

## 1. EXECUTIVE SUMMARY

- 1.1 The Western Section (Bedford, Milton Keynes, Aylesbury and Oxford) of the East West Rail route has been progressing over the last few years and has now reached GRIP 3 stage. A contract has recently been let to progress the scheme to GRIP 4 by December 2009.
- 1.2 The overarching objective of the EWR projects is to reopen the railway between Oxford and Cambridge to provide a strategic orbital rail link between the East of England and Central Southern England, avoiding the need to travel via London and connecting with all “core” radial routes out of London. It should support the O2C (Oxford to Cambridge) technology arc and should connect major areas of housing, jobs and growth across the Region, making for more sustainable communities.
- 1.3 Over the last few years there have been a number of developments, as a result of which the EWR Consortium considered it worthwhile to re-examine the options for the Central Section (the link between the Midland Main Line and the East Coast Main Line), which would complete the connections and enable through services from east to west across the sub-region. The developments that have prompted this include: the growth area strategies, with substantial additional growth in housing and jobs across the region, major expansion of both Luton and Stansted airports and the granting of planning permission for the rowing lake just to the east of Bedford. This lake would sever the previously adopted route between Bedford and Sandy.
- 1.4 The conclusion of the previous high level routeing assessment was that three basic route options should be investigated further, to determine whether there is an operating case that does not require a large long term subsidy (on the basis that options with a heavy subsidy requirement would be almost impossible to deliver in today’s rail industry, irrespective of the capital cost). The three route options were:
- a southern route via a new link to the Midland Main Line in the Stewartby area, Luton, Luton Airport Parkway and a new alignment from there to Stevenage;
  - a central route via Bedford, Sandy and the ECML, or via the former Bedford-Hitchin railway alignment;
  - a northern route via Bedford, Kettering, Corby, Manton and Stamford to Peterborough.
- 1.5 Consideration was also given to a direct route from Bedford generally routeing via Sandy and across country to Cambridge. This route would require an additional 20 miles of new alignment east of Sandy. The additional cost of this would very high, more than doubling the cost and deliverability challenges of any other route. Although the direct journey time to Cambridge would be the shortest, the passenger interchange opportunities with the East Coast Main Line corridor would be significantly reduced, effecting the overall demand and viability of the business case. In addition, this route would just duplicate the existing Hitchin – Cambridge line some 8-10 miles to the south. This route was not pursued further as it was considered undeliverable predominantly on cost grounds.

