**Economic assessments of Ox-Cam Expressway: Analysis**

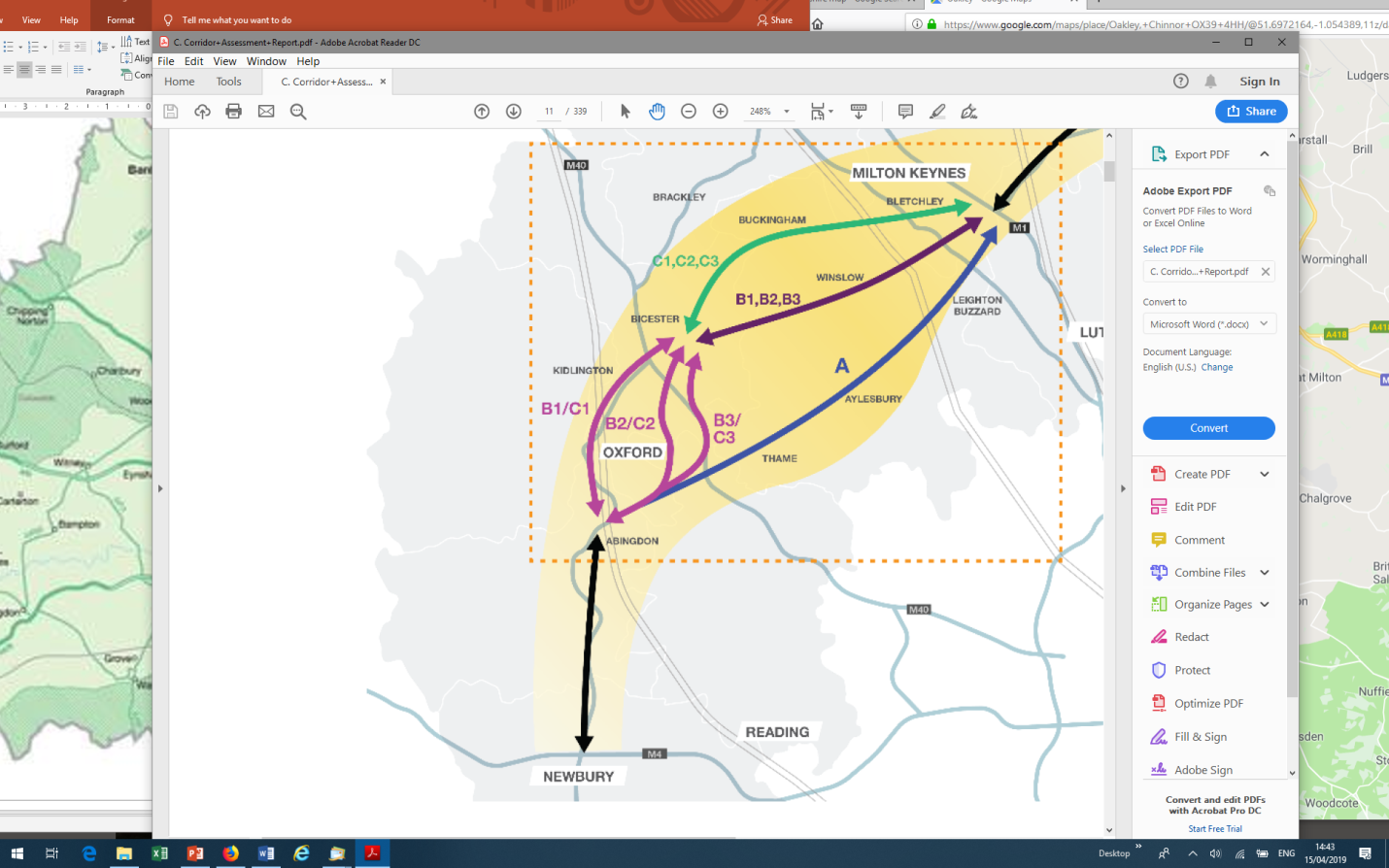
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**Summary and introduction**

Highways England in 2018 prepared two main reports analysing the case for the Ox-Cam expressway.

