



Department
for Transport

Government Response to Consultation: Options for a New Lower Thames Crossing

July 2014



Government Response to Consultation: Options for a New Lower Thames Crossing

Presented to Parliament
by the Secretary of State for Transport
by Command of Her Majesty

July 2014

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Department for Transport
Great Minster House
33 Horseferry Road
London SW1P 4DR
Telephone 0300 330 3000
Website www.gov.uk/dft
General enquiries <https://forms.dft.gov.uk>



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1. Introduction

- 1.1** On 21 May 2013 the Department for Transport (DfT) launched a public consultation on options for a new Lower Thames crossing. This set out the case for additional river crossing capacity in the Lower Thames area and the relative merits of three potential locations together with one variant option:
- a. Option A: near the site of the existing A282 Dartford-Thurrock crossing.
 - b. Option B: connecting the A2 with the A1089.
 - c. Option C: connecting the M2 with the A13 and the M25 between junctions 29 and 30.
 - d. Option Cvariant: connecting the M2 with the A13 and the M25 between junctions 29 and 30, and additionally widening the A229 between the M2 and the M20 in Kent to provide greater connectivity for the ports and Channel Tunnel.
- 1.2** The consultation posed questions on:
- a. the strength of the case for increasing river crossing capacity of the Lower Thames (consultation question 1)
 - b. the choice of location option and factors influencing that choice (consultation questions 2 and 3), and
 - c. the type of crossing whether a bridge, immersed tunnel or bored tunnel (consultation questions 4(a) and (b)).
- 1.3** The consultation closed on 16 July 2013. Over 5,700 responses were received via an online response form, email and letter. 4% of responses (224) were made on behalf of organisations including businesses, local government and other public sector bodies, trade associations, environmental organisations and residents groups. 96% of responses were made by individuals, most of whom lived in the vicinity of the existing crossing or the location options.
- 1.4** On 12 December 2013 DfT announced that there were sufficient grounds to discard Option B and that DfT would obtain advice on points raised during consultation in order to better understand the relative merits of Options A and C or Cvariant. As part of this announcement, DfT published a report summarising the feedback to consultation at <https://www.gov.uk/government/consultations/options-for-a-new-lower-thames-crossing>
- 1.5** DfT has now obtained technical advice and considered the available evidence including the public consultation feedback. The purpose of this document is, therefore, to report on the government's response to the consultation drawing upon the evidence available from the 2012 review of options, public consultation, the further advice obtained following consultation and other relevant published material.

- 1.6** This document provides a summary of the points raised during the consultation before stating the government's position on the case for a new crossing. It also provides an update on the government's opinion regarding the location and type of new crossing. Finally it outlines the next steps in determining the proposed solution and its delivery.

2. Reminder of Consultation Feedback

2.1 As recorded in the Consultation Response Summary published in December 2013 we received a very mixed reaction from the public consultation. This chapter provides an overview of the points raised in response to the respective consultation questions.

Case for a new crossing

2.2 In responding to the question on whether or not there was a strong case for a new crossing (consultation question 1), key reasons given for agreeing were:

- a. the need to address congestion at the existing crossing,
- b. the cost of delay, for example to businesses, and
- c. the need to address the problem of air pollution at the existing crossing.

2.3 Even those who disagreed with the case for a new crossing acknowledged there is a need to address congestion and improve the resilience of the road network. This extended to concern about congestion both on the surrounding strategic and local road networks, not just at the crossing itself.

2.4 There was, however, no consensus on how to address these needs. This was reflected in the reasons given for disagreeing with the case for a new crossing, namely that:

- a. congestion would be significantly reduced if the charges and/or payment booths were removed from the existing crossing;
- b. the provision of a new crossing would increase traffic levels;
- c. more could be done to reduce traffic flows by incentivising the use of other transport modes, such as rail: for example, by encouraging hauliers and freight transporters to utilise the rail network or ports north of Dover to transport goods; and
- d. the validity of the methodology used by DfT was questionable, including the assumptions underpinning the traffic modelling and the appraisal.

- 2.5** A proportion of the respondents also argued that the decision on a new crossing should be deferred because, among other things:
- a. new remote charging technology or the removal of the charge should first be trialled;
 - b. more robust evidence is required of the impacts that a new crossing would have on congestion, air quality and quality of life;
 - c. rail provision should be investigated as part of any proposal for a new crossing of the Lower Thames; and
 - d. additional location options should be considered both further west than Option A and further east than Option C.
- 2.6** Respondents also commented on detailed aspects and impacts of a new crossing irrespective of whether they supported a new crossing. For example, there were comments about the desirability of segregating different types of traffic and about the potential environmental impacts.

