

**ADVICE ON ASSESSING  
ENHANCEMENT SCHEMES  
PROPOSED IN NETWORK  
RAIL'S INITIAL STRATEGIC  
BUSINESS PLAN (ISBP)**

**Final Report**

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## 1. EXECUTIVE SUMMARY

- 1.1 In September 2006 the Office of Rail Regulation (ORR) appointed Steer Davies Gleave to provide advice on strategic business planning aspects of Network Rail's Initial Strategic Business Plan (ISBP), one of the documents it has produced in preparation for its 2008 Periodic Review for Control Period 4 (CP4) from 2009/10 to 2013/14. In parallel, ORR appointed Scott Wilson Railways Ltd (Scott Wilson) to provide advice on engineering aspects of the ISBP.
- 1.2 The ISBP described a total of nearly 200 "Baseline" schemes and additional "Base Case" schemes. We were asked to focus on 17 "major" Base Case schemes costing over £50 million and to advise on a number of aspects of how they had been selected, developed, prioritised and evaluated.
- 1.3 Working closely with Scott Wilson, we reviewed the extent to which these major schemes were required by Network Rail's emerging Route Utilisation Strategies (RUSs) and consistent or compatible with each other and medium and minor schemes in the ISBP. We concluded that some outputs of the schemes might prove to be either unnecessary or deliverable at lower cost.
- 1.4 Network Rail faces a number of difficulties in attempting to develop a consistent portfolio of investment schemes in the face of uncertainty in future passenger and freight demand, train operator and customer aspirations, public policy, network condition, future studies' conclusions and regulatory decisions. Nonetheless, aspects of the ISBP had not been documented to the level which would have been expected, had not been developed on a consistent basis throughout the network, had not completed the analysis which could be carried out with the available facts and had not identified interactions between complementary, competing and contingent schemes.
- 1.5 ORR subsequently asked us to provide estimates of the expenditure which would be required on Base Case schemes during CP4, which the ISBP suggested would be around £2.563 billion. Taking into account our analysis of the major schemes, a number of schemes which appeared likely to be unnecessary, duplicate other schemes, or be deliverable for less, we estimated that a "most likely" expenditure level would be around £2.062 billion.
- 1.6 ORR also asked us to examine briefly the capacity of the construction industry to deliver the enhancement programme. We did so, and concluded that construction capacity should be adequate, and that a programme of this scale should not materially affect it, although Network Rail would still need to plan carefully the deployment of specific railway skills.
- 1.7 In November 2006 Network Rail produced a "Refresh" document which we have compared with the July 2006 ISBP. We are concerned that there is little evidence that the objectives, scope, design and costs of the programme are progressing at the rate needed for Network Rail to deliver a Strategic Business Plan in October 2007 or even the enhancement programme during CP4. At ORR's invitation, we recommend rapid clarification of the approach to a number of large projects, but if the enhancement programme is to be delivered there is a wider need for Network Rail to accelerate the rate at which projects are being developed, defined and designed.

## 2. BACKGROUND, TERMS OF REFERENCE AND OBJECTIVES

### Background

- 2.1 The Office of Rail Regulation (ORR) regulates Network Rail through Periodic Reviews, the next of which (Periodic Review 2008 or PR2008) will relate to Control Period 4 (CP4) from the five-year period from April 2009 to March 2014. Prior to PR2008, Network Rail is scheduled to provide, in October 2007, a Strategic Business Plan (SBP). In parallel, the Department for Transport and Transport Scotland will be developing their High Level Output Specification (HLOS) and Statement of Funds Available (SoFA) documents describing the outputs required from the railway and the funds available respectively.
- 2.2 On 3 July 2006 Network Rail published a “June” 2006 Initial Strategic Business Plan (ISBP) which articulates its emerging plans for operating, maintaining, renewing and developing the network and which will be updated to form the October 2007 Strategic Business Plan.

