LOCALIS

GOVERNMENT CLEAN AIR STRATEGY

On the day briefing:
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Our response to the Clean Air Strategy

Today the government published its much-anticipated Clean Air Strategy - a pan-government initiative led by the Department for Environment, Food and Rural Affairs.

Containing tough new rules to clamp down on particulate matter pollution, the strategy promises new legislation to create 'a stronger and more coherent framework for action to tackle pollution'.

This framework is to be underpinned by new England-wide powers to control major sources of air pollution and new local powers that will lead to the expansion and acceleration of Clean Air Zones to reduce emissions from all air pollution sources.

The initiative also complements three other UK government strategies, the Industrial Strategy, the Clean Growth Strategy and the 25 Year Environment Plan.

From a place-based perspective, what Localis sees as important in the strategy is:

- The acknowledgement of the strategic role of authorities and **the need for collaboration within and between councils** is welcome.
- However, the strategy would benefit from more explicit acknowledgement of the local state's convening power, especially in connection with industry and citizens.
- The strategy indicates a clear path for local government to take independent action and start doing things - our guide to practice overleaf shows some already are - **ahead of receiving central government approval**.
- The strategy places the responsibility upon local authorities to work out **where collaboration is best delivered and what scale**, as well as what kind of action would be locally appropriate.

In this context, ministers must use this years Spending Review to tie funding for vital public infrastructure to the clean air agenda - and provide money and particular assistance to areas of the country doubly-affected by air pollution and economic stagnation.

The role of central government remains essential to making local schemes viable, but unless clean air is enshrined as a main objective of future infrastructure expenditure and cash pots, roads will go unrepaired and new structures remain unbuilt.

If correctly aligned, national level co-ordination as promised in the report, should be directed to securing investment and supporting those parts of the country which experience air pollution but lack the resources to respond to the clean air agenda.

In turn and at local level, strategic authorities - such as combined authorities or county councils - should take greater responsibility for delivering clean growth by attracting greater long-term private capital investment

Overleaf are some examples of policy and practice which local authorities can engage in to improve air quality.

Jonathan Werran, Chief Executive

Local Air Quality Policy: Examples and best practice

Extracted from forthcoming Localis report 'A Modern Transport Infrastructure Strategy'

Green waves

Green wave traffic signalling can help avoid saturated traffic situations by reducing variation in road speed and reducing the number of times vehicles stop at traffic lights. Consequently improving traffic light systems to help cars drive through a wave of green lights, hence the term 'green wave', could save money and reduce congestion whilst reducing emissions. This approach uses vehicle flow detection to coordinate lights with other traffic signals to allow for vehicles to pass continuously and smoothly through intersections. Analysis of green wave signalling indicates that waiting longer at one set of traffic lights has more environmental benefits than waiting less time at traffic signals but facing more traffic stops[1]. Green wave systems work with road stretches of up to 1 kilometre in length with multiple intersections and consistently reduce emissions of CO_2 levels, NOx levels, and PM10 levels compared to single traffic controls and roundabouts[2].

Future vehicle technologies such as adaptive cruise control and engine interventions may enhance the role of green waves in reducing vehicle emissions and improving efficiency on the roads. However, the green wave can be disturbed with the variability in cars at each light and an initial speed disturbance, such as a car turning onto a main road – which can cause a queue of vehicles in the green wave to grow in size until vehicles cannot reach the green lights in time, exacerbating saturation and gridlock[3]. Understanding the cause of these disturbances will help improve the green wave technology system, yet ultimately this technology still outweighs any single traffic controller or roundabout for traffic control and emission levels.

Birmingham City Council has entered into a collaborative partnership with Idox Transport, CheckedSafe and Amey as part of the 'Greenwave project' to support traffic and air quality management in urban areas by testing the viability of encouraging lorry drivers to 'ride the green wave'[4]. Large vehicles for commercial use emit a significantly larger amount of fuel when idling at traffic lights. Greenwave changes driving habits and by taking a driver-focussed perspective, reduces the number of traffic light stops, emissions and fuel consumption will reduce. The Greenwave app feeds information to lorry drivers about when the lights are about to change so they can adjust their driving style accordingly, rather than making quick speed changes and reducing waiting time at lights, creating savings of approximate 10-15% on fuel as well as emission reduction[5]. Birmingham City Council hopes in this way to address air quality and improve freight transport in a fairly cost-effective way.