1) The *Corridor Assessment Report*[[1]](#footnote-1) (CAR) was produced to examine the relative merits of three broad expressway corridors A, B and C between Oxford and Cambridge, using the following criteria:

* connectivity: “deliver faster, safer and more reliable connections across the corridor”
* strategic transformation: “reflecting and advancing plans for infrastructure, housing, business investment and development”
* economic growth: “benefit the UK economy through increased productivity, employment and housing”
* skills and accessibility: “improving access to job opportunities”
* planning for the future: “reduce the impact of new housing on local roads and contribute to better safety, security and health”
* environment: “provide a healthy, natural environment”
* innovation: “apply innovative technology wherever possible”

The rough trajectory of each corridor and option is shown diagrammatically here:

The objective of the CAR was to choose the ‘preferred Corridor’ in terms of its performance on the above criteria. The suitability or otherwise of each Corridor on each of the criteria was indicated on a rainbow scale, from dark green (very suitable) to red (very unsuitable). These qualitative ratings were clearly determined by some quantitative or semi-quantitative underlying methodology, but very little or none of this is made explicit in the main body of the CAR. For example, one of the Intervention Objectives in the ‘Planning for the Future’ criterion was ‘to promote access to public transport’. The different corridor options ranked from Light Green (‘Slightly advantageous’) to Dark Green (‘Very advantageous’), depending *inter alia* on their access to the existing strategic road network, to public transport, and their ‘ability to integrate with existing and known future multi-modal projects’, etc.

Monetised savings from the reduction in accidents and fatalities assumed for each Option are given in the body of the text, but the bulk (>>90%) of the financial benefits of the expressway turn out to be monetised reduced journey times, and these are first quantified in CAR Section 13.5 ‘Initial Value for Money and outturn cost estimate’. Further workings of the figures here are given in CAR Appendix G ‘Traffic Modelling and Appraisal’ and, in still more detail, in the Strategic Outline Business Case (below). These, and such figures as are given in the CAR, depend upon the application of the South East Regional Traffic Model (SERTM), a model designed to estimate traffic flows and journey times across the road network. One of the applications of the SERTM was to discover how near to capacity are existing road networks, and how this might change with an expressway, with a view to deciding how many extra houses could be built, given an expressway. The CAR seems to be assuming a limited number of expressway junctions around which new development could take place (up to a distance of 4km away) and concludes that the expressway alone could facilitate approximately 300,000 homes in addition to those already there, or in plan. Numbers for each corridor option are shown below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Homes potentially enabled for development (000) | A | B1 | B2/B3 | C1 | C2/C3 |
| Normal background growth of allocated housing sites | 85 | 90 | 90 | 90 | 90 |
| Aspirational and allocated development enabled with OxCamEx opened | 405 | 390 | 440 | 410 | 450 |

To arrive at these numbers the CAR and the SERTM must be imagining some spatial distribution of the new expressway and houses across the landscape, and these are given for the various options in the Table below. Notice that some development areas are only available in some corridor options, and that the largest single settlement area is ‘East of Oakley’, an area presently devoid of any significant settlements or development.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Approx. no. jobs | A | B1/C1 | B2/B3 | C2/C3 |
| West of Didcot | 32,000 – 36,000 | ✓ | ✓ | ✓ | ✓ |
| Abingdon | 8,000 – 12,000 | ✓ | ✓ | ✓ | ✓ |
| North of Great Milton | 37,000 | ✓ |  |  |  |
| North Oxford | 28,000 |  | ✓ |  |  |
| East of Oxford | 55,000 |  |  | ✓ | ✓ |
| Wendlebury | 50,000 |  | ✓ |  |  |
| East of Oakley | 83,000-84,000 |  |  | ✓ | ✓ |
| South of Bicester | 38,000-45,000 |  | ✓ |  | ✓ |

For comparison with the above figures, Oxford City provides 88,000 full time jobs, and 118,000 jobs altogether.

