cars-axed--for-being-too-successful-6898493.html</p> <p>http://www.parliament.uk/documents/post/postpn365_electricvehicles.pdf</p> <p>http://www.islington.gov.uk/services/parking-roads/electric-vehicles/Pages/default.aspx</p> <p>http://cityclimateleadershipawards.com/2014-project-oslo-evs/</p>
General Benefits	<ul style="list-style-type: none"> • Provides a significant incentive for people to choose zero or low emission vehicles, especially in central and inner London, where metered parking is limited and costly. • Fairly low cost to the council while uptake is low (and this policy could be for a time-limited period, such as 2-3 years, and/or just a limited number of free parking permits could be provided). • Can be implemented in a relatively simple/low-cost way (by providing exemption permits).
Emissions & Concentrations	Modelling for a main road showed that if the proportion of cars which are projected to be electric by 2025 (2.5%) is achieved by 2020, NO _x and PM ₁₀ emissions will be reduced by around 1.7% and 0.3% respectively. NO ₂ and PM ₁₀ concentrations will be reduced by around 1% and 0.1% respectively.
Awareness Raising Benefits	<ul style="list-style-type: none"> • May have a significant influence on what cars drivers purchase, especially in central and inner London. • Helps to raise awareness of the benefit of EVs in terms of air quality
Risks	<ul style="list-style-type: none"> • Free parking could be seen to conflict with the overall aim of reducing traffic numbers (in part through high parking charges). • Difficult to enforce against EV's over-using/over-staying. • There is contrasting evidence as to whether an initial surge in uptake of EVs and other new technology would be high enough to cause additional congestion in the long term. As a result of the issues experienced in City of London, it is suggested that pilot projects and consumer incentives can be very effective but should be introduced gradually and carefully to increase the uptake of electric, hybrid or bio-methane vehicles to a manageable extent, and ensure that they are bought as replacement vehicles rather than additional vehicles. When managed carefully, this is considered to be an efficient measure to pursue in improving air quality in London boroughs. (http://www.parliament.uk/documents/post/postpn365_electricvehicles.pdf).
Cost (to Borough)	Low
Inner, Outer, Central or All of the Above	Inner and Central
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	2
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	4
Priority Justification	Would be relatively simple and low cost to deliver and is likely to have a

	significant impact on uptake of EVs, and so has a relatively high score.
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Theme	6. Cleaner Transport	
Action	33. Free or low cost residential parking permits for zero emission cars.	
Examples	<p>London Borough of Islington: Islington have had a tiered parking permit system since 2008 where parking is completely free for EVs. Islington's officers stated that they have so far seen slow uptake of the free parking for EVs, however when combined with other incentives this measure can help to drive uptake.</p> <p>Many other boroughs, such as Camden, Westminster and Richmond also offer free or very low cost resident's permits to EVs.</p> <p>LB of Hammersmith and Fulham: Of 29,000 permits issued, around 850 are LEVs, eligible for 50% discount off the price of a permit.</p>	
Web Links	https://www.westminster.gov.uk/electric-vehicles	
General Benefits	<ul style="list-style-type: none"> Fairly low cost to the council while take up is low (and this policy could be a time limited offer: perhaps 2-3 years to incentivise shift to zero emission vehicles) 	
Emissions & Concentrations	Modelling for a main road showed that if the proportion of cars which are projected to be electric by 2025 (2.5%) is achieved by 2020, NO _x and PM ₁₀ emissions will be reduced by around 1.7% and 0.3% respectively. NO ₂ and PM ₁₀ concentrations will be reduced by around 1% and 0.1% respectively.	
Awareness Raising Benefits	<ul style="list-style-type: none"> May have a limited influence on vehicle purchasing decisions. May help to raise awareness of the benefits of lower emitting vehicles. 	
Risks	<ul style="list-style-type: none"> This incentive has been provided in a large number of boroughs already and has not had a significant impact on take up of EVs. This suggests that it needs to be combined with other measures (such as increased charging infrastructure and increased charges for more polluting vehicles) in order to be effective. It should be noted, however, we are now beginning to see exponential uptake of EVs. No impact on residents who park on private drives. Potential for decreased revenue for the local authority (if there is a significant surge in uptake of low emission vehicles). Potential for backlash when the incentive is eventually removed. 	
Cost (to Borough)	Low	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	3	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	6	
Priority Justification	The evidence suggests that this measure alone will not have a significant impact at first, however, it is relatively straightforward to implement and may influence behaviour when combined with other measures.	

