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The Economic Benefits of Crossrail

Prepared in association with



October 2007

The Economic Benefits of Crossrail

Final Report

This report has benefited from discussions with staff in Crossrail, the Department for Transport, the Greater London Authority and Transport for London. Responsibility for the analysis and conclusions rest with Colin Buchanan and Volterra Consulting.

Project No: 125721
May 2007

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Status: Final Report

Issue no: 1

Date: 05 October 2007

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Summary

Background

This report summarises the latest work undertaken by Colin Buchanan and Volterra Consulting on the economic benefits of Crossrail. In 2002 the economic appraisal concentrated only on the direct transportation effects, in the form of changes to time and comfort for travellers, which were assumed to capture the whole of the economic benefits. Colin Buchanan and Volterra extended that analysis of economic benefits by developing an approach which quantified and valued the impact of Crossrail on central London growth and productivity by applying the theory of agglomeration.

That work suggested that the economic impacts of Crossrail on business productivity valued in this way were both very large and entirely additional to the transportation impacts.

Clearly this was a radical conclusion and contrary to the conventional approach to transport appraisal. Now five years on, following lengthy discussions and detailed further analysis, the Department for Transport have adopted the approach, and written it up within their own guidance note. The implications are that the UK has been underinvesting, in urban rail infrastructure in particular, by ignoring the wider economic benefits.

The New Results

At the outset, gaining acceptance for such a radical approach led us to produce work on Crossrail which was highly conservative, with a number of restrictive assumptions applied in order to “be on the safe side”. The main report examines the impact on the economic benefits of unpicking some of those assumptions and shows the potential range of the wider economic benefits.

This report explores the following key issues:

- Longer term employment growth paths for London
- Valuation of regional output per head

It also flexes key assumptions in the following way:

- It allows a proportion of jobs to be filled by international migrants
- It removed caps on the growth in output for relocated jobs
- It moves to using the latest agglomeration elasticities published by the DfT

In order to explore their combined effect three scenarios are defined, and the results compared with those from the February 2005 valuation.

The full valuation table is given in Table S1, showing both the direct impacts on GDP and the welfare benefits. Welfare benefits are those normally included in a transport evaluation and are intended to reflect non monetary as well as monetary improvements.

Table S 1: Summary Results: User and Wider Economic Benefits, 60 year PV, £ billions

Benefits	High Scenario		Mid Scenario		Low Scenario		Feb 2005	
	Welfare (£bn)	GDP (£bn)	Welfare (£bn)	GDP (£bn)	Welfare (£bn)	GDP (£bn)	Welfare (£bn)	GDP (£bn)
Conventional User Benefits	12.8	4.8	12.8	4.8	12.8	4.8	12.8	4.8
Labour force participation		0.9		0.9		0.9		0.9
Move to more productive jobs		46.2		29.9		19.6		7.8
Pure agglomeration	9.3	14.3	8.2	12.6	6.8	10.4	3.8	5.8
Imperfect competition	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Tax Implications	19.2		13.7		9.9		4.7	
Wider Economic Benefits	29.0	61.9	22.4	43.9	17.1	31.4	9.0	15.0
Total (User and WEBs)	41.9	66.7	35.3	48.7	29.9	36.2	21.8	19.8

The differences between the scenarios are substantial, increasing GDP benefits from £19.8bn in the February 2005 valuation to £66.7bn in the high scenario. As a minimum it suggests that there is a very large upside; in our view it shows that the earlier valuation is not a central case but a very conservative valuation.

The table also describes tax implications from the Wider Economic Benefits. This tax take is based around some additionality assumptions and is itself conservative. The transport appraisal of Crossrail includes a loss of tax revenues from fuel tax and VAT, but this analysis suggests that the increase in taxes from the growth in output is far more significant. How the proceeds of that increase in output are divided between returns on capital, labour and property are uncertain and likely to vary over time, but the proportion accruing to government is relatively stable and predictable. This analysis suggests that over the long term investment in Crossrail would generate a positive financial return for government.

Conclusions

The Wider Economic Benefits derived from Crossrail could be worth several times more than the transport user benefits. The DfT's adoption of agglomeration benefits is a major step forward, but the guidance so far suggested represents a cautious interpretation of the potential benefits.

1. Introduction

1.1 Purpose of this document

1.1.1 A large body of work has been created which examines the economic benefits of Crossrail. This has included the development of ground breaking new approaches to valuing the agglomeration benefits of Crossrail, which have since been incorporated into Department for Transport (DfT) appraisal guidelines under the heading 'Wider Economic Benefits'. These are distinct from the transport user benefits, normally described as welfare benefits, which are based on savings of time and discomfort.

1.1.2 The DfT guidance identifies four components of the Wider Economic Benefits:

1. Move to More Productive Jobs
2. Pure Agglomeration
3. Increase in labour force participation
4. Impacts on imperfect competition

1.1.3 The increase in labour force participation and the impacts on imperfect competition (3 and 4 above) are derived directly from the Transport User Benefits. The Move to More Productive Jobs and the Pure Agglomeration benefits (1 and 2 above), which together form the vast majority of the wider economic benefits, need to be quantified and valued separately.

1.1.4 The Move to More Productive Jobs benefits derive from the role of Crossrail in overcoming transport capacity constraints on employment growth within central London. Those benefits reflect the productivity difference between central London and the rest of London. The Pure Agglomeration benefits value the changes in productivity arising from changes to the effective density of employment density. Effective density being the combination of changes to density and to accessibility. The Pure Agglomeration benefits show the benefits accruing to existing jobs.

1.1.5 This report aims to present a complete and up to date picture of the current state of the analysis, explanations of the methods available and the resulting range of assumptions. It also presents the latest overall valuations of Crossrail, for a range of assumptions.

1.2 Overview of the document

1.2.1 The report follows the argument for the benefits of Crossrail.

1.2.2 Chapter 2 starts by setting the scene. London is a premier world city, competing with cities across the globe. Transport improvements should be seen within the context of supporting further success. We present both short term employment forecasts and discuss longer term potential growth paths for London.

1.2.3 Chapter 3 explores methods for understanding the likely impact of the transport constraint on employment growth, and the extent to which this constraint would be relieved by Crossrail. Chapter 4 moves on to a discussion of the output generated by employees in different regions of Britain, and boroughs in London. This includes a new estimate of regional output, which addresses one of the flaws in the current ONS methodology. The ONS methodology is currently under review.

1.2.4 The next stage is to pull together a valuation of the benefits, which is done in Chapter 5. This sets out the methodology for estimating the impact on output for new and existing employees, and for estimating the other components of the 'Wider

Economic Benefits'. The key assumptions are discussed and the effect of relaxing them shown. The changes to the assumptions include:

1. Allowing for international migration to fill some of the new employment opportunities
2. Removing caps on output gains in the Move To More Productive Jobs
3. The DfT's latest published agglomeration elasticities

1.2.5 Chapter 6 pulls together packages of changes to the assumptions, and show their combined effect on the valuation of Crossrail. Chapter 7 describes the tax implications and Chapter 8 the study conclusions.