

Lower Thames Crossing

Carbon forecasts

Introduction

The proposed Lower Thames Crossing is the most ambitious project of its kind, and part of the largest investment in the UK's Strategic Road Network in a generation.

The Dartford Crossing is one of UK's most vital links, connecting key ports, distribution hubs and manufacturing centres, but it is also one of the most unreliable roads as the huge volumes of traffic regularly leads to long delays, with 95% of the journeys northbound during the evening peak being delayed.

The Lower Thames Crossing would almost double road capacity across the Thames east of London that would improve journeys across the region and create a reliable new connection that will boost the economy. It would also reduce traffic on the Dartford Crossing by over 13 million vehicles per year, reduce congestion and improve air quality in the area.

It would become an essential part of the UK's future low carbon transport infrastructure, reducing existing and future congestion in the south east, and improving journeys to the Midlands and beyond. It would also boost the economy by providing a reliable new connection between people and jobs, businesses and customers, and the region's key ports, manufacturing centres and distribution hubs.

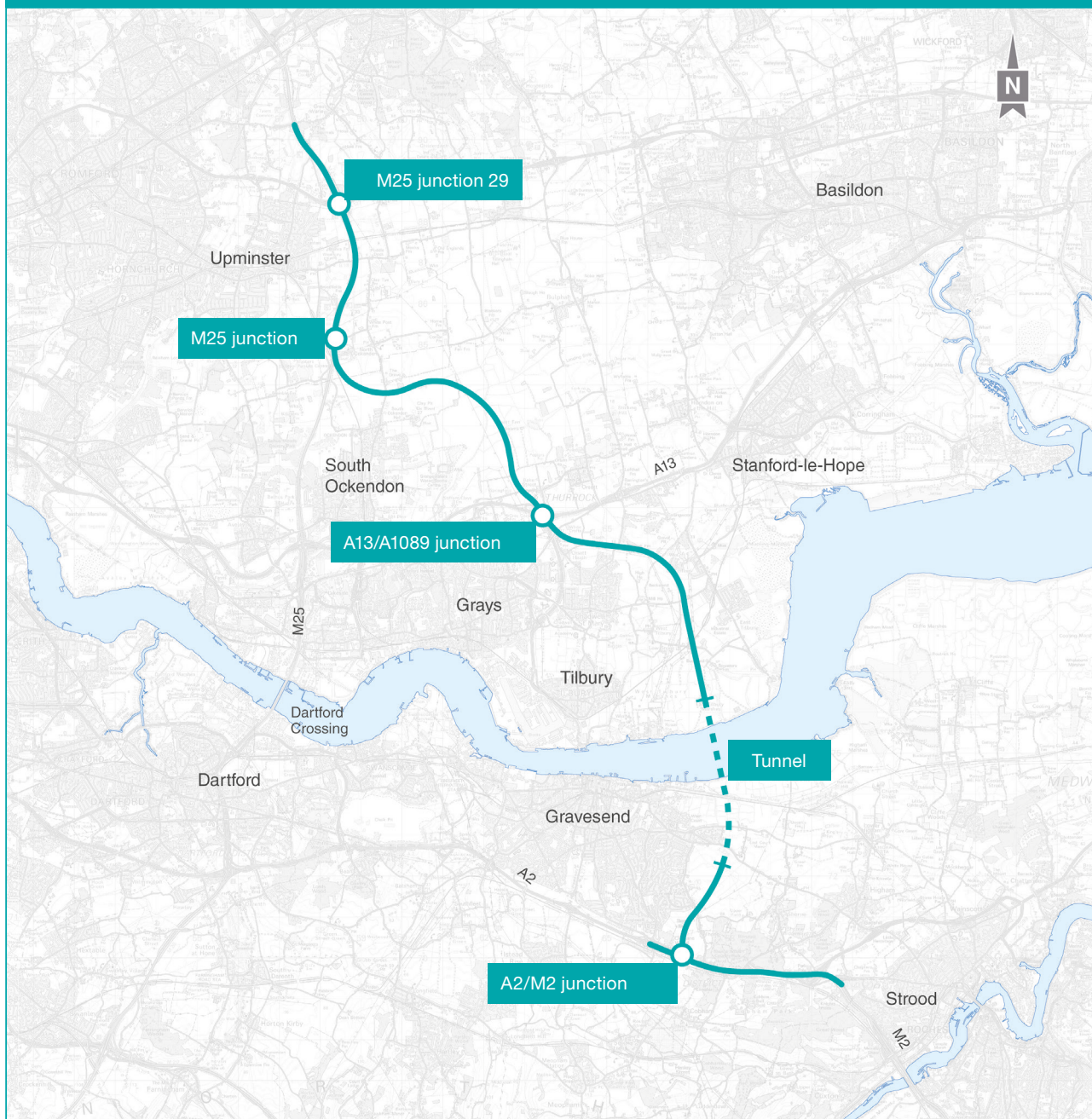
When the road opens for traffic, more and more people will be making the switch to electric and zero emission hybrid cars, meaning the makeup of vehicles using the crossing will be cleaner and greener. In June 2022, 50% of new cars registered were electric or hybrid. The Net Zero Strategy pathway assumes that 24% of all cars on the road could be zero emission by 2030, and 53% by 2050.