Choice of location

- 2.7** In responding to the questions about the choice of location option (consultation questions 2 and 3), the majority of respondents expressed a preference, irrespective of their views on the case for a new crossing. There was considerable variety in how respondents chose to comment. A number of respondents expressed their opposition to one or more options, while others positively identified the one or more options they would support including the variant, plus additional locations to the west of Option A or to the east of Option C.
- 2.8** Most of the respondents who favoured Option C also preferred Cvariant, which would include widening the A229 link between the M20 and M2. At the same time respondents raised the need to better understand the environmental impacts, the cost of Cvariant and whether it would be better to invest in improvements in other parts of the strategic network.
- 2.9** The factors that particularly influenced respondents' preferences were the need to ease congestion and improve resilience of the roads around the crossing and, at the same time, a concern to minimise any negative impacts on the environment, local communities and the quality of life for residents.

2.10 Aspects on which respondents commented in relation to the choice of location included:

- a. connectivity between Kent and Essex and elsewhere;
- b. links to M11;
- c. effect on future traffic growth;
- d. congestion on the surrounding road networks;
- e. investment required elsewhere in the network, especially at M25 Junction 30;
- f. effects on regeneration and business growth (both positive and negative at either option);
- g. the cost and financing of a new crossing including future charging;
- h. air quality and noise levels;
- i. effect on biodiversity, protected habitats, ancient woodlands and green belt land;
- j. impacts on individual properties, villages and local communities; and
- k. the prospect of future airport development.

Type of crossing

2.11 In responding to the questions about potential types of crossing structure (consultation questions 4(a) and (b)), only a minority (around 10% of all respondents) considered the choice of location would depend on the choice of crossing structure. A similar number expressed a preference for a particular type of structure, namely whether it should be a bridge, immersed tunnel¹ or bored tunnel². Of those who thought the location depended also on choice of structure, around 54% favoured a bored tunnel, 25% preferred a bridge structure, and 15% preferred an immersed tunnel whilst around 6% expressed no preference. Where respondents explained their preference, they commented on points such as cost, resilience to extreme weather and environmental impact.

¹ An immersed tunnel is a shallow depth tunnel submerged in a trench in the riverbed

² A bored tunnel is the construction of a circular tunnel at depth, without removing the ground above.

3. The Case for a New Crossing of the Lower Thames

- 3.1** This chapter describes the case for a new road based river crossing in the Lower Thames. It takes into account consultation feedback and updated published evidence.

How the existing crossing became nationally significant infrastructure

- 3.2** The Dartford-Thurrock River Crossing (the ‘existing crossing’) was built as a tunnel (the west tunnel) fifty years ago to provide a link between Kent and Essex. The east tunnel was opened in 1980. Between 1975 and 1985, the construction of the M25 around London changed the movements around the capital and for the South East. By the time the Queen Elizabeth II Bridge opened in 1991, the crossing also provided a critical link in the M25 London orbital road. Most of the traffic now using the crossing comprises users of the M25 and other strategic routes.
- 3.3** The crossing provides the only road-based river crossing east of London. It comprises the two two-lane tunnels carrying traffic to the north, and the four-lane cable stayed bridge carrying traffic to the south. The nearest river crossing located to the west is the Blackwall Tunnel and is about 18 miles by the main road.
- 3.4** The existing crossing is within the Thames Gateway, an area undergoing and with further ambitious plans for development. It extends from east London to Thurrock, Southend and south Essex, Medway and north Kent. Successive central and local government initiatives have recognised potential and prioritised development in this area. Over the past three decades this has included new housing, major strategic retail development – at Lakeside and Bluewater - and other employment development, such as the new London Gateway port. Local authorities and businesses view the Thames Gateway as a location for growth and important for London’s expansion, as stated by the South East Local Enterprise Partnership.³

³ “In the 21st Century, the Thames Gateway and the South East LEP area as a whole, will be London’s premier expansion location”, p.15 of the South East Local Enterprise Partnership Strategic Economic Plan, submitted to government 31 March 2014, available at <http://www.southeastlep.com/our-local-growth-deal-and-strategic-economic-plan>

The crossing and the Strategic Road Network

- 3.5** The government's vision is for dynamic, sustainable transport that drives economic growth and competitiveness.⁴ The government's aim is to create a national road infrastructure fit for the 21st century that supports economic growth, through maintaining and improving the asset, improving reliability and resilience, reducing congestion and supporting broader environmental and safety goals.⁵
- 3.6** The existing crossing acts as a link in the M25, which is used by many to orbit or bypass the capital. It also connects strategic radial routes into and out of London, including the A13, A1089, A2/M2 and M20. This provides connections between the Port of London (which includes the Port of Tilbury and new London Gateway port), Medway Ports (which includes Sheerness), Port of Dover and Channel Tunnel, as well as Lydd and Southend airports and high speed international and domestic rail services at Ebbsfleet International Station. Many of the strategic routes also form part of the Trans-European Road Network by providing access to Europe via Dover and the Channel Tunnel.