### Terms of reference and reporting

- 2.3 On 3 August 2006 ORR issued terms of reference for the provision of advice on engineering and strategic business planning aspects of the ISBP and supporting documentation. On 6 September 2006 ORR appointed Steer Davies Gleave to carry out the strategic planning work. In parallel, ORR appointed Scott Wilson Railways Ltd (Scott Wilson) to carry out the engineering work.
- 2.4 We were asked to focus on expenditure during CP4 on major schemes in the Base Case and to deliver three reports, as follows:
- 6 October, an initial report providing initial advice on these issues. This took the form of a briefing document summarising our initial comments and our findings on the limited number of major schemes we had examined.
  - 8 December, a draft final report to be shared with Network Rail and Government.
  - 20 December, 2006 this final report, which ORR may publish.
- 2.5 Our final report was delayed until 22 December 2006 to incorporate comments on Network Rail’s November 2006 “Refresh” of the ISBP. Network Rail were given the opportunity to review and comment on the final report, and this document updates it with a small number of changes to reflect those comments.

### The structure of this report

- 2.6 Our approach to our remit is set out in Section 3.
- 2.7 We were initially asked to focus on a number of “major” schemes on which our specific comments are set out in Section 4.
- 2.8 As our work developed we were also asked to comment on other matters arising:
- The estimated costs of the ISBP’s “Base Case” projects during CP4, which we discuss in Section 5.

- The ability of the construction industry to deliver the projected workload, which we discuss in Section 6.
  - The implications of the “Refresh” of the ISBP, which we received on 13 November 2006. Our comments on the major schemes are included in Section 4 and our comments and observations on other matters are included in Section 7.
- 2.9 Our conclusions, and our response to ORR’s invitation to make a number of key recommendations, are included in Section 8.

### 3. OUR APPROACH

#### Introduction

3.1 Our terms of reference drew attention to a number of factors including:

- The distinction, in the ISBP, between:
  - 20 committed enhancements or “Baseline” schemes, with an estimated cost of £1.0 billion in CP4
  - 162 proposed “Base Case” additional schemes, costing £6.4 billion in CP4
- ORR’s March 2006 Investment Guidelines, setting out different approaches to:
  - Major schemes, costing over £50 million
  - Medium schemes, costing from £5 million to £50 million
  - Minor schemes, costing under £5 million

#### Major schemes

3.2 We were asked to focus our analysis on the 17 major schemes in the Base Case listed in Table 3.1 below.

**TABLE 3.1 MAJOR SCHEMES IN THE BASE CASE FOR CONTROL PERIOD 4**

Strategic Route/Line	Scheme	GRIP Stage
Brighton Main Line	Platform extensions for 10-car suburban operations	1
	Gatwick Airport station capacity scheme	1
South West Main Line	Platform extensions for 10-car suburban operations	1
	Waterloo Masterplan	2
West Anglia	West Anglia Route Development including platform extensions	2
North London	Capacity enhancements	1
East Coast	Hitchin-Cambridge junction grade separation	2
Yorkshire	“Yorkshire Horseshoe” electrified second route to Leeds	2
West Midlands	Platform extensions for longer suburban trains	0
	Birmingham New Street development	4
North West urban	Platform extensions for longer suburban trains	0
	Capacity optimisation at Manchester Victoria and Piccadilly	0
Freight to/from Southampton	Southampton to West Coast Main Line gauge enhancement	3
	Southampton to West Coast Main Line western alternative	0
Freight to/from Felixstowe	Peterborough to Nuneaton gauge enhancement to W10	3
	Felixstowe to Nuneaton capacity enhancements	1
Great Western	ERTMS enabling works	2

## GRIP Stages

- 3.3 Network Rail has developed a Guide to Railway Investment Projects (GRIP) process, based on best practice, which identifies the stage projects have reached in the investment cycle. The GRIP Stages are listed in Table 3.2 below.

**TABLE 3.2 GRIP STAGES IN INVESTMENT LIFE CYCLE**

GRIP Stage	Point in life cycle
0	
1	Output definition
2	Pre-feasibility
3	Option selection
4	Single option selection
5	Detailed design
6	Construction, test & commission
7	Scheme hand back
8	Project close out

- 3.4 In general, the lower the GRIP Stage number, the less detailed the examination of the scheme and the greater the uncertainty in its exact configuration, costs and benefits.

