

The effects of the Silvertown Tunnel

This section outlines the impacts that we expect the new tunnel will have on traffic flow and the environment, as well as the economic benefits it could provide.

Impacts on traffic

We are using a traffic model – the ‘London Regional Demand Model’ to predict the demand for and traffic impacts of new river crossings for east London. The model was built using population and employment figures, as well as economic data, and forecasts demand for London’s road and public transport networks as a result of the growth predicted to take place here. The model also includes a tool to help us determine what routes motorists would take to access the new crossings. The model has been validated using on-street surveys, to ensure it is robust. The model allows us to identify broad changes in traffic patterns across London rather than exact changes at junctions on local roads. The model also does not take into account any further traffic management steps we might take, such as reviewing traffic light timings. We are undertaking further work to refine and improve our understanding of the traffic impacts of the Silvertown Tunnel, and we will publish our findings in our next consultation.

Demand for the Silvertown Tunnel and its subsequent effect on traffic flow will be influenced by the level of the charge motorists would pay to use the tunnel, as well as the availability of alternative river crossings further to the east. We have not yet fixed the level of charge that would best serve the purposes of demand management and revenue generation.

For the purposes of this consultation only, we have predicted the traffic impacts of the Silvertown Tunnel on the assumption that the charge would be reflective of that currently in place at the Dartford crossings; and that there will be a ferry crossing available at Woolwich that would offer 30 per cent more capacity than the current service.

What effects will the Silvertown Tunnel and new proposals for charging have on traffic?

The key effects will be:

- Congestion in the peak periods would be relieved and journey times would reduce,
- Journeys would be more reliable with journey times more predictable,
- Demand to use the Blackwall and Silvertown Tunnels would be managed through the effects of the user charge,
- The resilience of the network would be considerably improved since the new tunnel would provide an alternative crossing if the Blackwall Tunnel is unavailable and provide clearance for higher vehicles.

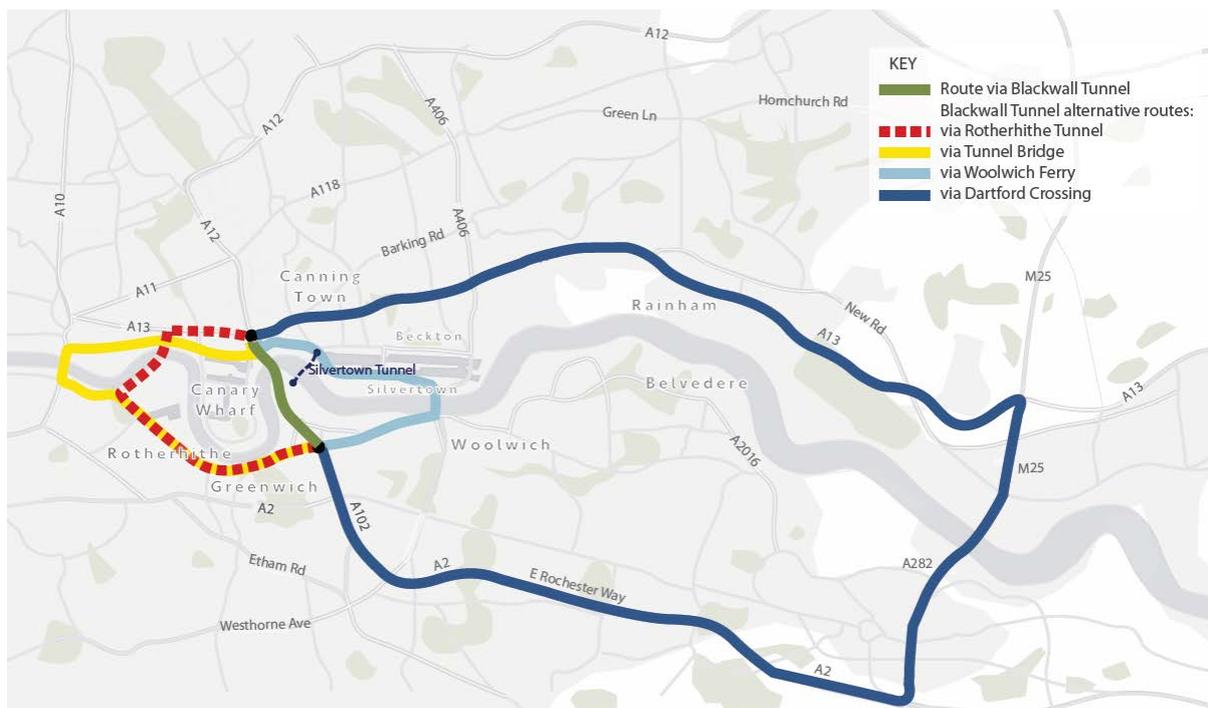
The Silvertown Tunnel would ‘release’ traffic currently held in lengthy queues to use the Blackwall Tunnel, which regularly extend as far as the Sun-in-the-Sands

roundabout. This would have the effect of reducing journey times in the Blackwall area.