Current challenges

- 3.7** The siting of transport generating businesses, coupled with a lack of alternative routes, has resulted in traffic growth to the point where the existing crossing is now frequently congested and one of the least reliable links in the strategic road network. It experiences typical daily traffic flows of 140,000, compared with the original design of 135,000 vehicles. This is not just a peak time or seasonal phenomena as the existing crossing operates above its design capacity on most days.⁶
- 3.8** Successive studies commissioned by central and local government have identified the need for additional crossing capacity. The DfT's 2012 review drew on the earlier 2009 DfT study to highlight the problems that result from a lack of crossing capacity, including congestion and negative impacts on the environment, especially in terms of air quality. The review also drew attention to the complex road layout at the existing crossing which leads to a higher frequency of incidents than on other parts of the network and exacerbates the problem of poor resilience.
- 3.9** The 2013 consultation and subsequent analysis have again highlighted the need to also focus on the congestion and poor resilience where the crossing connects with the surrounding strategic and local road networks. In particular, the Highways Agency has consulted on and

⁴ The High Level Output Specification (HLOS) 2012: Railways Act 2005 statement, Department for Transport, July 2012

⁵ Government Response to consultation on transforming the Highways Agency into a government-owned company, Department for Transport, April 2014 available at <https://www.gov.uk/government/publications/transforming-the-highways-agency-into-a-government-owned-company-decision>

⁶ For example, it operated above its design capacity on 257 days during 2010 according to Highways Agency HATRIS data.

published Route Based Strategy Evidence Reports for the London Orbital route and the Kent Corridor routes.⁷ These show that:

- a. Long distance journeys by road between Europe and most of Britain use the M25 London Orbital, with a high proportion routing via the Dartford-Thurrock crossing, and the remainder via the south and west side of the M25. Either route round the M25 is congested in the peak hours of most days;
- b. The major roads north and south of the river are economically important. For example, the A13 on the north side of the crossing serves the towns and villages in Thurrock and south Essex, ports of Tilbury, London Gateway and Lakeside Shopping Centre. The A2 on the south side serves the towns of north west Kent with Bluewater shopping centre and Ebbsfleet International Rail Station and the Medway ports. Where they join the M25 either side of the crossing, they carry respectively 100,000 and 130,000 vehicles a day;
- c. A high proportion of the traffic on the routes either side of the river is freight traffic. For example, the M20, where it joins the M25 London Orbital at junction 3, carries around 50,000 vehicles a day of which 12,000 are HGV. The A2, where it joins the M25 London Orbital at junction 2, carries 130,000 vehicles a day of which 20,000 are HGV;
- d. The approach road to the existing crossing is where the M25 north-south movements intersect with key east-west routes. Consequently there is also congestion on the approach road. The section of the A282 between junctions 1a and 1b is particularly affected also in terms of journey time reliability; and
- e. There are busy local roads with junctions immediately either side of the crossing at A282 junctions 1a and 1b to the south and M25 junctions 31 and 30 to the north. Congestion also spreads from the strategic road network onto these local roads.

3.10 A number of road improvements schemes are being developed to address constraints on the strategic road network, notably:

- M25 Junction 30/A13 corridor
- A2 Bean Junction
- A2 Ebbsfleet Junction

3.11 These schemes will make specific improvements to solve current issues but further investment will be needed to provide additional capacity on the strategic road network by the time the new crossing is opened, so as not to constrain its operation.

Dart Charge: measure to alleviate congestion on the existing crossing

3.12 There is a widespread perception that the current congestion problems are caused by the payment booths and plazas on the existing crossing and that their removal would address this. The government is committed

⁷ Available at <http://www.highways.gov.uk/publications/route-strategies-evidence-reports/>

to introducing a remote payment scheme as a way of improving driving conditions on the crossing itself. The Dart Charge scheme will be the new remote payment system for those using the existing crossing. It will be introduced from October 2014 and will involve the provision of open traffic lanes in both directions, the safe removal of the barriers and plazas, as well as new traffic control measures.

- 3.13** Dart Charge is expected to improve the situation in the short term. However by 2025, northbound delays are forecast to be similar to those experienced today as the capacity of the crossing is exceeded more regularly due to increasing traffic volumes⁸. And Dart Charge will be unable to alleviate the constraints caused by over height vehicles approaching the 1960's west tunnel as there are a greater proportion of larger HGVs using the crossing than before.
- 3.14** It will be important to observe the actual effects of Dart Charge once it is in full operation in order to better understand the residual issues on the approach road and surrounding road network.

