

Statement of Evidence

Public Inquiry for Evergreen 3, Chiltern Railways

Friday 12th November, 2010

1. Objector

Dr Rob Hope,
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2. Motivation/Expertise

a) Personal interest:

i) He lives with his family at 84 Ulfgar Road, Wolvercote, which backs onto the Oxford-Bicester track (Appendix 1).

b) Professional expertise:

i) An economist with 8 years experience of empirical design, use and analysis using economic methods to examine behavioural responses to and demand for competing policy alternatives. This does include the area of transport policy but rather environmental management (i.e. land use change) and, in particular, water service policy.

ii) He lectures post-graduate students in a module on Water Economics at Oxford University, including the substantive areas of a) Stated Choice Methods/Behavioural Economics, and b) Cost Benefit Analysis, *inter alia*.

iii) He has published in international, peer-reviewed journals on ii) (Appendix 2).

3. Statement

I wish to raise three points further to the questions I asked Mr Eyles in his statement on the afternoon of Tuesday 2nd November.

3.1 Accuracy/reliability of demand forecasts

It is standard practice in modelling platforms to have an estimate of the model fit in order to provide the reader (professional or lay-person) an indication of a) significance level (i.e. 1%, 5%, 10%), and b) the degree to which the data fit the modelled output. For example, in linear regression (OLS) the Pearson R^2 estimate provides a simple and comparable estimate from 1.0 (perfect fit) to 0.0 (no fit). Non-linear models also provide a pseudo- R^2 estimate, which equally offers comparability across models to guide assessing model results. The results from the demand forecasts lack this basic information which gives no sense of the accuracy or robustness of the results. The Inspector asked Mr Eyles on November 2nd for historical data of forecast results to actual (observed) outcomes. This might provide an anecdotal check but uncertainty would remain on the reliability of the estimated and very precise 57,000 net increase in single rail trips between Oxford and London.

3.2 Relevant scope and limitations of demand forecasts

The demand forecasts are driven by historical rail ticket sales and Passenger Demand Forecasting Handbook (PDFH) data (not publicly available) to estimate geographic clusters (hexcells) of the propensity (probability) to use rail (Appendix LAE2-1). Somehow this base data are considered sufficient "to estimate ... likely (travel) mode shift ... and with few more assumptions to estimate changes in base demand." The assumptions are detailed in the PDFH with existing data from prior work in other geographic locations. Such observed (revealed preference, i.e. what people did) is important and useful to guide decisions. However, it was stated that no data had been generated of

other competing transport modes to London (coach/bus, car) from the Oxford area. Rather, hexcell data points were used as proxies based, apparently, on a generalised and uniform time constraint for passengers, though it is not clear if this per average household or individual, or some other formula.

Of concern is that no primary data has been collected to model transport choices given competing alternatives of a) transport mode, b) journey time, c) journey cost, or d) service convenience (i.e. regularity or convenience of service). Such analysis is standard in transport economics internationally with thousands of such studies published in peer-reviewed journals for new transport routes where no observed data can reliably predict how a new alternative may influence behaviour (appendix 1).

Here, one might consider as a minimum comparing a) the two Oxford services to London (Paddington and Marylebone) by time, cost, convenience, reliability, and b) modal shifts to/from car or coach to train, subject to the parameters suggested across relevant catchment areas. Stated choice methods are commonly used to model alternatives across a sensible range of competing parameters based on the work of Dan McFadden (Nobel laureate in Economics) with increasingly sophisticated and accessible modelling platforms using a suite of regression models. Such studies are of relatively low cost (<1%) compared to multi-million pound investment costs but provide a credible though not unique source of information to test and validate the strength of any business case. Given the limited scope, uncertain accuracy and ambiguous rigour of the demand forecasts consideration of a more thorough and low-cost assessment would seem in the public interest.

3.3 Cost benefit analysis

A significant omission in the CBA is the recommended use of 'switching values' (Green Book, p32) which shows how much a variable would have to fall/rise to generate a cost-benefit ratio of one. This provides the general audience some sense of how sensitive the model is to shifts in uncertain parameters, such as benefits (particularly user benefits and congestion, CRCL/P/5/A, table 4.1), capital costs, and travel demand; for the latter testing beyond the government estimate of x% increase in rail demand might seem warranted.