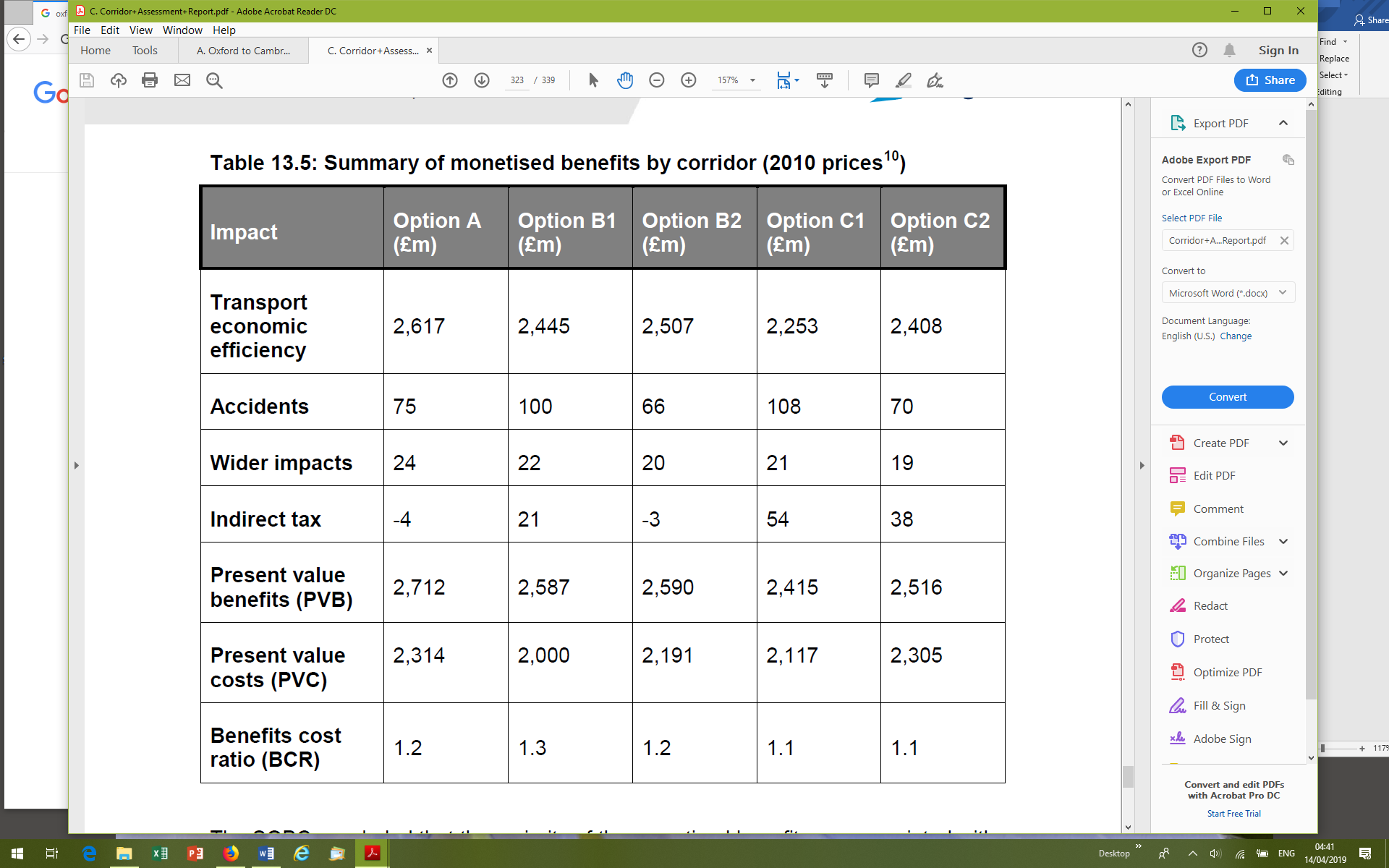
The CAR itself says very little about East-West Rail (EWR) seeing it only as a means of freeing up road space, allowing more development for a given expressway junction capacity.