Selective Vehicle Detection

One type of selective vehicle control is Selective Vehicle Detection (SVD), which is an above ground detection system using radio frequency identification to selectivity detect suitably tagged vehicles[6]. Certain vehicles have a tag mounted in the windscreen with a unique ID and the reader will contain a list of tag IDs that allows it to decide whether the vehicle passing is allowed access or should be granted priority over other traffic. Once a tag has been detected, the reader

1 Marcel Willekens, DTV Consultants (2009) – Green waves and air quality

2 Ibid.

3 Lisa Zyga (2013) – Physics of 'green waves' could make city traffic flow more smoothly

4 Green Wave (2017) – Project Background

5 Ibid.

6 Siemens – Selective Vehicle Detection

outputs a signal to the traffic controller for traffic priority or to release a barrier for access control. A common use for SVD involves providing local bus priority at traffic signals; when a bus passes a reader and the tag ID is recognised, an output is sent to the traffic signal and linked to the traffic controller allowing priority and access at that junction.

This system will help pave the way for future traffic management for local councils and is a highly cost effective way to do this, characterised by low set up and maintenance costs. This makes it an extremely cost effective solution for local authorities seeking more efficient public transport routes and to improve management through priority transport access.

Kent County Council adopted a SVD solution based on radio frequency identification technology to allow over 100 taxis and 60 local buses use an existing gate system, fitted with ID tags which are read by above ground detectors to access a strategic passenger transport route[7]. This prioritises use of local transport and deters individual motorists using the ring road by pre-identifying vehicles with the appropriate ID tags to improve effective and reliable traffic management.

3.10 Urban Traffic Management and Control

The main idea behind Urban Traffic Management and Control (UTMC) is to maximise the road network potential by creating a more robust system that allows for different traffic management tools to communicate and share information with each other. This includes traffic signals, air quality monitoring stations, car parks and automatic number plate recognition cameras and combining them. Shropshire Council put in a UTMC system in 2013 using the 'SCOOT system' which prioritises public transport, reduces traffic impact on air quality and restrains traffic and congestion through efficient management[8]. The SCOOT system and other UTMC systems co-ordinate single traffic signals within close proximity (particularly in urban areas) and uses a computer system to calculate optimum signal settings for a signal network[9].

Previously, combating conflicting routes and signals was done by using computer calculations to identify the optimum signal settings by analysing recurring traffic conditions. However, this can be time consuming and expensive. The advantage of UTMC systems is that they were developed to be more demand-responsive, monitoring traffic flows continuously and making small adjustments to reduce delays and improve traffic flow. Arguably UTMC systems are leading the way in efficiently control large and complex road networks.

Leicester has experienced a large growth in traffic since 2000 and discovered in 2008 that local traffic was estimated to contribute up to 90% of NOx emissions at receptor measurements, of which road transport was identified as the dominant local source of emissions[10]. Leicester has responded to this issue by investing in a range of UTMC systems including a network of classified traffic counters, CCTV and number plate recognition cameras, a SCOOT system as mentioned earlier, a common database integrating sub-systems to manage the network in a map (COMET) and a car park guidance system with 25 interactive signs distributed on routes into and within the city centre (SIESPACE). As a result traffic is managed in real-time and can respond to incidents and roadworks that disrupt traffic flow. Optimising traffic management during peak road times and in the long-term will help reduce emissions of NOx, PM and CO2 along with reaping the economic benefits of reducing traffic congestion in urban areas.