The future capacity problem

- 3.15** We expect that in future the crossing would have to cope with even more traffic, which would lead to longer and less reliable journey times. Traffic on the strategic road network is expected to rise over time reflecting continuing increases in car use and greater levels of HGVs. Recent research demonstrates continuing strong growth in groups representing 70% of the driving-age population in Britain.⁹ Whilst traffic in urban areas may be falling due to increased public transport use, traffic on motorways and rural areas is increasing¹⁰. Economic growth, population increases and a relative reduction in the cost of car travel from vehicle efficiency are all expected to contribute to traffic growth.
- 3.16** Whilst there have been relatively small fluctuations in traffic flows at the crossing in recent years, these mirror those experienced nationally caused by the economic downturn and the rising price of oil.¹¹ As the economy continues to recover, road traffic on English strategic roads is forecast to increase by 46% between 2010 and 2040.¹² Although there is uncertainty in these forecasts, given the underlying range of paths which future population numbers, economic growth and oil prices could take,

⁸ Dartford 'Free-Flow' Charging Project Traffic Forecasting Report, August 2013

⁹ RAC Foundation, On the Move. The report found continuing strong growth in non-company car use outside London for those aged 30 and over, in particular females. See also Department for Transport, Road Traffic Forecasts 2013 and successor documents.

¹⁰ For example, traffic on motorways has risen 7% to 26 billion vehicles kilometres from the low in Q1 2010. Rural A roads and rural minor roads have risen 3% and 4% from their respective lows in Q4 2010 and Q2 2010.

¹¹ Department for Transport traffic count data. These figures take account of a large programme of detrunking that took place over the period. These figures are for traffic on the network as it is defined today. See DfT, Action for Roads (July 2013), p18 and Road Traffic Statistics Table TRA4201.

¹² Forecasts from National Transport Model (NTM), August 2013. Note that between 2010 and 2040 the population in England is expected to rise by 20%, GDP per capita is projected to rise by 57% and the fuel cost of driving is projected to fall by 28%. Sources are ONS 2008 Principal Projection, OBR Budget 2013 and DECC/DfT respectively. A fuller discussion on the drivers of demand for transport and how these are used in the NTM is set out in the Department's Road Transport forecasts. See Road Transport Forecasts 2013 and subsequent updates.

even if these underlying factors were at the low end of the expected future range, significant traffic growth would be expected.

- 3.17** Traffic levels at the Dartford crossing are expected to replicate the increases in national traffic levels, and it is expected that local economic factors would drive a growth in traffic. The south east of England is forecast to experience higher population growth than the rest of the country and this is a significant factor underpinning the forecast increase in traffic flows. The 2012 review of options considered the future situation at the existing crossing, after Dart Charge has been introduced. It concluded that if no new crossing was built, the existing crossing would be under significant stress by 2041 with traffic flows up to 20% greater than today's levels, even though delayed and uncertain journey times would continue to deter some journeys.
- 3.18** Government continues to identify the areas known collectively as the Thames Gateway as a focus for major redevelopment and growth. South east London is expected to be the focus for a substantial proportion of the capital's population and employment growth over the next twenty years¹³ generating additional traffic demand.
- 3.19** In the South East, there are proposals for the creation of tens of thousands of new homes and jobs during the period up to 2021.¹⁴ The Chancellor recently signalled government's commitment to help deliver this growth by announcing the setting up of a Development Corporation and up to £200 million of public investment for major new development around the high speed rail station in Ebbsfleet in Kent to provide up to 15,000 new homes on existing brownfield land.¹⁵