- 3.5 We were asked to provide strategic advice as to whether or not the schemes proposed in the Base Case are a coherent, reasonable programme which should deliver the network-wide incremental outputs specified by Network Rail and to consider:

- How Network Rail has prioritised schemes and applied its published Business Planning Criteria
- The dependencies between these schemes and how Network Rail should allow for these
- The treatment of programme risk and uncertainties
- The scope for economies of scale in the enhancement programme and how Network Rail should take these into account
- Dependencies with non-infrastructure schemes
- Alternative options/packages to provide the specified outputs
- The strategic fit of the schemes with the industry route planning processes and the requirements of Network Rail's customers
- The reasonableness of Network Rail's work plan for developing the schemes further
- At a high level, the consistency of the schemes with Network Rail's demand forecasts

- 3.6 However, only one of the major projects has reached GRIP Stage 4, single option selection, and only two more have reached GRIP Stage 3, option selection. Five are only at GRIP Stage 1, output definition, and a further four are at "GRIP Stage 0", which Network Rail indicated means only that a conceptual scheme exists. With schemes in the early stages of development, it would not be possible for us to examine

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all the issues list above: in particular, Network Rail could not be expected to have prepared and documented detailed business cases.

- 3.7 In discussion with ORR and Scott Wilson, we therefore agreed that we should first examine the documentation provided – the ISBP itself, Network Rail’s “Project Summaries Control Period 4” (“Project Summaries”) listing individual schemes, and spreadsheets setting our projected scheme costs – and examine:
- The consistency of the major schemes with the emerging Route Utilisation Strategies (RUSs)
  - The linkages between major schemes and between major and other schemes

- 3.8 The next Section of this report summarises our analysis of these schemes.

#### **Network Rail’s November 2006 “Refresh” of the ISBP**

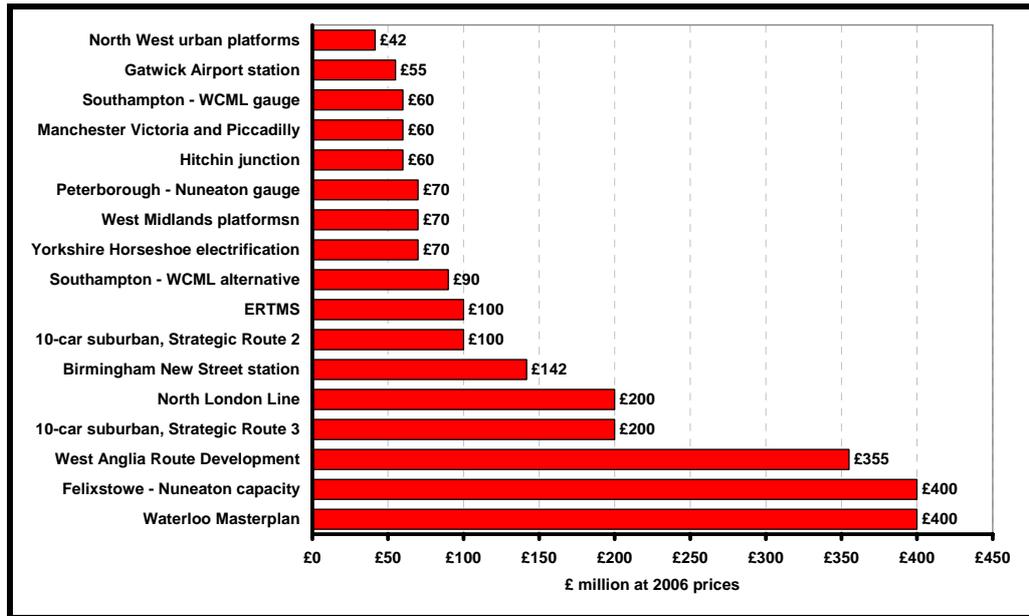
- 3.9 On 13 November 2006 ORR forwarded to us Network Rail’s “November 2006 Refresh” of the ISBP. This document was slightly longer than the original ISBP and provided a useful range of additional and helpful information including a clearer grouping of the schemes under consideration on each Strategic Route and an Appendix 1 listing projects related in some way to the 2012 Olympic Games. However, the information given on each scheme was less than in the earlier “Project Summaries” document and in particular did not indicate how much expenditure would occur in each Control Period.
- 3.10 The Refresh identifies no changes to some of the major schemes but provides material new information on the objectives, scope, stage of development or projected cost of others. However, this information is not exhaustive, and in many cases there is no explanation of the reason for changes in the costs, timing or scope of schemes from the ISBP.
- 3.11 In the next Section we end the comments on each major scheme with our initial observations of the changes in the Refresh document.