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Theme	6. Cleaner Transport	
Action	34. Surcharge on diesel vehicles below Euro 6 standards for Resident's and Controlled Parking Zone permits	
Examples	<p>London Borough of Islington: When Islington Council were asked about their experience with diesel surcharges they stated that they have decided to implement a diesel surcharge of £96 from 15 June 2015. This will be on top of the permit charge of between being free and £444, depending on the CO2 vehicle emissions of the vehicle in question. They believe that only 35% of residents in Islington drive a car and around 30% of those are diesel. When the surcharge was first decided, they received a small backlash of letters of complaint, but they have found that as soon as information was provided on why it was being done and the benefits involved, people largely accepted the surcharge. They found that raising awareness and providing members of the public with the full information largely overcomes any resistance they receive for newly introduced measures i.e. through phoning particular members of the public who have raised concerns.</p> <p>London Borough of Camden: The basic charge is determined by vehicle emissions, engine size and whether the vehicle is electrically powered. For 2015-2016 annual permits cost between £273.71 for conventionally powered vehicles and £28.91 for electric vehicles. An additional charge of £10.61 applies to each diesel vehicle.</p> <p>Madrid: Six monitoring stations (out of 24) in Madrid had exceeded the permitted number of exceedences of the hourly limit value for NO₂ for the whole of 2015 by January the 12th (http://sootfreecities.eu/city/madrid). Therefore traffic and parking management is an important technique used to encourage more sustainable transport choices. Madrid has a regulated parking system based on vehicle technology and occupancy and is considered the first city in the world to apply a fee based on these two parameters. The vehicles with lowest NOx emissions benefit from a reduction in the parking fee (a reduction up to 20%), while the most polluting vehicles are penalized with a higher fee (a penalty up to 20%), according to the 'polluter pays' principle. Electric vehicles are exempted from paying the fee. There are currently 156,000 parking spots under the municipality's management.</p> <p>In the interests of fairness and consistency, it is strongly suggested that any future diesel surcharges align with the ULEZ standards and only apply to diesel vehicles below Euro 6.</p>	
Web Links	http://www.islington.gov.uk/services/parking-roads/parking/Pages/Diesel-surcharge.aspx http://www.islington.gov.uk/services/parking-roads/parking/Pages/Diesel-Surcharge-Frequently-Asked-Questions.aspx http://www.camden.gov.uk/ccm/cms-service/stream/asset/?asset_id=3286266&	
General Benefits	<ul style="list-style-type: none"> • Low cost to the council. • [Note it is illegal to use parking charges to raise revenue and they must be clearly aligned to specific transport or environmental objectives like managing congestion or reducing emissions] • Concessions can be offered for blue badge holders, over 60s, new parents, faith groups and charities so that they are not unfairly impacted. 	
Emissions & Concentrations	Modelling for a main road showed that replacing diesel cars with petrol cars would reduce NO _x and PM ₁₀ emissions by 18% and 9% respectively. This would lead to reductions in NO ₂ and PM ₁₀ concentrations of 11% and 5% respectively. The benefits of this action would be even greater if diesel vehicles were replaced by LEVs.	
Awareness Raising Benefits	<ul style="list-style-type: none"> • The main benefit of this measure is likely to be that it helps to raise awareness of the impact of diesel on air quality. • Ensures that air quality as well as carbon is considered within the parking regime. 	
Risks	<ul style="list-style-type: none"> • Political risk and complaints. • Small surcharges compared to permit fee will result in less of an incentive (e.g. in RBKC the surcharge is £18 and in Camden it is £10). So this measure has not had a significant impact so far. 	
Cost (to Borough)	Low	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2	

Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	3
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	6
Priority Justification	This measure is relatively straightforward to implement but is unlikely to have a significant impact unless the additional charge is substantial, and the higher the charge the bigger the backlash. To be effective it needs to be a high charge and/or combined with other measures to support lower emission vehicles.