Protecting and enhancing the local environment, and reducing our carbon emissions, is at the heart of our plans and we are designing the Lower Thames Crossing to be the greenest road ever built in the UK, driving the adoption of net zero construction processes and equipment in the supply chain.

National Highways has designated the Lower Thames Crossing a Pathfinder project, meaning it will challenge and drive the supply chain to go further to deliver carbon neutral construction.

This document will explain the estimated carbon emissions associated with the Lower Thames Crossing – as it is built, and from road users when the new crossing is open.

The route



What is the Lower Thames Crossing?

The A122 Lower Thames Crossing will be a new road and tunnel.

It would connect to the A2 and M2 in Kent, passing through a tunnel under the River Thames, before linking to the A13 in Thurrock and junction 29 of the M25 in the London Borough of Havering, north of the Thames.

It would be approximately 14 miles long, with 2.6 miles of this in a tunnel. This would be located to the east of the village of Chalk on the south side of the Thames, and to the west of East Tilbury on the north side.

The Lower Thames Crossing and carbon

Greenhouse gas emissions on the Lower Thames Crossing will come from three sources: construction emissions from building the new crossing; emissions from road users; and operations and maintenance activity.

Construction carbon emissions

We have already been able to reduce the carbon emissions predicted during construction of the Lower Thames Crossing by around a third to 1.8 millions tonnes CO₂e. As a pathfinder scheme we will be seeking to drive this figure down even further as we seek out new and innovative materials and ways of working with our supply chain. We will also work with a broad range of partners from major engineering companies to small businesses and universities, to identify, test and scale-up innovative ways of building and maintaining low carbon infrastructure.

New ideas being considered include removing diesel from sites by using hydrogen and electric plant, and looking at alternatives to carbon-intensive materials such as concrete and steel.

Greenhouse gas emissions from construction of the Lower Thames Crossing have been assessed following the standards laid out in PAS 2080: 2016 Carbon Management in Infrastructure (Construction Leadership Council, 2016). PAS 2080 is an industry guidance document that describes the steps in carbon management best practice. The assessment is a summation of the quantities of each material and activity required to construct the scheme, multiplied by the relevant carbon factor for the material or activity.

Road user emissions

To assess the road user emissions associated with the scheme we follow the government's standard methodology, described in Transport Analysis Guidance (TAG).

First, we assess how many additional journeys would be made because of the Lower Thames Crossing, using a traffic model of the whole Lower Thames Area.

We then assess what the carbon emissions associated with those additional journeys would be using the Emissions Factor Toolkit (EFT), a standard tool developed and maintained by the Department of Environment, Food & Rural Affairs (DEFRA). It uses data on engine efficiencies and the proportions of petrol, diesel, electric and other vehicles to calculate the emissions. We assess the total additional emissions over the 60-year period from road opening, which is the government's standard appraisal period.

We estimate carbon emissions from road users to be 4.6 million tonnes of CO₂e, over a 60 year appraisal period, when using the current version of the government's recommended tools to assess carbon emissions from road transport.

However, the government has set out a pathway to Net Zero in its Decarbonising Transport Plan. Thanks to these ambitious plans, the sale of new petrol and diesel cars is due to end in 2030, the same time the Lower Thames Crossing is due to open. This means the proportion of electric cars on the roads will increase significantly, reducing the carbon footprint of road transport.

The plan also announced that the government will consult on proposals to phase out polluting vehicles weighing between 3.5 tonnes and 26 tonnes from 2035, and those weighing more than 26 tonnes from 2040.

Based on the pathway published in the Decarbonising Transport Plan, ***the predicted carbon emissions figure from road users would be in a range from 0.4 – 0.9 million tonnes of CO2e over a 60 year appraisal period.***

Operations and maintenance

To assess our emissions from operations and maintenance, we used data from other projects and estimates of how frequently assets would need replacing.

We have aligned with the National Highways commitment to achieve zero carbon operations from 2030. As part of this, National Highways has committed to using renewable electricity for operations, 100% electric vehicles for non-traffic officer vehicles by 2027 and for traffic officers vehicles by 2030.

We have also aligned with the National Highways commitment to achieve zero carbon maintenance from 2040 and this has saved 0.25 million tonnes of CO2e. The replacement of pavement is a key component of our maintenance emissions and National Highways is looking at innovative low carbon asphalts to reduce the carbon impact of pavement replacement.

Summary of greenhouse gas emissions for Lower Thames Crossing

	EFT v11 (with London adjustment) output (MtCO2e)	Transport Decarbonisation Plan Upper Bound scenario (MtCO2e)	Transport Decarbonisation Plan Lower Bound scenario (MtCO2e)
Construction	1.8	1.8	1.8
Maintenance (60 years)	0.3	0.3	0.3
Road users (60 years)	4.6	0.9	0.4
Total	6.7	3	2.5

MtCO2e = Million tonnes of carbon dioxide emissions.

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