Forecasting is an art rather than a science and transparent attempts to show that parameters are inherently uncertain allows identification and greater scrutiny of where risks and rewards lie. Rigorous analysis promotes significant effort in triangulating, validating and testing uncertain but significant parameters to avoid costly investment mistakes. Indicators, such as CBA, can give a false sense of precision which may lead decision-makers to value measurements rather than measuring value; a subtle but important difference.

Given the business case ultimately rests on demand forecasts and value, the above points are not minor technical disagreements but fundamental issues in the sufficient, credible and transparent nature of the evidence to support the EG3 case. My view is the demand forecast evidence as currently presented is ambiguous, parochial and un-validated. No credible decision on the business case can be made on this evidence.

Appendix 1. Letter of objection (14/02/2010)

84 Ulfgar Road,
Wolvercote,
Oxford,
OX2 8BA

14th February, 2010

Reference: EG3/14022010/RH

The Secretary of State for Transport,
c/o The Transport and Works Act Orders Unit,
Department for Transport,
Zone 1/31,
Great Minster House,
76 Marsham Road,
London, SW1P 4DR

Dear Secretary of State,

Re: Objection to Evergreen 3 – Chiltern Railways (Bicester to Oxford) improvements application

On Monday 11th January, 2010, I received access to the 1,000 page Environmental Statement prepared by ERM on behalf of Chiltern Railways for the planned Evergreen 3 project to develop rail links between Oxford and London. The project is a welcome initiative given public policy concerns for sustainable developmental pathways in the UK. However, I must raise two principal objections to the material made available to me which question whether the proposal is adequate for purpose and in the public interest. First, the demand assessment for this service is mired in ambiguity and offers a compelling lack of detail to provide any decision-maker with confidence in the plans proposed. Second, there is potentially a health and safety hazard issue related to moving to high-speed twin-tracks in the Wolvercote section in Oxford based on local knowledge of serious structural damage caused when part of the Wolvercot Tunnel section was previously twinned-track.

First, the stated aims of the Transport and Works Act application indicate that the "Evergreen 3 project will, over time, earn sufficient net revenue to pay for its construction, and can thus be delivered as a private sector project". Within Chiltern Railways' current licence to 2022, this assumes there will be sufficient new and switching passenger demand for the rail service, which can generate in the order of £18 million profit per year. There is no evidence presented to support this position. In fact, I understand that another (and unmentioned) consultancy report for Great Western Railways¹ recommended the closure of the Oxford - Bicester Line with the Strategic Railway Authority proposing reducing Oxford-Bicester trains due to "low usage".

Low usage of the route naturally focuses attention on the question of demand from existing or latent road or rail users for the London rail link, which would compete directly with Great Western's current service. Modelling transport preferences by the quality, price, time and reliability of a new service is a standard approach in such cases, which is referred to in Annex C of the December 2009 Environmental Statement Volume 4, p.174 of 714, referring to a Halcrow Fox study. However, no details are provided from the study. Without these data on demand forecasting of the quantity and likely returns per passenger, given existing transport alternatives, how can Chiltern substantiate their confident return on investment statement? Great Western's existing Oxford-Paddington rail link business model is also likely to respond to their effective monopoly on the London service. Any

¹ Greater Western Franchise Outline Business Case Report (Jacobs Consultancy)

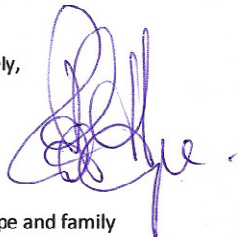
rudimentary Environmental Impact Assessment considers such alternatives, though I could not find any assessment in the available documentation.

The magic number of 66 minutes journey time by EverGreen 3 is also worthy of reflection. Chiltern have reputedly conceded to the fact they cannot run trains around almost perpendicular bends, such as over the Oxford canal bridge, at over 60 mph. In addition, they have agreed to reduce residents' complaints of high speed trains suggesting the rather precise figure of 66 minutes may increase. Currently, Great Western runs a 50 minute single-trip journey time to Paddington. If EverGreen 3 edges up to 70 minutes of more how will this effect passenger demand and revenue for a service that may be almost twice the return journey time of its competitor? Standard economic theory and almost all published peer-reviewed articles would suggest business model problems. For residents' bearing the risk of another transport white elephant, these concerns are large, credible and immediate. Government may well like to push responsibility, returns and risk to the private sector, but recent experience has left the public badly bruised and government desperate to regain credibility and authority in regulating markets more equitably and effectively.