## East West Rail Central Section – Operating Case

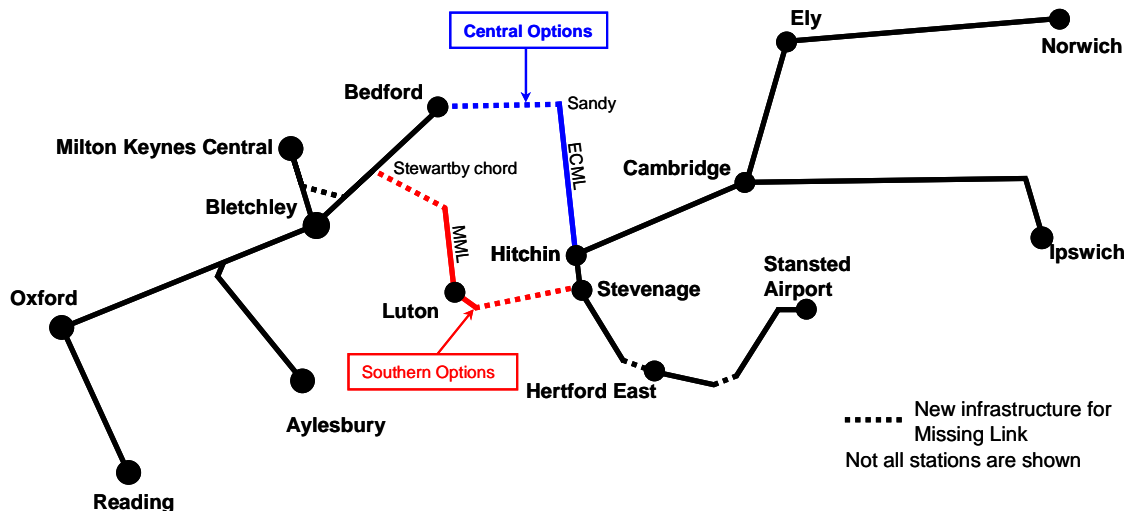
- 1.6 The scope of this work was to revisit the Central Section, giving consideration to the following:
- a planning assessment to establish definitive land use assumptions for demand modelling;
  - a review of the routeing options;
  - demand forecasting;
  - an outline service plan; and
  - the establishment of an operating case.
- 1.7 The service patterns were developed by building on one of the Western Section timetables for the GRIP 3 study, with minor modifications. This is simply to give a sound basis for analysis and does not show any preference for a particular Western Section option. Also, a limited number of additional stops could be incorporated in any of the options, although this would increase the journey times.
- 1.8 Initially the eastern termini for services were considered as Stansted and Cambridge; subsequently, however, the Cambridge terminus was replaced by through services to Norwich and Ipswich (replacing part or all of the existing services east of Cambridge).
- 1.9 In the initial optioneering process, a number of different service patterns and routeing sub-options were considered for each of the basic routes, with combinations of through services from Birmingham & Reading to Stansted, Reading to Cambridge, Aylesbury to Peterborough, Aylesbury to Milton Keynes, Aylesbury to Bedford and Reading to Milton Keynes. Revenues and operating costs were determined to identify the broad operating case for each route and indicative capital costs were estimated. Generally all services were hourly, giving at least 2tph on the core route between the ECML and the Great Western.
- 1.10 Two key conclusions were reached at this stage and endorsed by the consortium:
- Through services to Birmingham incurred more additional operating cost than additional revenue, and were competing against existing fast WCML services between Birmingham and Milton Keynes. Further service pattern assessment should not take services north of Milton Keynes.
  - The Northern route would require the largest long term financial support and delivered the lowest revenues, although at the lowest capital cost. On this basis it is the least likely option to receive DfT support or inclusion in any franchise specification. A service on this route would not deliver the core EWR objective of connecting Oxford with Cambridge to create a strategic orbital route between the East of England and Central Southern England. In addition, the journey times between places such as Oxford and Cambridge would still be quicker via London, including interchange and use of the Underground. Therefore no further work was to be undertaken on the northern route.
- 1.11 Five options were identified and agreed to be taken forward, three on the southern route via Luton and Stevenage and two on the central route via Sandy and Hitchin. These comprised the service patterns shown in Table 1.1.

TABLE 1.1 OPTIONS SELECTED FOR OPERATING CASE ASSESSMENT

	Southern (Luton) Options			Central (Sandy) Options	
	1A	1B	1C	2A	2B
Hourly	Reading-Oxford-Milton Keynes	Reading-Oxford-Milton Keynes	Reading-Oxford-Milton Keynes	Reading-Oxford-Milton Keynes	Reading-Oxford-Milton Keynes
Hourly	Reading-Oxford-Luton-Stevenage-Stansted Airport	Reading-Oxford-Luton-Stevenage-Cambridge, then Norwich or Ipswich (each every 2 hrs)	Reading-Oxford-Luton-Stevenage-Cambridge-Ipswich	Reading-Oxford-Bedford-Sandy-Stevenage-Stansted Airport	Reading-Oxford-Bedford-Sandy-Stevenage-Cambridge, then Norwich or Ipswich (each every 2 hrs)
Hourly	Aylesbury-Bedford	Aylesbury-Bedford	Aylesbury-Bedford	Aylesbury-Milton Keynes	Aylesbury-Milton Keynes
Hourly	Milton Keynes-Luton-Stevenage-Stansted Airport	Milton Keynes-Luton-Stevenage-Stansted Airport	Milton Keynes-Luton-Stevenage-Cambridge-Norwich	Milton Keynes-Bedford-Sandy-Stevenage-Stansted Airport	Milton Keynes-Bedford-Sandy-Stevenage-Stansted Airport
Two-hourly	Bletchley-Bedford stopping service	Bletchley-Bedford stopping service	Bletchley-Bedford stopping service	Bletchley-Bedford stopping service	Bletchley-Bedford stopping service

1.12 A composite map of the routeings is shown in Figure 1.1.

FIGURE 1.1 OUTLINE PLAN OF OPTIONS SELECTED FOR OPERATING CASE ASSESSMENT



1.13 The timetabling work identified competitive journey times between the key nodes, which reinforced the potential for direct EWR services. The journey time

## East West Rail Central Section – Operating Case

comparisons below are given for the southern route, which is typically about 10mins faster than the central route. It should be borne in mind that this comparison does not take into account any specific journey time penalty for interchanging, which would not be insignificant given that journeys via London require at least two interchanges.

