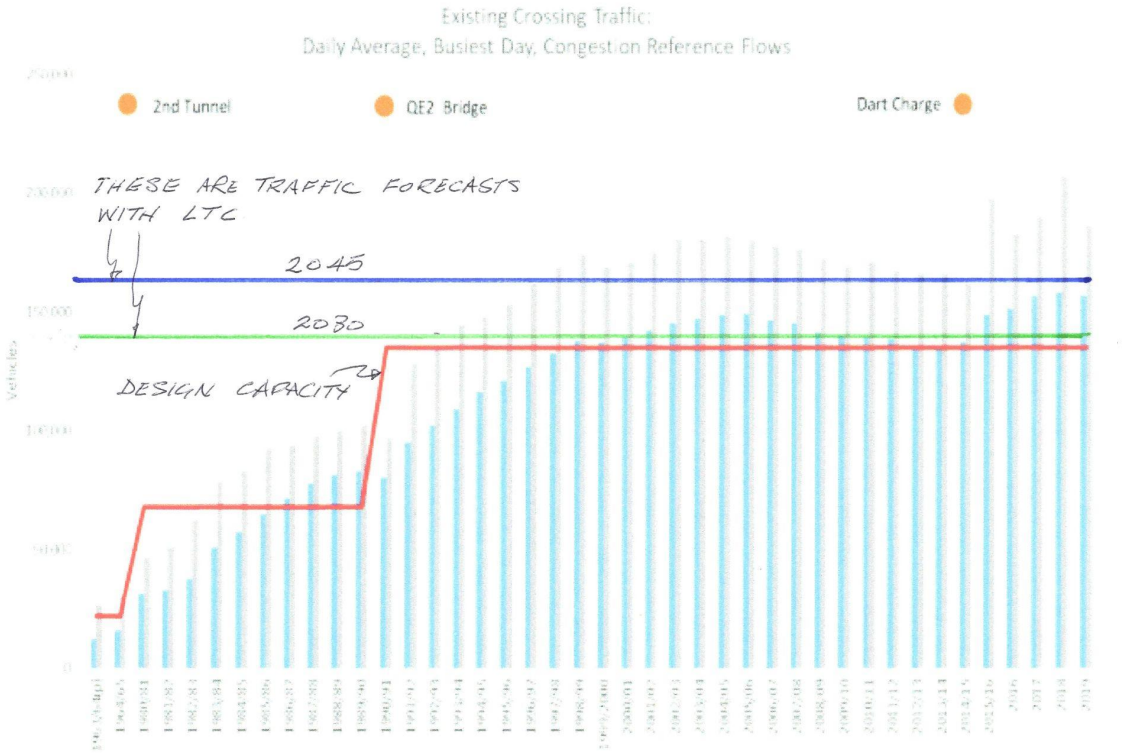
LTC Planning Submission (1)

Permission must be refused

The fundamental reason for considering a further crossing of theThames was to solve the congestion problem at the Dartford crossing.

I have added to plate 4.2 indications of the forecast flows which will persist at the Dartford crossing even after the construction of the proposed Lower Thames Crossing.

Plate 4.2 Traffic using the Dartford Crossing



It can be seen that the proposal totally fails in its intended purpose. All that is offered even after the vast intended expenditure is a situation where the forecast flows in both 2030 and 2045 at the Dartford crossing remain well in excess of the designed capacity there.

The proposal to construct the Lower Thames Crossing should be immediately refused on these grounds alone without further consideration.

There is one single limiting number which transcends all of the other thousands presented in the proposal.

6700

The reasonably reliable capacity of the northbound tunnels in terms of pcu's per hour is apparently somewhere near this figure. It is the deficiency represented by this figure that needs to be addressed. What is required is an estimate of the unrequited peak demand which occurs reasonably often in this same direction. I have not found a figure for this in the presented documents. I find no recourse but to speculate. I suggest a figure of 7500. Taking the forecast figures in table 5.1 as a guide, this demand would increase to 8325 in 2030 and

8440 in 2045. If increased capacity were to be provided on the Dartford alignment this would attract some additional usage so I suggest a design northbound requirement might be about **9000** pcu's per hour

A possible solution

Early in the design process a range of possible solutions were considered. One of these, designated A14, was discarded on the grounds that it would not attract much traffic and cost twice as much as the downstream proposal.