It currently takes around 45 minutes to drive from Lewisham to Stratford during the morning peak period of an average weekday, assuming that there are no incidents at the Blackwall Tunnel. If an incident has occurred in or around the Blackwall Tunnel, then the journey time could be much longer.

Our modelling forecasts that with future growth taken into account, a journey from Lewisham to Stratford at the same time in 2021 would take around 53 minutes if the Silvertown Tunnel were not built and there were no charge in place. If the Silvertown Tunnel were built and a user charge was introduced to manage demand for it, a journey from Lewisham to Stratford could take around 40 minutes.

The Silvertown Tunnel would also offer an alternative route for vehicles across the river if the Blackwall Tunnel is unavailable. There is currently no nearby alternative route across the river if the Blackwall Tunnel must be closed temporarily, requiring motorists to follow lengthy diversionary routes to the nearest available crossing. This is shown on the map below:



Diversions to alternative routes if the Blackwall Tunnel is unavailable

In 2013, there were almost 1,100 incidents at the Blackwall Tunnel which caused the tunnel to become temporarily unavailable. The majority of these were caused by overheight vehicles seeking access to the northbound bore. The Silvertown Tunnel will be accessible to HGVs, removing the necessity for these vehicles to use the Blackwall Tunnel.

The remaining incidents at the Blackwall Tunnel were caused by a variety of factors, including vehicle breakdowns or road traffic accidents. While the new Silvertown Tunnel would not prevent these incidents from happening, it would provide a nearby

diversionary route if it were necessary to close the Blackwall Tunnel temporarily. Of course, the Blackwall Tunnel would also offer an alternative crossing if there were an incident at the Silvertown Tunnel which meant that it became temporarily unavailable.

The introduction of the Silvertown Tunnel would greatly improve the resilience of the road network to incidents at the Blackwall Tunnel.

How will traffic access the new tunnel?

The opening of the Silvertown Tunnel would reduce delays at junctions nearby the Blackwall Tunnel. The map below identifies those junctions where during the morning peak in 2021 there will be the greatest reduction or increase in delays to vehicles as a result of the opening of the Silvertown Tunnel.



Map to show the greatest effects of the Silvertown Tunnel on reducing delays at junctions

Our modelling suggests that building the Silvertown Tunnel would lead to a 25 per cent reduction in delays at junctions within the Royal Borough of Greenwich in the morning weekday peak by 2021. We are undertaking further work to understand the impact of the Silvertown Tunnel on delays at junctions, and will outline our findings in our next consultation.

Other measures to manage the impacts of the Silvertown Tunnel on traffic flow

Demand to use the crossings could lead to an increase in pressure on junctions elsewhere on the network, principally on the key strategic routes for accessing the crossings such as the A2, A12 and A13. The data we have presented above outlines the effects we predict the Silvertown Tunnel would have on traffic flow with the effects of a new user charge taken into account. There are further steps we

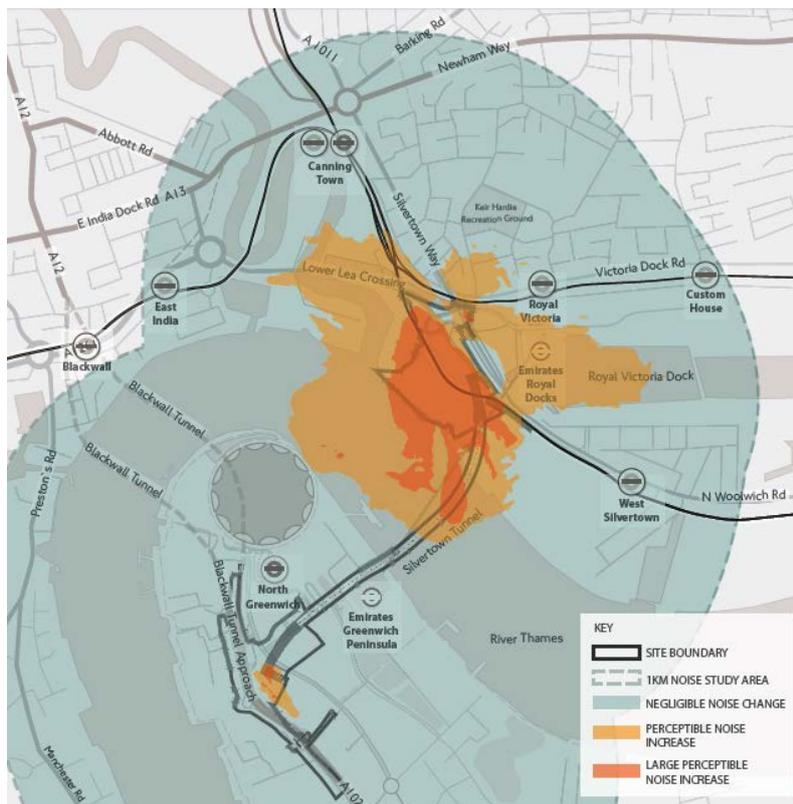
could take to mitigate these impacts, such as reviewing traffic signal timings; however our data does not yet take these steps into account.