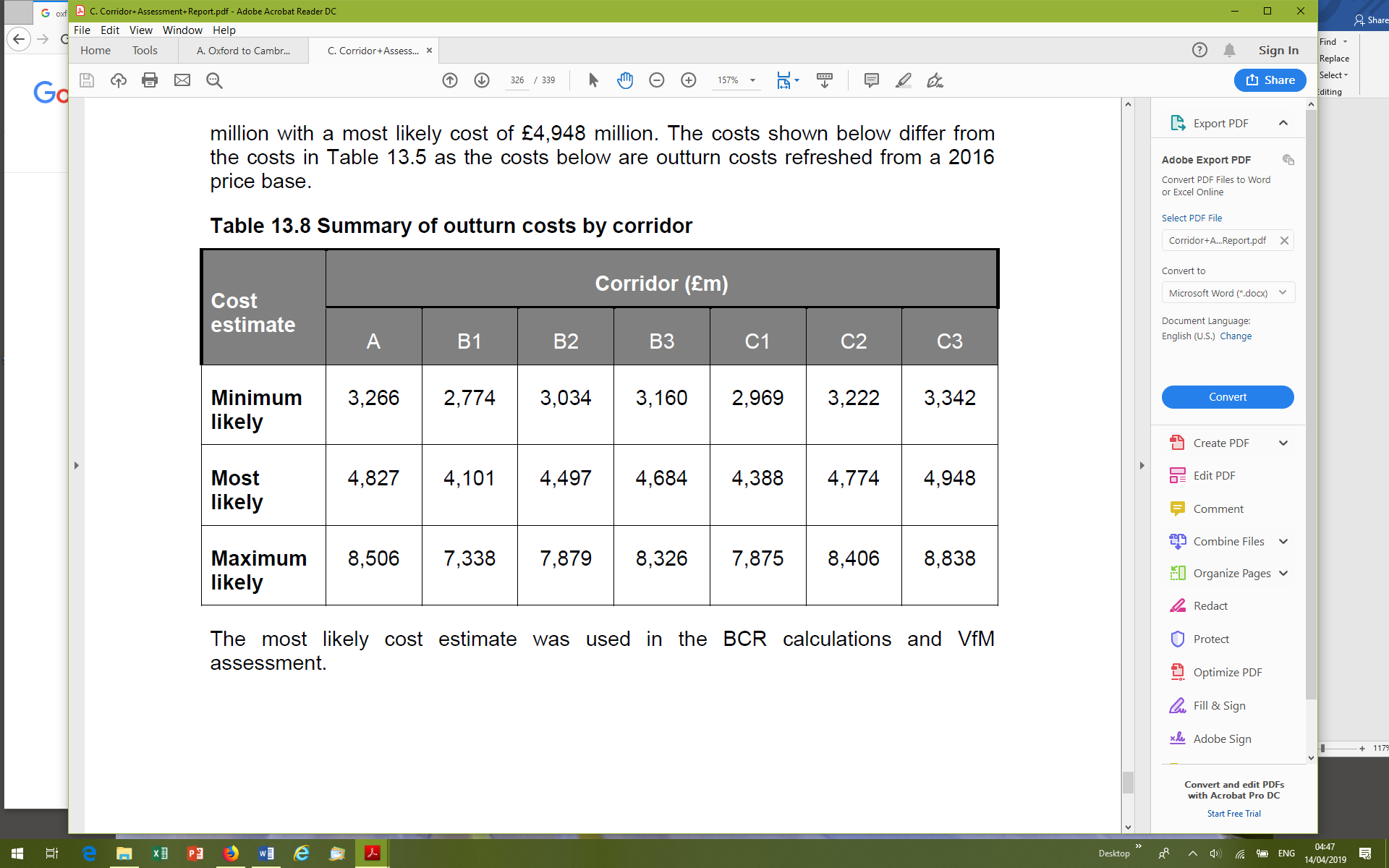
2) The *Strategic Outline Business Case*[[2]](#footnote-2) discusses the financial costs and benefits of the expressway, based on development ‘committed’ (we think this means ‘in adopted Local Plans’) at the time of the report. As pointed out above, the majority of benefits result from faster journeys (the cost savings depend upon whether they are business or pleasure journeys!) and, importantly, these benefits (derived from the SERTM) are those assuming the present levels of traffic, not those that will arise from transformational development of the Arc (which is likely to involve a doubling of present traffic numbers). Obviously more traffic is likely to increase average journey times and therefore to decrease the benefits of the expressway.

The costs of building and maintaining the expressway (over a 60-year time horizon) vary by a factor of 2-3 depending on whether they are ‘minimum likely’, ‘maximum likely’ or ‘most likely’. Under ‘most likely’ costs, depending on the route, the benefit:cost ratio is between 1.1 and 1.3. In other words, the report shows, at best, a modest economic benefit under current Local Plan allocations.