The case

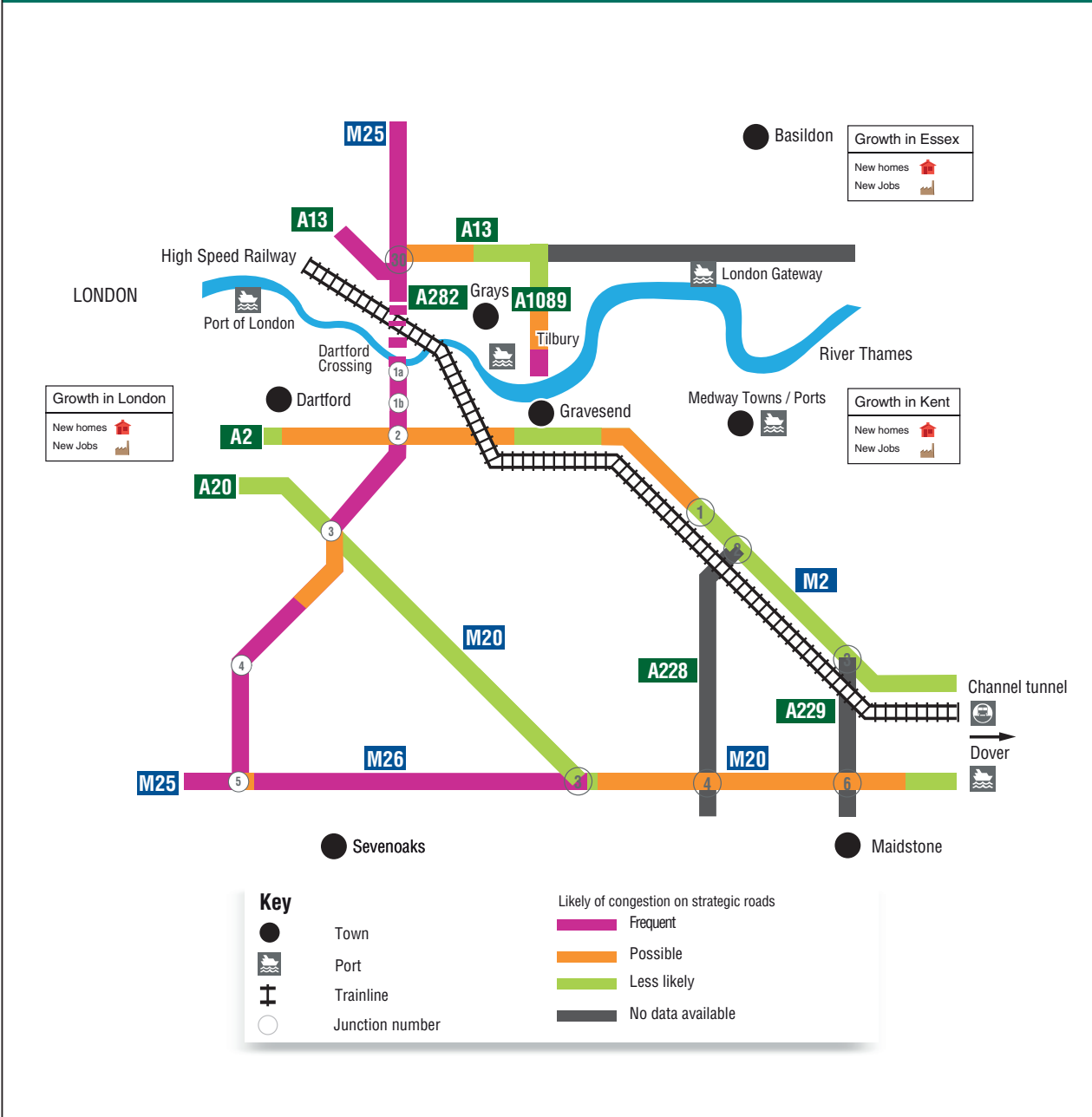
- 3.20** The evidence gathered through the 2012 review, the public consultation and recently published evidence confirms that:
- a. there is a need for an additional crossing between Essex and Kent that ties in effectively with the surrounding road network to address the lack of capacity and resilience at the existing crossing, the approach road and junctions with east-west routes;
 - b. doing nothing would mean that this lack of capacity and resilience would act as a brake on plans for growth in this area, and incur an increasing cost to the national economy as traffic levels grow in future years; and
 - c. it is therefore important to build a new crossing that meets the government's objectives for this part of the strategic road network and supports economic growth across South East England.

¹³ See London Plan 2011

¹⁴ Source: South East LEP Strategic Economic Plan Section 2 available at <http://www.southeastlep.com/our-local-growth-deal-and-strategic-economic-plan>

¹⁵ Part of the Budget in March 2014; briefing available at <https://www.gov.uk/government/news/chancellor-announces-major-boost-to-housebuilding>