## 4. MAJOR SCHEMES IN THE BASE CASE FOR CONTROL PERIOD 4

### Introduction

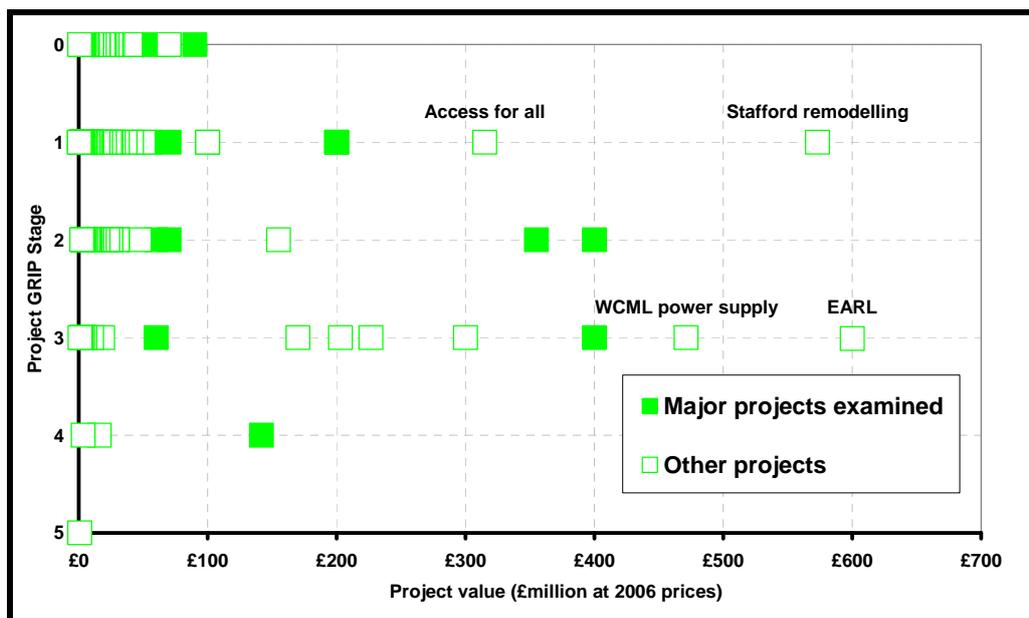
4.1 Figure 4.1 shows the value of the major projects as they appear in Network Rail’s “Project Summaries” document which describes most, but not all, of the schemes in the ISBP. Their estimated collective cost is almost £2.5 billion at undiscounted 2006 prices, although not all this expenditure would necessarily occur during CP4.

**FIGURE 4.1 MAJOR PROJECTS BY VALUE**



4.2 Figure 4.2 below shows a scatter diagram of these major projects and other projects against GRIP Stage.

**FIGURE 4.2 ISBP SCHEMES BY VALUE AND GRIP STAGE**



- 4.3 The major projects we were asked to examine are of high value and often low GRIP Stage, and hence contribute high uncertainty to overall costs, although we identified a number of other projects which might also contribute high uncertainty:
- One Base Case project
    - Edinburgh Airport Rail Link (EARL), at £600 million and GRIP 3. This is a wholly new railway which may be relatively high risk.
  - Three Baseline projects
    - Stafford remodelling, at £573 million and GRIP Stage 1. This is potentially a relatively high risk project.
    - WCML power supply, at £471 million, GRIP Stage 3. We have assumed that this includes a portfolio of minor projects and therefore overall risk may be relatively manageable.
    - Access for all, at £315 million and GRIP Stage 1. This includes a portfolio of minor projects and therefore overall risk may be relatively manageable.
- 4.4 In other words, nearly £1.4 billion of the (prima facie) most uncertain projects are in the Baseline, but among these the dominant uncertainty is likely to be the Stafford remodelling.
- 4.5 We reviewed, as far as possible, each of the major schemes against the criteria set out in Section 3 above. Our findings are summarised in the following paragraphs. We complete the commentary on each scheme with any material updates resulting from our initial interpretation of Network Rail’s November 2006 “Refresh” of the ISBP.