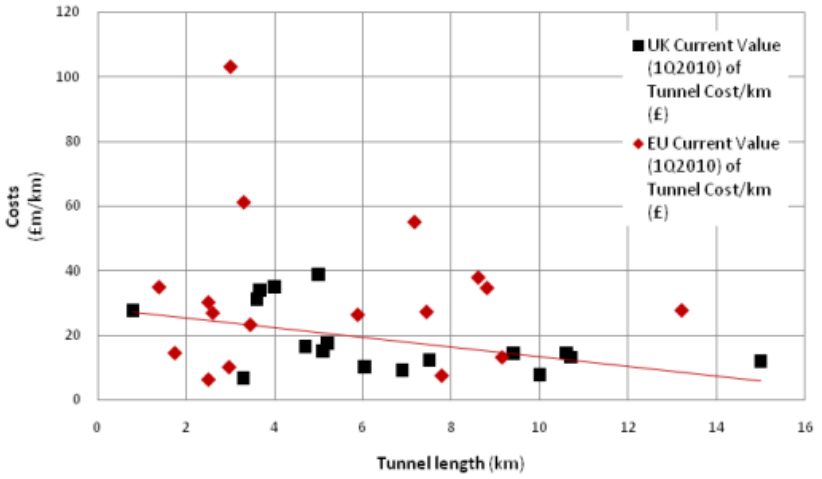
Dartford with bridge over river	impact on a SSSI.
A14 – Long tunnel south of junction 2 to north of junction 30	Cost approximately more than twice A1. Poor level of economic benefit due to limited attraction of traffic.
C3	The 2016 assessment did not select the section of C3 on the

I suggest that a mistake was made here and that A14 would in fact be much cheaper than the current proposal. A14 would consist of approx 10 km long twin tunnels running from the south of the A2 to north of the A13. It would seem reasonable to assume that the cross section of these tunnels could be similar to that currently being created at Silvertown.

Estimating the cost of A14

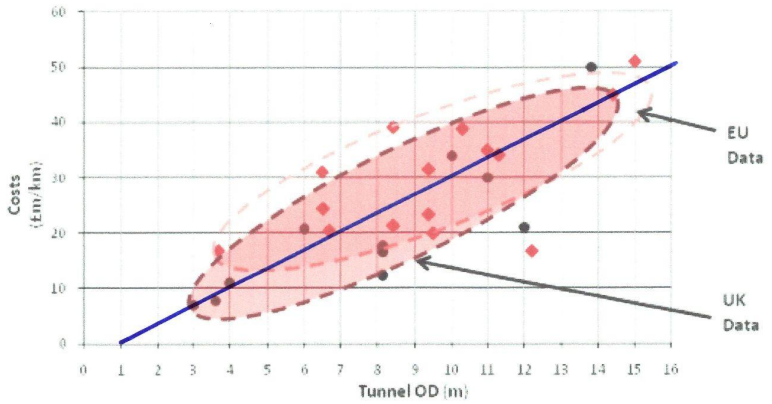
The following is not an attempt to make an accurate forecast. I do not have the information to do that. The following series of comparisons will however demonstrate that Highways England were wrong in the inflated cost they assigned to the A14 solution. In 2010 The Treasury published a report titled "Infrastructure Cost Review". The following 2 diagrams were presented under the section headed "Benchmarking Tunnels". This topic was revisited in 2018.