7 Siemens (2011) – Kent order first TagMaster system from Siemens

8 Shropshire Council (2013) – Urban Traffic Management Control

9 Department for Transport (1995) - The SCOOT Urban Traffic Control System

10 Department for Environment, Food & Rural Affairs - Local Air Quality Management Case Study – Managing Transport Emissions

3.11 Road pricing

More and more cities are exploring the possibilities of introducing road pricing in their area. This is partly driven by government's threat that places whose air quality action plan they deem insufficient will have charging imposed in their area in the form of a charging clean air zone. And it is partly driven by the necessity of raising more revenue to fund road betterments. As one interviewee put it, "we either have to start looking at recuperating more land value… or users will need to start paying more for roads".

The winner of the 2017 Wolfson Economics Prize proposed a national road pricing scheme, where fuel duty and VED are scrapped.[11] The scheme suggested replacing them with a distance-based charge determined by road and environmental impacts and collected by the insurer. There may be scope to pilot a similar scheme across a city-region, or for alternative green tariffs to be introduced.

In places with high numbers of HGVs, a supplementary local levy could be issued for investing in reducing congestion. In Kent, for instance, the county's motorways are often clogged by heavy-goods traffic entering and exiting Dover. The levy would be collected as HGVs pass through the port and could be invested in services like motorway lorry parks.

For town and city centre locations, the Transport Act 2000 allows local traffic authorities, outside of London, to introduce a Workplace Parking Levy subject to approval of the Secretary of State. The Levy enables local authorities to charge businesses for every employee who parks in the area. It is in effect a licensing scheme that allows office owners to pay for a licence to park up to a maximum number of vehicles.[12] So far the Levy has only been introduced in Nottingham.

3.12 Local fuel duty

A separate option to road pricing that places could introduce, but with similar potential for revenue-raising and for changing behaviours through financial means, is local fuel duties. This would be an increment, set and collected locally, on fuel sold within the area of a strategic authority. It would be paid on-top of the national fuel duty with revenues raised spent on local infrastructure.

Undoubtedly a local fuel duty would bring complications – how it is collected, displacement effects and political difficulties – but there are two examples of local fuel duties across the world which suggest there is potential for implementation in England:

- In Auckland, New Zealand, a Regional Fuel Tax was passed into law in June 2018. From July 2018, an 11.5c/litre tax will be levied on fuel sold within Auckland (around 6p in Pound Sterling). It is to raise NZ$1.5bn over the next ten years and revenues raised will be used to fund improvements to the road network, identified in the council's infrastructure gap. It has been reported that 52 per cent of people from Auckland supported the tax while 43 per cent opposed it.[13]
- In Portland, Oregon, a four-year 10-cent-a-gallon 'gas tax' was approved by public vote in 2016. In its first year, the Bureau of Transportation has said the city collected $19.9 million. The duty was originally forecast to raise $64 million, or $16 million a year before it sunsets at the end of 2020. Meaning 2016/17 revenues were higher than expected. 56 percent of revenues are to be spent on road repairs, with the remainder spent on pedestrian and bicycle safety improvements, particularly near schools.[14]

A local fuel duty in England would necessitate government approval and, as we write above, political endeavour. Yet there are significant revenues to be raised,

11 Policy Exchange (2018) - Wolfson Winner

12 House of Commons Library (2012) - Roads: Workplace Parking Levy (WPL)

13 Stuff NZ (2018) - Regional Fuel Tax bill finally passes

14 The Oregonian (2018) - Portland gas tax brings in more than expected

if implemented. Below we have provided rough estimates of what could be raised across English regions by a local fuel duty of £0.06 per litre (the same as in Auckland).

Region	Total road energy consumption (litres)[15]	Potential revenue (£)
North East	1,336,368,233	80,182,094
North West	4,072,814,846	244,368,891
Yorkshire and the Humber	3,220,838,168	193,250,290
East Midlands	3,109,892,462	186,593,548
West Midlands	3,658,388,625	219,503,317
East of England	4,115,037,057	246,902,223
Greater London	2,410,801,703	144,648,102
South East	5,920,680,142	355,240,808
South West	3,465,678,850	207,940,731

15 BEIS (2018) - Road transport energy consumption at regional and local authority level