#### **Brighton Main Line: platform extensions, Gatwick Airport**

##### ***Suburban platform extensions for 10-car operation and provision for 12-car***

- 4.6 This scheme is for platform extensions to handle 10-car trains, with passive provision for 12-car trains on all “inner services” except routes to Caterham and Tattenham Corner. We identified a number of potentially related schemes in the ISBP: platform lengthening on the East Grinstead branch, an upgrade to the Uckfield line, provision of a turnback at Epsom and works at East Croydon and West Croydon stations.
- 4.7 Platform lengthening on the East Grinstead branch (£20 million) appeared to be proposed to provide for 12-car operation between London and East Croydon rather than because capacity was needed between East Croydon and East Grinstead. Scott Wilson pointed out that a more cost-effective solution might be to use 12-car trains but to lock the doors of one or two 4-car units out of use between East Croydon and East Grinstead. In the absence of any other information we provisionally assumed that a solution could be achieved for 75% of the budgeted cost of £15 million.
- 4.8 We also considered Scott Wilson’s view that there was likely to be scope for cost reductions of the proposed works at East Croydon and West Croydon stations. We assumed that provision should be made for only 75% of the budgeted £45 million.

### **Gatwick Airport**

- 4.9 Proposals for infrastructure at Gatwick Airport are unclear. £55 million has been budgeted but Network Rail has not stated what would be provided either in customer terms (would all Gatwick Express departures be from a single island platform?) or railway operational terms (what additional infrastructure would be built?). More importantly, the Brighton Main Line RUS is now consulting again on the future of the Gatwick Express. Consultation closes on 22 December 2006 and no final decision appears likely before 2007. We concluded that the need for, or objectives and scope of, the scheme must be considered uncertain until consultation is complete and a decision has been taken.
- 4.10 On balance we concluded that there was a possibility that the Gatwick Express scheme was de-scoped or not required and that provision should be made for only half the £55 million budgeted.

### **November Refresh**

- 4.11 Network Rail's November Refresh of the ISBP identified a number of schemes to be completed during CP3, and noted that the Thameslink project would necessitate lengthening many platforms for 12-car operation, but did not otherwise materially change or add to the ISBP.

### **South West Main Line: platform extensions, Waterloo Masterplan**

- 4.12 Network Rail published a complete RUS for the South West Main Line (SWML) in March 2006. The RUS identified Waterloo as the dominant constraint on the whole route and particularly on the provision of suburban 10-car operation, beginning with the Windsor and Reading lines, a priority for capacity increases. The second and lesser constraint was identified as Clapham Junction, on which the ISBP does not propose any major work until after CP4.
- 4.13 The ISBP proposes the complete redevelopment of Waterloo station as "a key step towards the operation of longer trains – first ten cars, later twelve" as the "cornerstone of the rail industry's strategy", but would achieve this by extending the platforms across the concourse, and providing new passenger circulation areas, rather than modifying the complex junctions which form the station's "throat".
- 4.14 On 22 September 2006 DfT announced the award of a new South Western Franchise to Stagecoach Rail, stating that "main improvements include [] an extra 10 vehicles to operate 10-car operation on peak busy Windsor Line services", which appears to suggest that Stagecoach propose either increased use of Selective Door Opening (SDO) or longer platforms, but there was no reference to the Waterloo Masterplan.
- 4.15 In discussions with Scott Wilson we identified a number of practical difficulties that had not been explained but would presumably need to be addressed by the franchisee, such as how 4-car sets would be converted to 5-car and how SDO would work on the extended trains. There would also be a need to lengthen platforms on the south side of Reading station, which in principle could be included in the proposals for the station described elsewhere in the ISBP and due for completion by 2010. However, Scott

Wilson note that lengthening the existing platforms would require the widening of an overbridge. We have seen estimates that this is likely to cost at £16 million but this cost does not appear to have been included in the budget for the Reading station scheme. The ISBP also makes no reference to an alternative approach, to reuse a former underpass to lead to replacement platforms on the north side of the station.