Chart G.2: The effect of tunnel length on unit costs



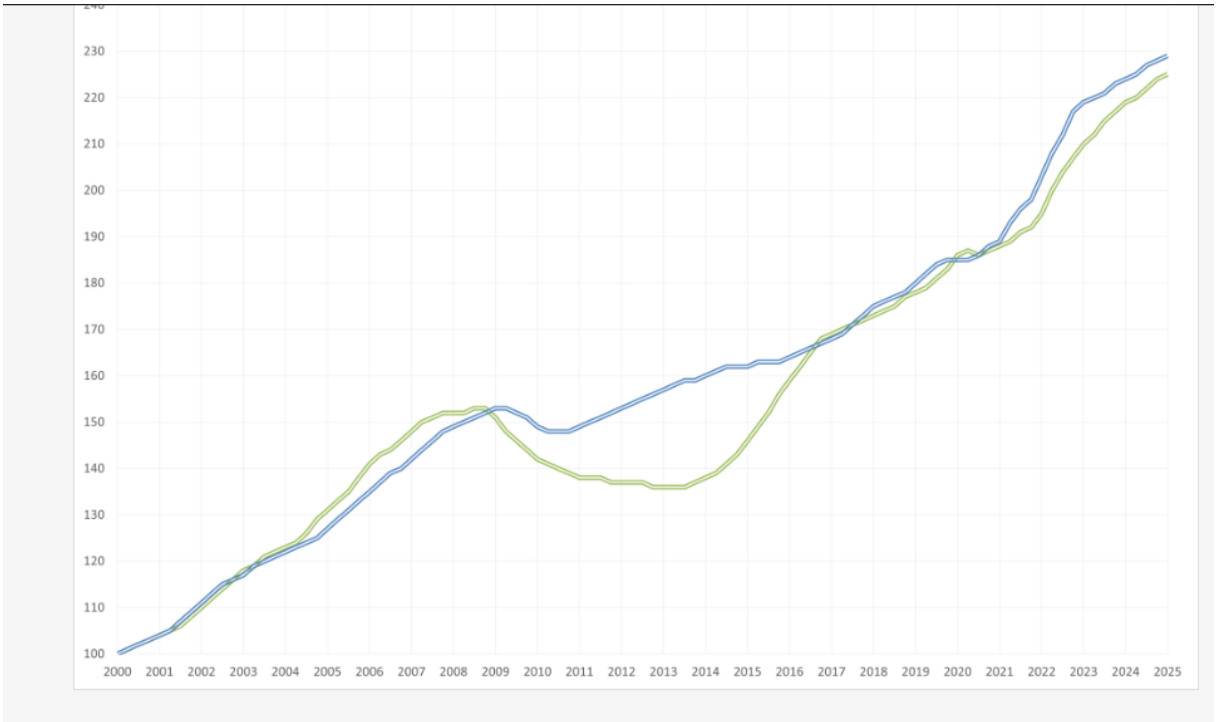
Source: Infrastructure UK Cost Questionnaires and British Tunnelling Society.

Chart G.1: The effects of tunnel outside diameter on unit costs



Source: Infrastructure UK Cost Questionnaires and British Tunnelling Society

The blue line is an addition of mine. The following diagram traces the inflationary increases in construction costs (blue line).



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I use these 3 diagrams in updating and adjusting the costs of previously implemented tunnelling projects to give a guide to the cost of A14 in 2022.

Westerschelde (Netherlands): 2003, 6.6km long, under the river Schelde (TBM).
£0.5bn (727m eu.) x 1.51 (length) x 1.24 (dia.) x 0.74 (length ratio) x 1.88 (infl.) = £1.31bn

Dublin Port : 2006, 4,6km long, mostly bored (TBM), some cut and cover etc.
£0.515bn (752m eu.) x 2.17 (length) x 1.09 (dia.) x .63 (length ratio) x 1.71 (infl) = £1.24bn

Hindhead (A3) :(2011), 1,1km long, not bored with a TBM
£0.285bn x 9.1 (length) x 1.0 (dia) x 0.55 (length ratio) x 1,43 (infl) = £2.04bn

Bolanus (N Spain) : 4.7km twin railway tunnels, TBM driven in hard rock, concrete lined, I add 33% to allow for internal roadway construction.
£0.188bn (209 eu.) x 2,12 (length) x 1.38 (dia.) x 0.74 (length ratio) x 1.43 (infl) x 1.33 (road) = £0.77bn

Euston HS2 : 24.3 km twin railway tunnels, I add 33% to allow for internal road construction.
£3.3bn x .41 (length) x 1.32 (av. dia.) x 0.9 (est. length ratio) x 1.23 (infl) x 1.33 (road) = £2.63bn.