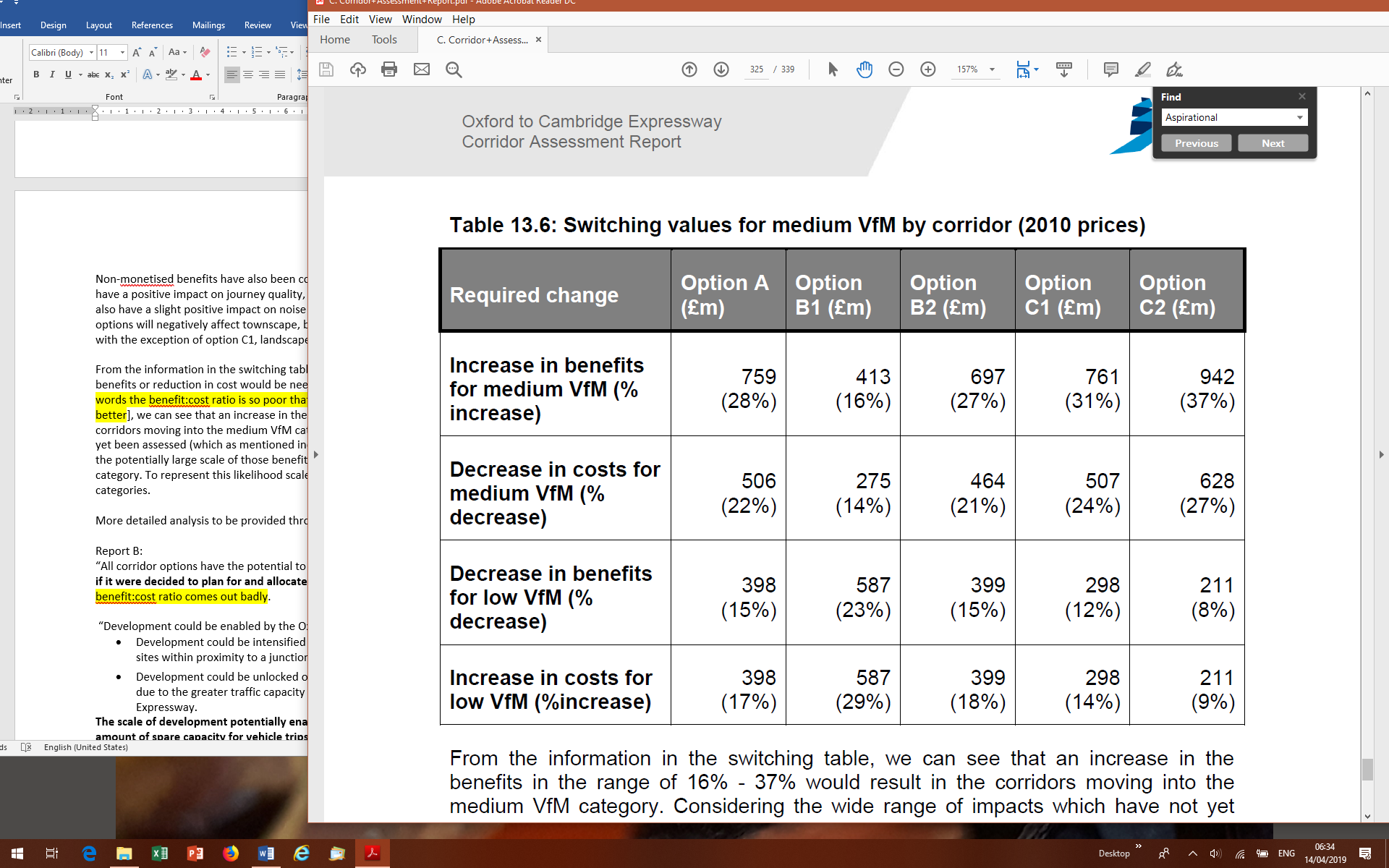
The tables below summarise the results of the report by Corridor options. The main points are:

* The benefit:cost ratio is low for all routes
* The cost assumptions (‘most likely’) are consistently on the low end of the minimum-maximum likely scale. As an example, the cost of HS2 has nearly doubled since it was proposed[[3]](#footnote-3). Only a 20-25% increase in present value costs would essentially make the benefit:cost ratio 0 or negative
* Economic benefits (‘transport economic efficiency’) are essentially linked to development along the route, “if it were decided to plan for and allocate such growth”. The assumption is that all these benefits would come from car-based development being permitted because there is now the road space for that development.
* Any assumptions about rail are treated as easing congestion on existing roads and thus allowing for more development on those roads
* It is not clear to us how Table 13.8 fits into Table 13.5. The SERTM routinely expresses both benefits and costs at 2010 values (so future benefits and costs are discounted back to 2010 prices at standard rates of either 3% or 3.5% pa). This appears to have been done for Table 13.5 only (both Table numbering from the CAR. The same data are also given in the Strategic Outline Business Case).