- 4.16 We subsequently discussed the scheme with DfT and were advised that it had been concluded that carrying out the Waterloo Masterplan scheme, and then reworking the station throat in around 2020 in association with signalling renewals, would not be logical. We were told that the new franchise agreement did provide for some 10-car working by 2009 (although how this would be done was not identified, and any work would be largely or wholly complete before CP4) but that the scheme was now more likely to focus on remodelling the station throat and other track and signalling work to reduce conflicts, rather than redevelopment of the station without changes to the throat. This may be the case, and may reflect the franchisee's suggestions and aspirations for how capacity should best be developed. However it may render redundant much of the work on the existing GRIP Stage 2 Waterloo Masterplan which, as Figure 4.1 shows, is at £400 million the most costly of the major schemes we examined.
- 4.17 We provisionally concluded that, for indicative purposes, the Waterloo Masterplan should be replaced by a notional expenditure of half that budgeted, or £200 million, mainly for resignalling Waterloo throat and other track and signalling work, and the assumed budget for 10-car operations should also be reduced by 50%.

#### ***November Refresh***

- 4.18 Network Rail's November Refresh of the ISBP modifies the proposals to remodel Clapham Junction, with a 50% reduction in the projected cost of the scheme from £100 million to £50 million, despite no apparent change in the (relatively) detailed project definition. The scheme would be completed over the period 2012/13 to 2015/16, extending beyond CP4. There was, however, no reference to, or update of, the overall approach to Waterloo.

#### **West Anglia: route development including platform extensions**

- 4.19 The Regional Spatial Strategy covering West Anglia is currently at consultation stage, meaning that Network Rail has had to develop its proposals without a firm planning context for rail development. Nonetheless, Network Rail was able to begin work on the Greater Anglia RUS in February 2006 and a Scoping Document was published in March 2006. This identified drivers of change, including growth at Stansted Airport, and specific issues such as capacity constraints at Liverpool Street, two-track sections on the main line and the current track layouts at Stansted, Cambridge and, more peripherally, Ely.
- 4.20 The ISBP identifies a single "West Anglia Route Development" (WARD) scheme, with a projected cost of £355 million, plus a projected contribution from BAA relating to improvements to services to Stansted Airport. It mentions as possible works "additional tracks in the Lea Valley, platform extensions at Liverpool Street, Stansted Airport station and other stations on the Stansted line, additional rail access into the

airport, probably including a second tunnel, power upgrade, signalling enhancements, depot works, additional turnbacks and loops, possible grade separation works at specified junctions and possible level crossing replacement at specific locations on the Lea Valley line” depending on further feasibility assessment, and notes that BAA is due to submit “a planning application” in July 2007.

- 4.21 Despite notionally being at GRIP Stage 2, Network Rail’s Project Summaries document provided no further disaggregation on how the £355 million would be spent, for example identifying how capacity would be distributed between the two parallel routes, serving 19 local stations, between Hackney Downs and Cheshunt, which works were related to airport services and which to train lengthening, or the extent to which components of the programme were complementary, independent or alternatives. Nor was there any statement of whether level crossing works could or should be funded through any other programme, or discussion of the mechanisms for and timing and funding of the associated rolling stock fleet expansion programme which would be needed to take advance of 12-car platform lengths.
- 4.22 We provisionally assumed that further refinement of the scheme would enable its costs to be reduced by 25%.