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Theme	6. Cleaner Transport	
Action	35. Installation of resident charge points close to homes on targeted residential streets	
Examples	<p>75% funding for residential charge points is available from the Office for Low Emission Vehicles (OLEV). Boroughs need to fund the other 25% and officer time. However, the Local Implementation Plan (LIP) Guidance has been revised in May 2015 to allow boroughs to use LIP funding to cover the remaining cost and officer time.</p> <p>There are obvious complexities involved in installing resident's charge points but they are also crucial in stimulating uptake of cleaner vehicles because in London two thirds of households do not have access to off street parking.</p> <p>Westminster is taking the following approach to resident charge point installation, which is proving to be very effective:</p> <ul style="list-style-type: none"> • They use visitor parking bays (rather than residential parking bays) where possible. This minimises local resistance, although it does have an impact on council parking revenue. • When they reach a ratio of 3 cars to 1 charge point they look at installing an additional residential EV bay on a street. • They use an app-based booking system which restricts the amount of time a resident can spend in a residential EV bay to 8 hours. After this they have to move their car into a standard residential bay. This ensures other resident EV-owners can use the charging bay. <p>Further guidance on installation of resident charge points will be available later in 2015 from London Councils.</p>	
Web Links	<p>https://www.zap-map.com/live/#y=51.5/x=-0.13/z=9</p> <p>https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/3986/plug-in-vehicle-infrastructure-strategy.pdf</p> <p>https://www.westminster.gov.uk/sites/default/files/uploads/workspace/assets/publications/Electric-charging-and-EV-vehicles-1247227333.pdf</p>	
General Benefits	<ul style="list-style-type: none"> • Recharging at home, at night, seems to be the natural recharging behaviour of plug-in vehicle drivers. Evidence from trials suggests that the majority of plug-in vehicle owners want to charge their vehicles at home, at night, as this is the most convenient time. (OLEV, 2011). However, a large proportion of Londoner's use on-street parking, so require on-street charging facilities in order to enable this. • Research undertaken by Newcastle University determined the following as the main concerns people had with switching to EVs: Purchase price; Limited driving range; Time required to recharge; Inconvenience of recharging; Limited availability of charge points; Lack of power / performance; Unfamiliarity with the technology; Lack of choice of makers / models; Safety concerns about battery or electrical (http://rapidchargenetwork.com/public/wax_resources/RCN_brochure.pdf). Three of these concerns would be significantly reduced if charge points were provided in residential areas. 	
Emissions & Concentrations	<p>Modelling for a main road showed that if the proportion of cars which are electric projected for 2025 (2.5%) is achieved by 2020, NO_x and PM₁₀ emissions will be reduced by around 1.7% and 0.3% respectively. NO₂ and PM₁₀ concentrations will be reduced by around 1% and 0.1% respectively.</p>	
Awareness Raising Benefits	<ul style="list-style-type: none"> • Very significant scope to influence purchasing decisions. • Plug-in hybrids are more likely to be charged and used in electric mode. 	
Risks	<ul style="list-style-type: none"> • Complaints about lost residential parking. • Concerns about finding alternative charge points if ratio of vehicles to charge points is incorrect. • Only successful if it stimulates a wider market of EVs (reducing the market price) and/or if the incentives of EVs to buyers are increased and communicated better to the public. 	
Cost (to Borough)	Moderate - OLEV provide 75% of funding; councils must provide the remaining 25% and officer time, although the LIP can be used for this.	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	3	

Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	1
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	3
Priority Justification	A rapid increase in uptake could lead to large air quality benefits.