Figure 3.1 Key considerations in the case for a new Lower Thames crossing



4. Choice of Crossing Location

- 4.1** The purpose of this chapter is to set out the position on the choice of crossing location, taking into account consultation feedback and the latest technical advice.
- 4.2** Work completed to date has narrowed the options down to two suitable broadly defined locations. Government does not propose to re-open the options considered previously or any new options. The 2009 study considered passenger and freight rail requirements. It concluded that the provision of freight or passenger rail as part of any new crossing would neither address rail freight capacity issues, nor would they be likely to provide value for money passenger services. The 2009 study also examined five potential location options and shortlisted only three of these as having potential to alleviate congestion at the existing crossing and offer the prospect of value for money investment.
- 4.3** The 2012 review of options focussed on the three locations shortlisted by the 2009 study against the following objectives for a new crossing:
- a. To contribute to the national economy, through improving journey times and the connectivity of the strategic road network, both to and within the Thames Gateway and the South East;
 - b. To reduce congestion at the existing crossing and improve the resilience of the strategic road network;
 - c. To contribute to reducing greenhouse gas emissions;
 - d. To avoid unacceptable impacts on environmentally sensitive areas and improve quality of life;
 - e. To avoid unacceptable impacts on committed development; and
 - f. To take into account additional considerations:
 - distributional impacts on different income groups,
 - cost
 - the impact of cost on affordability, and
 - value for money.
- 4.4** The 2012 review of options included consideration of increased river crossing capacity within London in light of the proposals by the Mayor of London. This analysis indicated that increased river crossing capacity within London, which tends to serve movements within the capital, was likely to have a negligible effect on traffic demand at the Dartford crossing.
- 4.5** The 2013 consultation elicited no new or convincing evidence that location options further west than Option A or further east than Option C would better satisfy the 2012 review objectives or bring sufficient benefits at a reasonable cost. For example, one of the considerations raised by respondents was the prospect of a new airport development in the Thames Estuary. Any new airport proposal is currently a matter for the

Airports Commission who has been charged to examine the need for additional UK airport capacity and to recommend how this can be met in the short, medium and long term. The Commission is due to present its final report to government in summer 2015. A new crossing will be needed regardless of whether or not in future there will be a new airport in the Thames Estuary from 2030. There are a number of ways in which surface access to any new airport could be provided and we are working with the Airports Commission to understand how either location for the new crossing could be an integral part of access arrangements.

4.6 Among the many responses submitted during consultation were a number of comments that the DfT thought warranted further consideration. DfT, therefore, commissioned expert consultants, Jacobs and AECOM, to consider and report on these. This further advice has been completed and confirms that a new crossing could be delivered at either location but due to the scale of this major undertaking, it would be challenging. The advice indicates that neither option is optimal in their current form and that it would be desirable to investigate the range of possible solutions at each location in more detail, with a better appreciation of the road networks and development aspirations. This work is published on the government's website (gov.uk). A summary of the work undertaken and the findings is set out in Box 1.

4.7 We are mindful of the need to reduce uncertainty in making this key investment decision on where to locate a new crossing. At the same time, the government is concerned to reach a sound decision given that a new crossing at either location would impact on many communities. Furthermore we recognise that more up to date relevant evidence is becoming available and that it would be wise to draw upon this in reaching a decision on where to locate the new crossing, namely:

- a. a new traffic model covering the road network in more detail for both Options A and C is anticipated to be ready later this year;
- b. we will be able to observe the actual effects of Dart Charge on traffic flows at the existing crossing from October 2014 onwards; and
- c. work on generating and assessing route options is commencing and will provide the more detailed evidence which the latest independent advice has identified as desirable.

4.8 As there is no clear preference for either option A or C (with or without the Cvariant) and as more up to date information is becoming available, we propose to consider both locations as possibilities during the next stage of work. Rather than using one illustrative route to indicate only a technically viable solution at each location, the next stage of work will examine the pros and cons of a number of route options and types of crossing structure.

4.9 All the route options and types of crossing will need to be appraised against a single set of objectives in the context of government's and stakeholders' aspirations for economic growth. The objectives will build upon and amplify the government's existing objectives for a new Lower Thames crossing as previously set out at paragraph 4.3.

BOX 1. TECHNICAL REPORTS PROVIDED BY CONSULTANTS (JACOBS/AECOM) <https://www.gov.uk/government/collections/lower-thames-crossing>

Comparative assessment of air quality impacts of Lower Thames crossing options

This assesses the air quality impacts of alternate crossing solutions at location options A and C. It concludes that a future scheme at Option A could lead to adverse air quality effects principally at M25 Junction 1a to Junction 1b. The impact of a future scheme at Option C would depend on whether it is a bridge or a tunnel, but could lead to overall beneficial air quality effects if the crossing were to be a tunnel emerging south of the internationally designated South Thames Estuary & Marshes RAMSAR site.

Scoping the cost of potential environmental mitigation through alternative route approach suggested by Kent County Council

This considers the potential cost and value for money of an alternate illustrative route for Option C - called C2 – incorporating suggestions by Kent County Council as to how some of the potential environmental impacts of Option C might be mitigated. It concludes that C2 would be technically feasible and offers some mitigation of the environmental impacts in comparison with the initial illustrative route (referred to as C1). C2 is estimated to cost approximately £3.4Bn (£0.25bn more than C1) and a benefit cost ratio (BCR) of 1.8 (slightly lower than C1 at a BCR of 1.9).