Second, in private conversations with Oxford City Councillor, John Goddard, who has lived in Upper Wolvercote for several decades, he has related how the railway line previously had a twin-track line but was changed to a single track line partly due to residential and commercial property structural damage caused by low speed (compared to the proposed 100 mph) trains on the heavy clay/mud geo-morphological beds underlying the area. Again, the Environmental Impact Statement and Chiltern Railways do not adequately this issue. As a parent of a child in Wolvercote Primary School, which is adjacent to the track, I have understandable concerns that this potentially serious health and safety issue is not adequately understood nor any measures discussed to mitigate the risks to an acceptable level. Another primary school, SS Philipp and James, also lies adjacent to the proposed track development off Aristotle Lane in Jericho. By way of this letter, the Minister is now aware of these issues and hopefully will act in a suitably responsible manner.

Finally, the project also plays to the revival of the former Oxford-Cambridge rail link closed in 1967. However, my understanding is that planning permission for a larger rowing lake has been granted at Willington near Bedford, which will supply gravel for the Olympic Games in 2012. For some commentators this has reduced the likelihood of this cross-country linkage materialising. As with other unsubstantiated and speculative statements in the planning application the proposal dilutes the fundamental argument that rail transport has an increasing role in a sustainable transport policy for the UK. Building and exploiting existing infrastructure has a clear role to play in this process. Unfortunately, as presented, Evergreen 3 reflects an imperfect and speculative vision that is not adequate for purpose. As such, I recommend the Secretary to reject the proposal until sufficient, credible and satisfactory evidence is provided to support the claims made.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'R. Hope', with a flourish at the end.

Robert A. Hope and family

Appendix 2. Peer-reviewed publications

- Mayers, J., Hope, R. et al. (2009) Water ecosystem services and poverty under climate change: key issues and research priorities. *Natural Resource Issues* No. 17. International Institute for Environment and Development, London, UK.
- Hope, R.A., Frost, P.G.H., Gardiner, A. and Ghazoul, J. (2009) Experimental analysis of adoption of domestic Mopane Worm farming technology in rural Zimbabwe. *Development Southern Africa* **26**(1)
- Hope, R.A., Borgoyary, M. and Agarwal, C. (2008) Smallholder farmer preferences for agri-environmental change at the Bhoj wetland, India. *Development Policy Review*, **26**(5): 585-602.
- Hope, R.A., Jewitt, G.P.W. and Gowing, J.W. (2008) The contested future of irrigation in African rural livelihoods – analysis from a water scarce catchment in South Africa. *Water Policy* **10** (2): 173-192
- Hope, R.A. (2007) Evaluating social impacts of watershed development in India. *World Development* **35** (8): 1436-1449
- Hope, R.A., Porrás, I.T., Borgoyary, M., Miranda, M., Agarwal, C., Tiwari, S. and Amezcaga J.M. (2007) *Negotiating Watershed Services*. Markets for Environmental Services series, **No. 11**. London: IIED.
- Hope, R.A. (2006) Evaluating water policy scenarios against the priorities of the rural poor. *World Development* **34** (1): 167-179.
- Hope, R.A. (2006) Water, workfare and poverty: the impact of the Working for Water Programme on rural poverty reduction. *Environment, Development and Sustainability* **8**: 139-156
- Hope, R.A., Porrás, I.T., Miranda, M., Agarwal, C. and Amezcaga, J. (2005) Are the poor benefiting from environmental service reward schemes? *European Tropical Forestry Research Network*, **45-46**: 36-39.
- Hope, R.A., Jewitt, G.P.W. and Gowing, J.W. (2004) Linking the hydrological cycle and rural livelihoods: A case study in the Luvuvhu catchment, South Africa. *Physics and Chemistry of the Earth* **29**: 1209-1217
- Hope, R.A. and Garrod, G.D. (2004) Household preferences to water policy interventions in rural South Africa. *Water Policy* **6**: 487-499

Appendix 3. International, peer-review journal search of 'transport demand/stated choice' in last 10 years (n=5,050)

SOLO: Search Oxford Libraries Online - transport demand / choice model - Windows Internet Explorer

http://solo.bodleian.ox.ac.uk/primo_library/libweb/action/search.do?&dscnt=0&v(1UI0)=contains&v(D726582UI4)=all_items&scps=primo_central_multiple_...