#### ***November Refresh***

- 4.23 In the event, Network Rail’s November Refresh of the ISBP provides much greater disaggregation of the proposed WARD scheme. It divides WARD into a series of sub-projects and lists the proposed works in greater detail, but does not unambiguously link individual elements of the works to specific outputs.
- 4.24 The more detailed proposals appear to make provision for 12-car operation services to Cambridge, entailing a new platform there, extensions elsewhere and power supply upgrades, at a CP4 cost of £93 million compared with the £50 million identified in the ISBP. For CP5, the Refresh notes train operator one’s arguments for increasing capacity, frequency and line speeds, and appears to prioritise adding sections of a third track over platform lengthening, reflecting one’s preference, which might permit increases in capacity to be delivered through more frequent and/or a wider range of services rather than through train length.
- 4.25 In advance of the Regional Spatial Strategy, the relative merits of platform lengthening, incremental third-tracking and strategic four-tracking may be difficult to determine, and all the proposals remain at GRIP Stage 0. The situation may become clearer through the work of the Greater Anglia RUS, which is to cover the 10-year period to 2017 and is expected to produce a Draft Report in January 2007.
- 4.26 However, optimisation to meet the projections for the current franchise to 2011 or 2014, or even for the RUS to 2017, might not be consistent with a longer term strategy, for example to provide a four-track railway paired by direction. Providing services to both Liverpool Street and Stratford to an increasing range of passengers will also introduce new constraints, particularly where the services merge and diverge at Coppermill (North) Junction. We would expect proposals for significant additional trackwork either to identify a longer term strategy or at least to confirm that this need not constrain the detail of the initial enhancements.

### **North London: capacity enhancement**

- 4.27 In August 2006 Network Rail published the Cross London RUS. We have not examined the document in detail but note that it lists a number of changes which could be made to trains, services and infrastructure. In the ISBP, Network Rail proposes to spend £200 million on the North London Line on works which “are likely to include resignalling, local four-tracking additional loops, etc” with the aim of completing works before the 2012 Olympic Games. There is also a proposal to spend £19 million by 2009 on enhancing the Great Eastern, North London and Gospel Oak to Barking lines as a diversionary route for freight, although there is no clear statement of why this work is needed or what synergies it would have with the main scheme.
- 4.28 Transport for London’s 7-year London Rail Concession, providing services along the North London Line, is scheduled to start operations in November 2007. Network Rail’s proposals do not state what parts of the proposed scheme support or are required by the London Rail Concession, or conversely whether they will be seen by TfL and the Concessionaire as a source of disruption to a “flagship” scheme. Nonetheless we note that new stock procured by TfL for the concession is due to come into use by 2009, and we assume that TfL and the Concessionaire would have a preference for works to be completed by then.
- 4.29 The ISBP does not identify whether the works are required for passenger or freight services or whether they are complementary, independent or alternatives.

### **November Refresh**

- 4.30 Network Rail’s November Refresh of the ISBP refers to TfL’s concessions but makes no material changes to the above.

### **East Coast Main Line: Hitchin Junction**

- 4.31 Work on the East Coast Main Line RUS began in October 2005 and a Scoping Document was published in December 2005. Decision-making on the route is complicated by ORR’s decision to award, to Grand Central, access rights which GNER argued will make its recently-awarded franchise unsustainable, and DfT’s subsequent decision, announced on 15 December, to terminate the franchise and re-tender it. It is unlikely that a new franchisee, with a clear franchise plan for the route, will be in place before 2008.
- 4.32 The ISBP proposes grade separation of Hitchin Junction, where the route to Cambridge diverges from the main line. The extent to which the scheme is necessary will depend on the exact timetables operated by GNER and other operators.
- 4.33 Working with Scott Wilson, we identified around 15 schemes in the ISBP which might interact in some way with the scheme. Some are intended to provide additional capacity at Kings Cross, the London terminal of the ECML, others lengthen existing platforms or provide additional track capacity. We understood that one scheme, a new “Platform Y” at Kings Cross, may be a high priority, but the ISBP does not explain what combinations of schemes could deliver what outputs.

- 4.34 Grade separation of Hitchin Junction is a GRIP Stage 2 scheme budgeted at £60 million, but it is not clear whether platform lengthening proposals listed elsewhere in the ISBP would allow the junction remodelling to be deferred or avoided. The junction is on 4-track embankment with various developments close by. Either a flyover or diveunder solution would be technically complex to construct: the former would result in visual intrusion and the latter, which might be preferred by the local community, might need to be constructed in several stages over a lengthy period. We discussed these issues with Scott Wilson who agreed that the need to obtain a Transport and Works Order for the scheme, the risk that this specified a diveunder design and/or other ameliorative measures, and the possible compensation payments to operators during construction all suggested that this figure might underestimate the outturn costs.
- 4.35 Network Rail also identified, but did not include in the ISBP, a £4 million scheme to increase line speeds at Hitchin, including on the “ladder” used by trains to Cambridge. This scheme would presumably be irrelevant if the junction was remodelled, but might achieve some of its benefits at much lower cost.