Potential Additional Network Investment at M25 Junction 30 and on the A13

This considers the changes in demand along the M25 and A13 that might arise from a new Lower Thames crossing and indicates the possible scale of additional capital investment required. When considering demand arising with a new crossing, the note concludes that Option A is likely to require the greatest additional investment at M25 Junction 30 (potentially up to £860m). However, further investment could be required to accommodate the future traffic demand even without a new Lower Thames crossing. Additional investment at M25 Junction 30 would be likely to be needed in the do-minimum scenario or if Option C is chosen (estimated to cost approx. £400m). More detailed assessment of route options would, however, be needed to determine design solutions and ensure value for money.

Integration of Option A with the M25 and A282

This investigates issues if a new crossing were to be developed at Option A. Namely, whether traffic flows could be managed within existing capacity on the sections of the M25 and the A282 approaching the crossing, both during the construction period and following scheme opening, and if not, what scale of investment could be needed. It also identifies any potential operational issues at the crossing both during construction and following scheme opening, considering if and how these could be overcome. It concludes that the construction and operation of Option A would be complex but is feasible. Further work would, however, be required to develop the infrastructure and operational regimes in more detail. If Option A were to be implemented the A282 may need to be widened to provide the additional capacity required to optimise the benefits of the new crossing. Further studies may also show other network improvements are necessary.

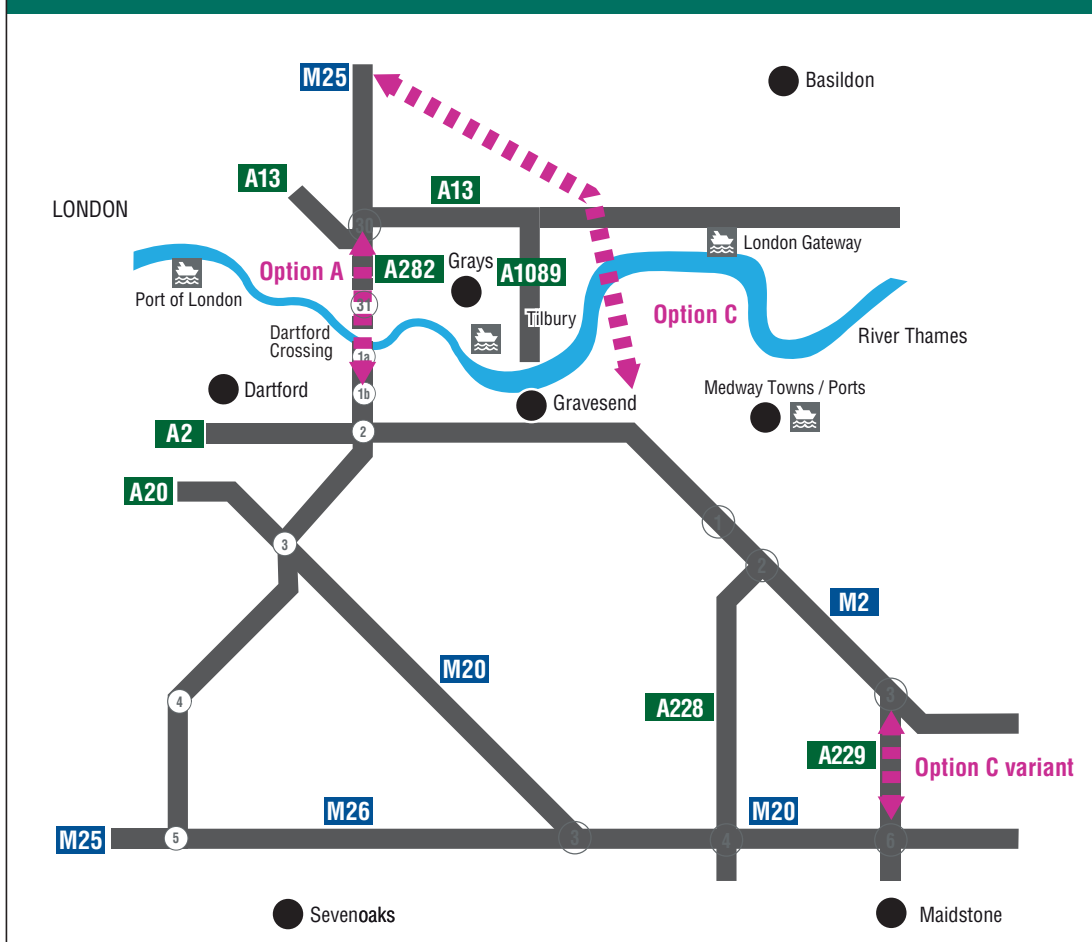
Review of Potential Employment and Housing Growth

This sets out a high level assessment of the opportunities for potential future development, including redevelopment within the Thames Gateway, which may be associated with the alternate crossing options, the potential traffic demand consequences and the implications for the strategic case for options A, C and Cvariant.