We will address this issue during our next consultation on the Silvertown Tunnel. We will outline what changes we will make at those junctions where our modelling suggests that any change in demand for the crossings from users could lead to increased delays.

Impacts on the environment

The traffic impacts of the Silvertown Tunnel would also affect noise and air quality in the area. This section outlines our initial understanding of the impact of the new tunnel on noise and air quality based on our initial traffic predictions. We will continue to refine our understanding of the environmental impacts of the tunnel and will present further details of likely environmental impacts in our next consultation, together with the steps we might take to mitigate these impacts.

Introducing new roads and a higher volume of traffic at certain times of day through new areas will inevitably change existing noise levels. The map below indicates those areas where our initial modelling predicts that the introduction of the Silvertown Tunnel will lead to perceptible increases in noise from traffic only.



Map to show noise differences upon opening of the Silvertown Tunnel in 2021

Any increase in noise would be mainly restricted to the immediate area on the north bank of the Thames at Silvertown, though noise could be reduced through the use of low-noise road surfacing and noise barriers where appropriate. As such, it is unlikely once noise-reducing measures such as low-noise surfacing have been introduced, that existing local residents will notice any particular increase in traffic noise. As our

work continues we will consider whether these mitigating steps might be necessary. We will outline our findings in our next consultation.

Poor air quality is already a problem in this area, partly as a result of the very high level of demand for the Blackwall Tunnel and the congestion on the approaches to the tunnel. The resulting congestion reduces the engine efficiency of vehicles, leading to higher levels of harmful emissions. The map below shows concentrations of Nitrogen Dioxide (NO₂) in the wider area, using data from 2010 as a reference. The location of the proposed Silvertown Tunnel is highlighted for ease of reference.



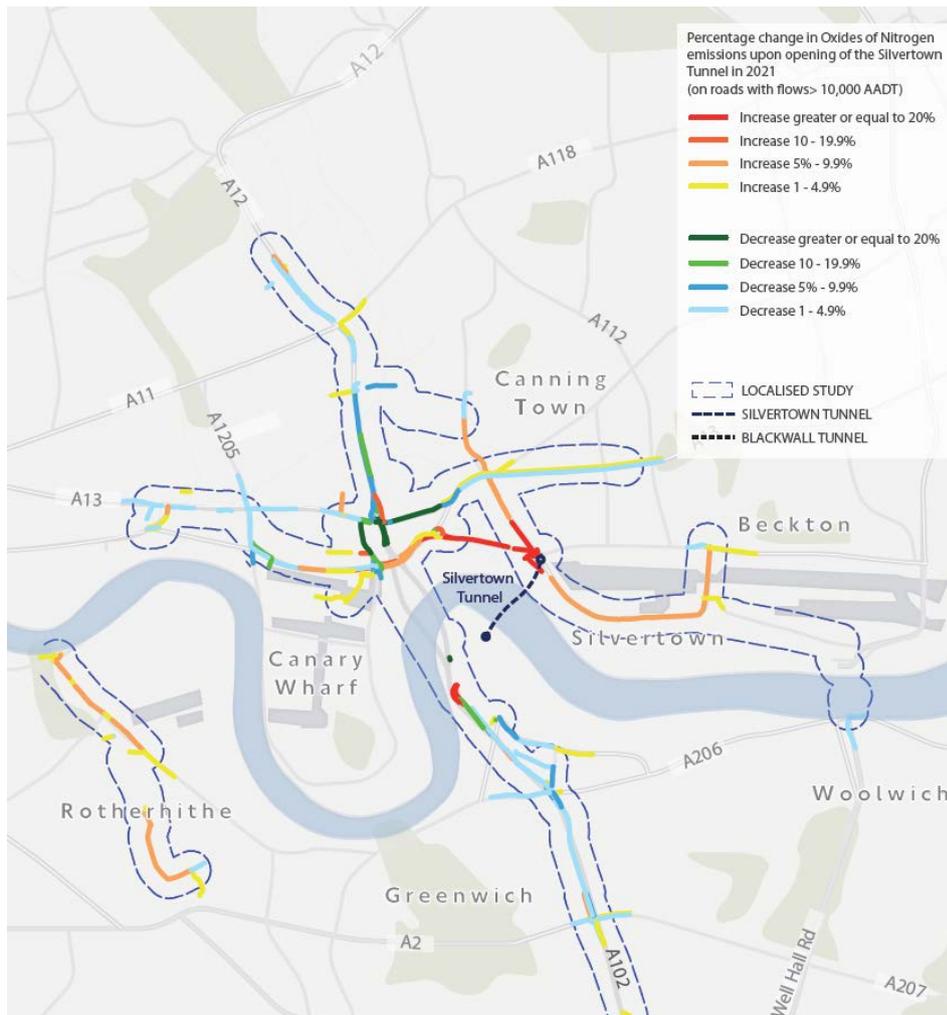
Map to show modelled NO₂ concentrations in east London (based on London Atmospheric Emissions Inventory 2010)