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Theme	6. Cleaner Transport
Action	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)
Examples	<p>The UK government published its strategy Driving the Future Today in September 2013 (Office for Low Emission Vehicles, 2013) in which it made plans to increase the number of rapid charge points to around 500 in the near future, and committed £37 million to building national charge point infrastructure. As of 19th March 2015, it is estimated that there are 8020 charging points across the UK in 3160 locations, with 884 rapid chargers included (https://www.zap-map.com/statistics/). It's estimated that 20% of all chargers in the UK are based in London.</p> <p>Go Ultra Low City Scheme: OLEV has made up to £35 million available for between two and four cities that commit to supporting a step change in ULEV adoption in their areas through measures such as access to bus lanes, ULEV car club support, infrastructure for residents, preferential parking policy and changing their own fleets. The aim is that these cities will increase the uptake of EVs and become cities that lead by example. London is one of 12 shortlisted cities. As of May 2015, the GLA, TfL and London Councils are working with boroughs to develop a bid. Should this bid be successful boroughs may be able to apply for / access some of this funding. Further details will be announced in due course.</p>
Web Links	<p>https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239317/ultra-low-emission-vehicle-strategy.pdf</p> <p>https://www.zap-map.com/live/#y=51.5/x=-0.13/z=9</p> <p>http://rapidchargenetwork.com/public/wax_resources/RCN_brochure.pdf</p> <p>https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/307019/ulev-2015-2020.pdf</p>
General Benefits	<ul style="list-style-type: none"> • Can help to facilitate longer journeys by enabling drivers to quickly and conveniently top-up their vehicle's charge. • Reassure EV drivers that they can undertake longer journeys easily. • Can be applied to residential or commercial areas. • Potential source of revenue for boroughs from charging customers for electricity. • Rapid chargers enable batteries to be recharged much more quickly e.g. a 24 kWh battery can be recharged from flat to 80% in less than an hour, representing a method of enabling longer distance journeys without the need for long recharging stops (OLEV, 2011).
Emissions & Concentrations	Modelling for a main road showed that if the proportion of cars which are electric projected for 2025 (2.5%) is achieved by 2020, NO _x and PM ₁₀ emissions will be reduced by around 1.7% and 0.3% respectively. NO ₂ and PM ₁₀ concentrations will be reduced by around 1% and 0.1% respectively.
Awareness Raising Benefits	<ul style="list-style-type: none"> • Increased visibility and increased EV driver confidence.
Risks	<ul style="list-style-type: none"> • New technology that's not well trialled. • Security concerns about charger locations. • So far some issues have been experienced with grid capacity. Chargers must be carefully located in close proximity to an electricity substation. • Finding suitable land - they are big pieces of equipment and there will be a high number of vehicle movements to accommodate. • Possible slow return on investment for charge point network operators, especially where electricity substation upgrades are needed. • Older EVs and Plug-in hybrids may not be able to fast charge.
Cost (to Borough)	Low (because funding is likely be available from TfL/OLEV).
Inner, Outer, Central or All of the Above	All
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	MT
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	2
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	2

Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	4
Priority Justification	Boroughs would only install a small number of rapid chargers so it would not be an excessively large or on-going time commitment. A strategic network of rapid chargers is viewed as a crucial component in encouraging an increase in take up of EVs.

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Theme	6. Cleaner Transport
Action	37. 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.
Examples	<p>Removing or relocating parking away from busy roads and High Streets can help address congestion pinch points and free up space for buses and bicycles. Reducing parking in accessible destinations, such as High Streets with good public transport links, can also help to encourage modal shift away from the private car. This is likely to be more appropriate for inner and central London boroughs.</p> <p>Any reallocation of road space needs to reflect local characteristics, public transport accessibility levels and mode share aspirations. Removal or relocation of parking may be challenging to implement in many boroughs.</p>
Web Links	<p>https://www.tfl.gov.uk/cdn/static/cms/documents/roads-review-part-a.pdf (A8 - Paris urban street design)</p> <p>http://www.seattle.gov/transportation/parking/cbdCurbspaceStudy.htm</p> <p>http://www.seattle.gov/transportation/2ndavepbl.htm</p> <p>http://www.seattletimes.com/seattle-news/seattles-vanishing-street-parking/</p>
General Benefits	<ul style="list-style-type: none"> • Improvement to bus journey times and reliability. • Improvement to cyclist experience. • Easier access for emergency services. • Removing/relocating parking can simplify street layouts and make it easier for pedestrians to cross the road by creating better sight lines and less obstacles. • Addressing congestion pinch points caused by parking will enable more free flowing traffic, which may reduce emissions. • Support modal shift away from private cars.
Emissions & Concentrations	<p>Modelling for a main road showed that: if on street parking were removed, concentrations of NO₂ and PM₁₀ at receptors closest to the road could increase by 5.8% and 1.9% respectively, if vehicles remained driving at the same speed. This results from removing on-street parking to enable traffic to flow freely along the kerbside, moving emissions closer to receptors and causing increased concentrations.</p> <p>The same scenario was modelled but with the average speed increased by 5kph to account for the reduced congestion. This resulted in decreases in NO₂ and PM₁₀ concentrations of 4.2% and 0.6% respectively.</p> <p>Both scenarios assume that traffic numbers stay the same, that is, no additional traffic is attracted.</p>
Awareness Raising Benefits	Promoting access to town centres and popular destinations by raising awareness of walking, cycling and public transport options may make it easier for people to shift from private cars.
Risks	<ul style="list-style-type: none"> • Reallocated road space should specifically be made available to more sustainable modes; otherwise it could induce demand and encourage more people to drive. For example, reallocated space should be for the provision of bus priority measures or the introduction of a segregated cycle lane. • This measure may impact on local businesses and any such impacts should be carefully considered before any proposal is put in place.
Cost (to Borough)	Medium
Inner, Outer, Central or All of the Above	Inner and central
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	ST
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	3
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	2
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	6
Priority Justification	This is likely to be fairly challenging to implement but, if managed effectively, could have significant benefits.