**TABLE 1.2 SAMPLE NODE JOURNEY TIMES (HOURS/MINUTES)**

<b>Journey</b>	<b>EWR</b>	<b>Existing Rail</b>
Oxford - Cambridge	1:45	2:30
Oxford - Stevenage	1:15	2:15
Ipswich - Oxford	2:25	3:07
Stansted - Oxford	2:10	2:41
Norwich – Milton Keynes	1:55	3:10

- 1.14 An overview has been undertaken of each of the routes, to identify the core infrastructure requirements and whether there are any insurmountable obstacles to delivery. The cost range is broadly from £50m for the Northern route where only a chord is required, to £300m - £400m for the southern and central routes. In delivery terms, there will be significant challenges establishing the connections through to Stansted and the southern route would require a significant amount of tunnelling, although this is more a cost than a delivery issue. The central route would have the challenge of bypassing the rowing lake. However, at this juncture we do not believe that any of the routes are technically undeliverable.
- 1.15 The demand and revenue forecasts for the options were developed from a gravity model calibrated against around 1000 non-London rail flows within the wider South East. This is a similar approach to that used for the Western Section of EWR and the recognised approach for new rail links. The model has taken into account the significant growth across the region up to 2031 using a combination of existing data sources and discussions with the local authorities
- 1.16 The UK Rail operating revenues, the net additional revenues received by the rail industry as a result of the new service, in 2016 and 2031 are shown in the table below.

**TABLE 1.3 UK RAIL REVENUE (£MPA)**

<b>Option</b>	<b>2016</b>	<b>2031</b>
Option 1A	14.1	24.7
Option 1B	16.4	28.5
Option 1C	16.7	28.8
Option 2A	11.3	19.5
Option 2B	13.9	23.8

1.17 The operating costs for the service patterns have been developed taking into account all the costs of operating the trains, including maintenance and the costs associated with operating on the existing rail network/infrastructure including capacity and access charges. As with the revenues, which are the incremental element resulting from the new services, the operating costs are also incremental and allow for the savings resulting from existing services which would be replaced or subsumed. The resultant operating costs are given in the table below.

**TABLE 1.4 UK RAIL OPERATING COSTS (£MPA)**

Option	2016	2031
Option 1A	18.71	35.98
Option 1B	19.21	34.28
Option 1C	18.34	33.21
Option 2A	18.13	34.99
Option 2B	18.50	33.16

*Note: this table assumes that Fixed Track Access Charges are phased in over time between opening and 2031*

- 1.18 As with the Western Section operating case we have defined a scenario whereby the cost of the rolling stock has been taken out, on the assumption that the cost of this could be capitalised. This reduces the operating cost in the table above by some £4m-£5m per year.
- 1.19 The operating case has been assessed both for the whole of EWR (including the Western Section services) and as an incremental scheme (impact of the Central Section, over and above the Western Section). The operating case for the whole scheme is stronger than for the incremental scheme, which is to be expected given the strength of the case for the Western Section.

**Synopsis**

**Northern Route**

- Little or no journey times advantage over existing routes, which include two interchanges in London
- Very poor operating case and services will require very large yearly support ad infinitum
- Relatively easy to deliver
- Infrastructure significantly cheaper than any other option

## East West Rail Central Section – Operating Case

### **Central Route**

- Significantly shorter journey times than current routes
- Services to Cambridge and beyond perform more strongly than those to Stansted
- Service operating costs similar to the southern route
- Incremental revenues about 80% of those on the southern route
- Operating case will require significant support for a long time even if the cost of rolling stock is excluded
- Deliverability challenges: routeing out of Bedford, by-pass of rowing lake, connection to ECML, pathing on ECML, connection to the new Hitchin chord
- Infrastructure costs with all services going to Cambridge (option 2C) approximately £250m

### **Southern Route**

- Significantly shorter journey times than current routes
- Services to Cambridge and beyond perform more strongly than those to Stansted
- Service operating costs similar to the central route
- Highest incremental revenues
- Strongest operating case with the revenues exceeding operating costs if the cost of rolling stock is excluded
- Deliverability challenges: connection to Midland Main Line, tunnelling eastwards from the Midland Main Line in the vicinity of Luton Airport, connection at Langley junction just south of Stevenage
- Infrastructure costs with all services going to Cambridge (option 1C) approximately £300m