Lower Thames Crossing : 4.25 km, twin bores 16m dia.
£2.3bn x 2.35 (length) x 0.72 (dia) x 0.68 (length ratio) = £2.64bn

Conclusion
It seems highly probable a solution based on the A14 concept could be achieved for a cost in the region of one third of that for the current proposal rather than "more than twice the cost" as stated in the submitted documents.

Does A14 solve the Dartford Crossing congestion problem?
The traffic using the Dartford Cross can be divided into 2 groups, a "through" group travelling from south of the A2 to north of the A13 and a "local" group. At the time of the first public consultation the split was given as 40% "through" and 60% "local". It can be seen then that of the 9000 required capacity I postulate above, about 3600 would use the long tunnels, leaving 5400 using the existing northbound tunnels.

The congestion problem at the Dartford Crossing would be solved.

It should be noted that traffic on the A2 bound for north of junction 2 would not be able to access the A14 tunnels although those from the M20 would be able. If in the future the crossing became "sticky" again then all of the traffic from East Kent including all HGV's from Dover heading north would transfer to the M20 and use the long tunnels as they would have plenty of spare capacity. It is necessary for some traffic modelling to be carried out to confirm my suggestions.

Probable superiority of the A14 solution
It is not necessary to make much play of the probable superiority of A14 over the proposed Lower Thames Crossing as it is likely to be superior on almost all metrics. These include: lower costs, better cost/benefit ratio, reduction in delays at Dartford, almost negligible construction delays, negligible habitat destruction, reduced atmospheric pollution, largely avoids increasing the flow on the national road network, has lower carbon emissions, greatly reduces the land and property take, lower accident injuries and deaths etc.

Highways England should be required to carry out an immediate analysis to validate (or otherwise) the viability of the A14 solution. The results to be fully declared in the public domain.

Is the cost/benefit ratio for LTC correct?

In calculating this ratio the benefit side includes £m 746.8 (7.7-table 11.2) for “user charging revenue”. Is including this as a benefit correct? This question can be considered in 2 ways.

The construction of the Queen Elizabeth bridge was debt financed. It was promised that when the debt was cleared the crossing charges would cease. If this promise had been kept and maintained the £m746.8 would not now appear as a benefit. On the other hand if at a whim the Chancellor of The Exchequer decided to increase the charges, this figure would jump to a higher value and at a stroke the business case for LTC would be markedly improved. Should these almost whimsical political flip flops influence whether or not the project should proceed? Surely not. These charges are merely a (slightly) disguised alternative means of raising taxes. The level at which they are set has only a marginal effect on demand and should have little influence on the real viability of the project. The “make believe world” where the pretence is held that Highways England Ltd is anything other than a government department should not be allowed to falsify reality.

Construction of the project will cause delays to the traffic using the network. These delays are quantified in monetary terms and presented as a cost against the project. After completion, users of the crossing will be subject to charges. These charges are no different to the costs due to delays. They will both debit in the same way from the users bank account. It seems therefore that these user charge costs should appear as a cost against the project thereby cancelling out the similar figure listed as a benefit. I cannot see where they are. Am I missing something?

Imagine an itinerant plumber operating in the Gravesham area. The number of jobs he can do in a day is restricted by the traffic congestion he is experiencing but he is doing OK. He has a positive bank balance.
LTC is approved. Construction commences on the large interchange at Thong Lane. Traffic congestion in the region increases. His income declines. This relative loss he is experiencing is reflected in the project BCR as a loss under the heading “construction and maintenance delays”.
The project is completed. Traffic congestion is now much lower. He is managing more jobs in a day than he was originally including some in Essex. The benefits he is receiving are included on the benefits side of the BCR in the form of reduced travel times and agglomeration. But each time he goes to Essex he pays to use the tunnel. These benefits and costs are both similarly reflected in his bank account but I cannot see where his costs for using the tunnel are reflected in the BCR.

I will be pleased to be corrected if my analysis is wrong but it seems to me that the BCR may be closer to 0.96 than 1.22.