Highways England are clearly uncomfortable about the low benefit:cost ratios. The CAR includes a ‘switching table’, which discusses how much extra benefit or reduced cost would be needed for the expressway to reach a ‘medium’ 1.5:1 benefit:cost ratio:



The economic benefits, low though they are, provide some sort of case for a new expressway (although the Report itself includes the statement only that there are ‘some benefits of the expressway’) except:

* Building until roads are at capacity will reduce the benefits of faster journeys
* Experience suggests that the roads will cost more than the ‘most likely’ cost, bringing the original benefit:cost ratio down, possibly to less than 1:1
* The ‘transformation’ envisaged for the Arc as a whole is dependent on local authorities allocating sites for development, and on there being a sufficient number of developers and builders to develop them.

The report’s conclusion is, however, somewhat more up-beat:

*“This [report] has confirmed that this indicative assessment shows the benefits of the Missing Link between the M1 at Milton Keynes and the A34 at Abingdon south of Oxford are likely to provide some value for money. Thus the scheme is promising enough to take forward to the next stages of assessment which will take account of wider economic impacts, including related housing and employment delivery. This further assessment will allow robust estimates of value for money for each of the three corridors.”*

**Our Conclusions**

As discussed above, not all of the ‘benefits’ of the expressway identified in the two reports will come about. In particular, the ‘strategic transformation’ of housing and jobs posited in the Corridor Assessment Report would cancel out the ‘faster journeys’ benefits of the Strategic Outline Business Case. But Highways England will presumably propose some combination of the two, with an economic case showing a benefits:costs ratio of >1:1.

**Next steps**

Rather than commissioning an economic expert to untangle the assumptions and fallacies in these two reports, we suggest first asking a transport modeller to answer some questions:

1. How could Highways England have calculated travel time savings in its Strategic Outline Business Case (via application of the SERTM) without knowing relatively specifically where the routes will go? Does their model allow for a broad corridor, without any specific routes, to be modelled?
2. How robust and accurate is the South East regional transport model? Has it made good predictions in the past? This is in light of <https://www.bbc.co.uk/news/uk-england-47845050> and Highways England’s own experience with SERTM: .<https://saturnsoftware2.co.uk/uploads/files/SATUGM16-Highways-England-Regional-Models-Update.pdf>
3. What (if anything) does the model miss out? Does it include anything that is not relevant?
4. What assumptions in the report (and model) are dubious, if any? Does the Ox-Cam expressway pose issues that are non-standard but that are treated as standard by the model?
5. What kinds of journeys are modelled? (e.g. long v. short distance, commuter v. other)
6. Who would/will pay for the expressway? (Highways England, county, developers etc.)

With clear answers to the above questions we can then approach an economist with more precise questions about the overall economic viability of the Ox-Cam expressway.

15/04/19

1. [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwjh1ITDgdLhAhU7TB UIHdKjDIQQFjAAegQIAxAC&url=http%3A%2F%2Fassets.highwaysengland.co.uk%2Froads%2Froad-projects%2FOxford%2Bto%2BCambridge%2Bexpressway%2FCorridor%2BAssessment%2BReport.pdf&usg=AOvVaw2XTjKEFJV4RRDvfKjQX5XD](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwjh1ITDgdLhAhU7TB%20UIHdKjDIQQFjAAegQIAxAC&url=http%3A%2F%2Fassets.highwaysengland.co.uk%2Froads%2Froad-projects%2FOxford%2Bto%2BCambridge%2Bexpressway%2FCorridor%2BAssessment%2BReport.pdf&usg=AOvVaw2XTjKEFJV4RRDvfKjQX5XD) (sorry, couldn’t find a direct link) [↑](#footnote-ref-1)
2. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/739893/ strategic-outline-business-case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739893/%20strategic-outline-business-case.pdf) [↑](#footnote-ref-2)
3. The HS2 budget has risen from £34bn to £56bn, with acquisition of properties accounting for much of this. <http://www.railtechnologymagazine.com/Rail-News/mps-misled-over-enormously-wrong-land-costs-for-hs2-reveals-whistleblower>, <http://stophs2.org/facts> [↑](#footnote-ref-3)