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SOLO: Search Oxford Libraries Online - transport dem...

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Oxford Collections **Journal Articles (beta)**

Any contains transport demand
 Any contains choice model

Publication Date: Last 10 years
 Material Type: All items
 Language: Any language
 Search Scope: Primo Central (or select from) Find Databases

Search Simple Search

Show only

Online Resources (3,962)
 Peer-reviewed Journals (4,244)

Refine My Results

Topic

- Supply chain management (98)
- United Kingdom (50)
- Economics (21)
- Distribution management (20)
- Consumer behaviour (20)
- Show 15 more

Language

- English (1,956)
- French (21)
- Portuguese (4)

Creation Date

- After 2008 (1,825)
- 2002 To 2004 (1,596)
- 2006 To 2008 (1,542)
- Before 2002 (1,368)
- 2004 To 2006 (1,070)

Creator

- AguirreGmez, JosAlfonso (1)
- Andrew Potter (3)
- Axelsson, Henrik (2)
- Bales, Sarah (2)

5,050 Results for Primo Central (or select from list) sorted by: Relevance 1-10 Next

Show only Online Resources (3,962) | Peer-reviewed Journals (4,244)

The Influence of Task Complexity on Consumer Choice: A Latent Class Model of Decision Strategy Switching
 Swait, Joffre ; Adamowicz, Wiktor
 Journal of Consumer Research, Vol.28(1), p.135-148 [Peer Reviewed Journal]
 Online resource Details Reviews & Tags Additional services Recommendations

Modelling Modal Choices with Discrete Choice Models: An Application to the North Shore Busway
 Huang, Yi-Min ; Wang, Judith YT
 Road & Transport Research: [A Journal of Australian and New Zealand Research and Practice], June 2008, Vol.17(2), p.50-59 [Peer Reviewed Journal]
 Additional services Details Reviews & Tags

Determinants of Mode Choice between Road and Shipping for Freight Transport: Evidence for Four Spanish Exporting Sectors
 García-Menéndez, Leandro ; Martínez-Zarzoso, Inmaculada ; De Miguel, Delia Piñero
 Journal of Transport Economics and Policy, Sep., 2004, Vol.38, p.447-466 [Peer Reviewed Journal]
 Online resource Details Reviews & Tags Additional services Recommendations

Evacuation Modelling in the United States: Does the Demand Model Choice Matter?
 Yazici, Mustafa Anil Ozbay, Kaan
 Transport Reviews, 2008, Vol.28(6), p.757-779 [Peer Reviewed Journal]

Appendix 4. International, peer-review journal search of 'transport demand/MOIRA' in last 10 years (n=0)

The screenshot shows a Windows Internet Explorer browser window displaying the SOLO search interface. The address bar shows the URL: [http://solo.bodleian.ox.ac.uk/primo_library/libweb/action/search.do?dsct=0&v\(1UI0\)=contains&v\(D726582UI4\)=all_items&scps=primo_central_multiple_](http://solo.bodleian.ox.ac.uk/primo_library/libweb/action/search.do?dsct=0&v(1UI0)=contains&v(D726582UI4)=all_items&scps=primo_central_multiple_). The search criteria are: "Any" contains "transport" and "in subject" contains "MOIRA". The filters are: Publication Date: "Last 10 years", Material Type: "All items", Language: "Any language", and Search Scope: "Primo Central (or select from)". The search results section shows "0 Results for Primo Central (or select from list)" sorted by "Relevance". The footer contains copyright information for Bodleian Libraries 2010 and an option to "Update my screen automatically".

SOLO: Search Oxford Libraries Online - transport / MOIRA - Windows Internet Explorer

http://solo.bodleian.ox.ac.uk/primo_library/libweb/action/search.do?dsct=0&v(1UI0)=contains&v(D726582UI4)=all_items&scps=primo_central_multiple_

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SOLO: Search Oxford Libraries Online - transport / M...

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New Search | OU e-Journals | OxLIP+ | OLIS | Bodleian Libraries | Tags | Feedback | SOLO Guide | Help

Oxford Collections **Journal Articles (beta)**

Any contains transport

in subject contains MOIRA

Publication Date: Last 10 years

Material Type: All items

Language: Any language

Search Scope: Primo Central (or select from) Find Databases

Search Simple Search

rss

0 Results for Primo Central (or select from list) sorted by: Relevance

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