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Theme	6. Cleaner Transport	
Action	38. Provision of infrastructure to support walking and cycling	
Examples	<p>TfL funding for cyclists: TfL is leading projects for suburbs to be transformed for cyclists in a 'mini-Holland' revolution. Three boroughs – Enfield, Kingston and Waltham Forest – have been selected for full mini-Holland status, receiving up to £30 million each for changes including:</p> <ul style="list-style-type: none"> • Kingston: A major cycle hub will be created and the plaza outside Kingston station will be transformed. New high-quality cycling routes will be introduced together with a Thames Riverside Broadway, a landmark project which could see a new cycle boardwalk delivered on the banks of the river. • Enfield: Enfield Town centre will be completely redesigned, with segregated superhighways linking key destinations, three cycle hubs delivered across the Borough and new greenway routes introduced. • Waltham Forest: A semi-segregated Superhighway route along Lea Bridge Road will be developed as well as a range of measures focused on improving cycling in residential areas and the creation of "Hackney-style" cycle-friendly low-traffic neighbourhoods. 	
Web Links	http://www.apfo.org.uk/resource/item.aspx?RID=91553 https://www.london.gov.uk/media/mayor-press-releases/2014/03/suburbs-transformed-for-cyclists-in-100m-mini-holland-revolution	
General Benefits	<ul style="list-style-type: none"> • Encourages more exercise through walking and cycling which should have a positive impact on public health and at the same time potentially reduces travel made by car. • Department of Health (2010) determined that almost all of the studies identified reported economic benefits of walking and cycling interventions which are highly significant. The median result for all data identified is 13:1 and for UK data alone the median figure is higher, at 19:1. Investment in infrastructure which enables increased activity levels amongst local communities through cycling and walking is likely to provide low cost, high-value options providing benefits for our individual health, the NHS in terms of cost savings, and for transport as a whole. 	
Emissions & Concentrations	35% of car journeys by London residents are for 2 km or less. Dispersion modelling for a main road showed that removing this proportion of car journeys, which would be reasonable to be replaced by walking or cycling, would reduce NO _x and PM ₁₀ emissions by 9% and 16% respectively. NO ₂ and PM ₁₀ concentrations would be reduced by 6% and 8% respectively.	
Awareness Raising Benefits	<ul style="list-style-type: none"> • The magnitude of these projects is such that awareness will be high. 	
Risks	<ul style="list-style-type: none"> • For some schemes, modelling may indicate increased congestion and pollution as a result of road space reallocation, but there would be significant benefits in terms of promoting a longer term switch to walking and cycling. • Provision of infrastructure projects can be costly, challenging and time consuming 	
Cost (to Borough)	High	
Inner, Outer, Central or All of the Above	All	
Timescale for Impact (ST - weeks/months MT – months/years, LT - years/decades)	LT	
Ease of Delivery (Easiest= 1, Medium = 3, Most Difficult = 5)	5	
Magnitude of AQ Benefits (High = 1, Medium = 2, Low = 3)	1	
Priority Level (High = 1, Low = 15) (Ease of Delivery * Magnitude of Benefits Scores)	5	
Priority Justification	Due to the infrastructure changes involved and the agreement needed across several sectors, it is considered relatively difficult to implement these very ambitious interventions.	