We have compared the levels of traffic that we forecast in 2021 without the Silvertown crossing with the levels we expect to occur with the Silvertown crossing. Our forecasts estimate that by the early 2020s without the Silvertown Tunnel, traffic queuing to pass through the Blackwall Tunnel will worsen. The map below shows what levels of NO₂ we would expect across east London by the early 2020s if the Silvertown Tunnel is not built. The map does not include the effects that the proposed ultra Low Emission Zone in central London might have in further improving air quality, since that proposal is currently subject to consultation.



Map to show predicted NO2 concentrations in 2020 without any new infrastructure in place

The opening of the new tunnel will lead to changes in the distribution of traffic crossing the river. Some roads will see a decrease in traffic and others will see an increase. A particular effect of the Silvertown tunnel will be a reduction in the congestion on the approaches to the Blackwall Tunnel. Overall, with the changes in traffic flows we are forecasting, we expect the level of emissions across the area in 2021 with Silvertown to be similar to the level of emissions we would expect in 2021 without Silvertown. However, the change in traffic flows will mean that some roads will experience a reduction in emissions and some will experience an increase. The map below shows those areas where our initial modelling predicts that the introduction of the Silvertown Tunnel will lead to a change in NO_x emissions.



Map showing predicted changes in NOx emissions as a result of the opening of the Silvertown Tunnel in 2021

The next stage of work will model how the change in emissions will influence concentrations of NO₂ and PM₁₀ and how they affect receptors (e.g. homes and schools). This will be reported in the consultation planned for mid 2015.

The economic benefits of the Silvertown Tunnel

We have commissioned a number of studies of the potential economic benefits of the proposed new tunnel. This included research with 800 businesses across east London to understand the difficulties that a lack of river crossings cause them and the potential benefits a package of new crossings might bring.

Transport accessibility is widely recognised as key to unlocking economic growth. Businesses rely on access to their customers, staff and suppliers to trade. Easy access enables businesses to grow, generating new jobs. Good highway links are particularly important to the distribution, construction and manufacturing sectors, which rely on the road network to access their suppliers and to deliver goods or services to their customers.

We believe that the Silvertown Tunnel will provide a number of key economic benefits:

- It will greatly reduce delays in and around the Blackwall area, considerably reducing the time users spend stuck in traffic;
- The relief of congestion at the Blackwall Tunnel will make the wider area more attractive to businesses and developers, supporting growth in one of the most deprived areas of the country; and
- It will save users money in wasted fuel and other costs by significantly reducing the number of incidents at the Blackwall Tunnel which restrict the availability of the tunnel.

In 2013 there were some 1,100 incidents at the Blackwall Tunnel which restricted the availability of the tunnel, leading to worsening congestion in and around the local area. Some users will choose to divert to an alternative crossing when the Blackwall Tunnel is closed or there is very significant congestion, however this would inevitably add to the length of their journey, increasing their travelling costs.

The table below shows the additional fuel costs involved in diverting to the nearest alternative crossings for a typical petrol engine car, assuming a fuel price of £1.35 per litre. The journey times are calculated with the assumption that there would be no congestion between Blackwall and the alternative crossing – in reality it is unlikely that this would be the case and the journey time may be considerably longer.

Diversion via ...	Distance involved	Journey time	Approximate fuel cost
Tower Bridge	8.6 miles	30 mins	£2.18
Rotherhithe Tunnel	6.6 miles	23 mins	£1.74
Woolwich Ferry	6.6 miles	42 mins	£1.77
Dartford Crossing	30.7 miles	40 mins	£5.89

Table to show potential journey time and fuel cost savings

Taken over a 60 year time period, we estimate that the reduction in wasted fuel and other costs to existing users of the Blackwall Tunnel could amount to over £94m.

We explained earlier that the introduction of the Silvertown Tunnel would reduce delays at junctions across east London. We have undertaken an initial estimate of the value of the time that would be saved by opening the Silvertown Tunnel. Taken over a 60 year period, we estimate that the relief of the congestion at Blackwall and beyond would lead to journey time savings worth over £1.3bn.