Key findings were:

- While different methodologies for forecasting housing and job growth gave different estimates, they consistently concluded that Option C and Cvariant demonstrated greater benefits from wider economic growth than demonstrated for Option A;
- A new crossing would be expected to increase trip movements between south Essex and north Kent and reduce trips within south Essex; but this trip redistribution effect would be expected to be much greater with a new crossing at Option C and Cvariant than at Option A;
- A new crossing at any of the options is likely to enable further redevelopment in the urban areas of Dartford, Thurrock, Gravesham and Medway and – depending on the scale of growth and availability of re-developable land – may also require amendments to the Green Belt. Additionally the accessibility effects of Option C and Cvariant could also be felt further afield, supporting urban extensions in the Ashford, Maidstone, Tonbridge and Canterbury areas as well as further east including Dover and Ramsgate area, and in and around key transport centres in the South East.

Figure 4.1 Location options for a new Lower Thames crossing



5. Type of Crossing and Other Details

- 5.1** The purpose of this chapter is to set out our position on the choice of engineering solution and other details of a future scheme on which consultation respondents commented.
- 5.2** The 2012 review of options considered a number of working assumptions to prepare an illustrative route for each location option. This was for the purpose of assessing technical feasibility and estimating the potential scale of costs and benefits of a new crossing at each location. This included assumptions about capacity (2 and 3 lane carriageways) and bridge or tunnel designs, an assumption that there would be charges to use both the existing and new crossings, and assumptions about delivery timescales. Government has made no final decisions on such matters and therefore all assumptions remain under consideration as part of the development of route options.
- 5.3** At the same time, both the 2012 review and public consultation provided additional information about aspects relevant to a new crossing. For example, the 2012 review considered a wide range of potential environmental assets that could be impacted. Another example is the Port of London Authority's advice that any bridge at location Option A must at least be comparable to the current crossing, whilst the minimal acceptable height at location Option C would be nearly 18 metres higher.
- 5.4** Other considerations include:
- a. environmental impacts ranging from light pollution and noise effects to impacts on sensitive inter-tidal and sub-merged habitats;
 - b. economic, commercial and affordability considerations;
 - c. the need to accommodate tall and wide vehicles and those carrying hazardous goods.
- 5.5** We acknowledge that a bridge could accommodate high and wide freight vehicles, whereas a bored tunnel could be more resilient in extreme weather conditions and avoid adverse impacts on protected habitats.
- 5.6** Government is, however, drawing no conclusions at this stage about whether the new crossing should be a bridge or a tunnel. Neither are we making decisions about any aspect of future scheme design or operation such as the capacity of the new road, design of junctions, type of crossing construction or method of financing the scheme. The further work to assess a number of route options and types of crossing will need to take into account all the evidence and regulatory advice made available.

6. Next Steps

- 6.1** This chapter outlines the steps which DfT are now taking to determine where and how best to tie a new crossing into the road network and ensure it can be opened when it is needed.
- 6.2** The consultation feedback and other available evidence confirm there is a case for a new road-based crossing of the Lower Thames and that location options A and C (with or without the Cvariant) each provide valid yet different solutions. A new crossing scheme will require development consent under the terms of the Planning Act 2008 (as amended by the Localism Act 2011). Its preparation is, therefore, subject to due process including, for example, Environmental Impact Assessment procedure.
- 6.3** As there is as yet no preference for either location, we will consider both during the next stage of work. This work will be led by the Highways Agency and will involve:
- a. Further modelling of traffic flows which will include a new more detailed traffic analysis tool and draw upon the observed effects of Dart Charge (Dartford Crossing remote payment). This will ensure we more fully understand what is likely to happen when a new crossing is opened and inform the preparation of the business case;
 - b. Work with local government, the South East Local Enterprise Partnership, business and other organisations to ensure proposals for the new crossing and associated road network improvements will serve planned and prospective economic development. This will include amplifying the government's objectives for this part of the strategic road network and aligning them with the government's commitment to the Ebbsfleet Garden City;
 - c. Developing and assessing possible route options and types of crossings at both location options A and C. For Option A this could include route options close to, but not immediately next to the existing crossing. For Option C, routes to connect the A2/M2 to the M25 via the A13 should be considered and assessed. This will build upon the evidence to date including feedback obtained through consultation. It will assess the relative merits of a range of possible routes and types of crossing in terms of their economic, environmental and social impacts, as well as their cost and value for money.
- 6.4** This work is expected to lead to public consultation on a proposed solution in late 2015 or early 2016.
- 6.5** By adopting this approach - undertaking more detailed work on route options at both locations - we will identify the solution that best meets government and stakeholder aspirations and value for money considerations. In addition, by taking this approach we will not delay the opening of a new crossing which we currently estimate could be 2025 if publicly funded.

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