

EXPANSION OF THE ULTRA LOW EMISSION ZONE

Highway Modelling and Impact Assessment

Summary of modelling

Background

On 8 April 2019, the first London Ultra Low Emission Zone (ULEZ) was introduced, operating 24 hours a day, 7 days a week, within the same area of central London as the Congestion Charge. Diesel vehicles not meeting Euro 6 emission standards and petrol vehicles not meeting Euro 4 emission standards are now charged a daily fee to enter the zone.

The ULEZ has been introduced to clean up London's toxic air which is a public health crisis. Over 2 million Londoners live in areas that exceed legal limits for NO₂, of which over 400,000 are children under the age of 18. Thousands of Londoners die early each year because of toxic air pollution. It is stunting the growth of children's lungs, is a cause of cancer, and increases the risk of asthma, stroke and dementia.

On 25 October 2021 the ULEZ will expand up to, but not include, the North and South Circular roads. The ULEZ charge aims to improve air quality in central London by discouraging the use of the most highly polluting vehicles. The daily cost of entering the expanded ULEZ area, £12.50 cars and £100 for HGV's and buses (in addition to charges associated with the Congestion Charge Zone and Low Emissions Zone), is predicted to be high enough to change vehicular travel patterns of some non-compliant vehicles within a wider business and socio-economic context.

The impacts associated with the expansion of ULEZ were originally analysed in an environmental and emissions assessment, reported on by TfL in November 2017 as part of the published consultation material. The report estimated a 3 per cent reduction in car trips travelling from outside the boundary to inside from October 2021 over the first year of operation. The full report can be found on the TfL website.

Modelling Approach

Following the 2017 assessment, professional services firm WSP, were commissioned by TfL to undertake a detailed traffic modelling study in order to:

- Understand any operational considerations on the boundary and surrounding routes;
- Identify potential mitigation measures- ranging from soft measures (signal timing changes) to hard engineering solutions; and
- Test the resilience of the network during peak times including am and pm.

The study area assessed within the report was defined as the North and South Circular roads, plus a 2km buffer outside this boundary, as well as up to 5km along the Transport for London Road Network (TLRN) radial routes.

The model used for the assessment was updated to include new and upcoming schemes such as Cycleway 9 and the closure of the Hammersmith Bridge. Predicted compliance rates, split by ward, were also included as one of the assumptions within the model. These compliance rates were

developed as part of the 2017 report (referenced above) and are supported by London vehicle age data and data on the normal rate that vehicles are changed without ULEZ.

In order to identify the areas within the model's study area, which experienced impacts as a result of the ULEZ expansion, a set of thresholds were derived for key traffic metrics: traffic flow (numbers of vehicles), junction capacity and vehicle delay. The thresholds identified drew on industry expertise and were used to categorise the magnitude of impact of the scheme at each location in the study area; classification ranged from 'no change' to 'significant' impacts, including adverse and beneficial changes.

Modelling Results

Overall the modelling results demonstrate that ULEZ expansion does not significantly impact traffic flows across the study area, with the majority of modelled sites seeing 'no change':

- 90% road links saw 'no change' in flow;
- 98.5% road links saw 'no change' in capacity;
- 99% junctions saw 'no change' in capacity;
- 81% road links saw 'no change' in vehicle delay; and
- 87% junctions saw 'no change' in vehicle delay.

Areas were further investigated as required and as a result three junctions were identified as requiring signal timing changes, these are listed below; no sites were identified to require hard engineered mitigation measures.

It should be noted that the study measures the direct impacts of ULEZ expansion and hence is a measure of change. Therefore roads and junctions that are currently very busy that do not see any great change in flow, capacity or vehicle delay as a result of the ULEZ expansion would not necessarily be flagged by the thresholds set.

Junction Reference	Impacted Location
A205 Clifford Avenue / Mortlake Road / Lower Richmond Road	Northbound ahead and right turn impacted
A205 / Vine Road / Priory Lane	Eastbound right turn impacted
A205 / Haha Road / Nightingale Place	Increased flow southbound

In order to test the effectiveness of the proposed signal timing changes at these locations, the proposed timing changes were put back into the model to be tested during the AM and PM peaks. The changes demonstrated the ability to rebalance junction capacity and reduce the impacts which had resulted from a small increased number of vehicles on particular approaches.

The conclusion of our modelling study is that the impacts of ULEZ can be effectively managed through adjusting signal timings, and that no permanent physical layout changes are required. In addition to the above areas identified, TfL will carry out a comprehensive signal timing review of key roads and junctions following 'go-live' in October 2021 to ensure that the network surrounding the boundary is operating optimally.

This modelling study complements a wider programme of work in spreading awareness of the ULEZ expansion and encouraging pre ULEZ launch behaviour change towards more sustainable solutions, including switching to active travel and public transport or transitioning to a cleaner vehicle. This will be done through an extensive proposed marketing campaign, and ongoing collaborative work with the boroughs and developing local Borough Action Plans to maximise outreach to local stakeholder groups and resident communities.