#### ***November Refresh***

- 4.36 Network Rail’s November Refresh of the ISBP appears to make only minor changes on the southern end of the ECML. Outline proposals for new switches and crossing at Stevenage (£6 million) are withdrawn but the savings are offset by a need for power supply enhancements between Hitchin and Cambridge, not mentioned in the ISBP in July but apparently at GRIP Stage 2 in November. These improvements would presumably be linked not only to platform extensions on this route, also to be completed by 2009/10, but also to the proposed additional platform at Cambridge by 2013/14 listed as a West Anglia scheme. The fundamental uncertainty over the characteristics of the Hitchin Junction scheme remains.

#### **“Yorkshire Horseshoe”**

- 4.37 The Yorkshire Horseshoe scheme would provide a second electrified route from Leeds to the ECML, allowing trains from London to approach from the south east and leave to the east or vice versa. The scheme appears to have originated in GNER’s proposals for a more frequent London-Leeds service, although the status of these services is now in doubt and the ISBP does not state whether the scheme would be essential even with them.
- 4.38 The ISBP identifies this as a £70 million GRIP Stage 2 scheme but also identifies an option to spend a further £40 million on a scheme extending the new electrification to Selby and Leeds. We have been unable to identify what new services or aspirations this extension would facilitate, and it could in any case only be carried out if the initial Yorkshire Horseshoe scheme were to proceed.
- 4.39 We concluded that it was broadly credible for both schemes to be included in the ISBP, but that electrification to Selby and Leeds cannot proceed without the Yorkshire Horseshoe, and that there is a possibility that neither is needed.

**November Refresh**

- 4.40 Network Rail's November Refresh of the ISBP appears to make no changes in the area which would be material to the Yorkshire Horseshoe.
- 4.41 Since we submitted our Final Report on 22 December, GNER has announced that it will operate half-hourly services to Leeds from 21 May 2007. This may strengthen the case for delivery of the Yorkshire Horseshoe project by 2010/11, but is clearly not dependent on it.

**West Midlands: platform extensions, Birmingham New Street**

- 4.42 Network Rail's Birmingham New Street scheme is a proposed contribution of £142 million to the redevelopment of the passenger circulation, retail and property areas of the station. It involves no works directly related to the railway or its operational capacity, although improved passenger circulation might at some stage be critical to facilitating increased passenger throughput.
- 4.43 The West Midlands RUS was completed by the Strategic Rail Authority in July 2005. It refers to the "important and exciting" scheme to redevelop Birmingham New Street and reports that lower cost schemes were unlikely to resolve the key bottleneck of access to/from the platforms. It also notes that "there is plenty of scope at New Street to handle longer trains on most routes and services" and recommends platform and train lengthening on a number of routes, although some of these recommendations are unsupported by any discussion elsewhere in the RUS. DfT and Network Rail subsequently confirmed to us that the RUS's conclusions on where lengthening would be needed were not yet definitive.
- 4.44 We examined the RUS's proposals for platform and train lengthening, which were primarily for capacity increases from 3- to 4-car or 3- to 6-car. We also examined platform-lengthening estimates obtained by Scott Wilson from Network Rail, and noted that Network Rail had identified where constraints might preclude lengthening, presumably implying a need for SDO.
- 4.45 Network Rail estimated costs of £20 million for 20m cars and £26 million for 23m cars, but these included "aspirational" lengthening at stations, and to platform lengths, not described in the RUS. Network Rail's costs provided for 8-car platforms on the Wolverhampton-Birmingham-Coventry corridor, where the RUS only called for 4-car, and the Redditch-Litchfield corridor, on which the RUS was silent.
- 4.46 We discussed these differences with Network Rail, who suggested that it might be better to "future proof" the network. However, we saw no rationale for lengthening work on routes where none was required. We noted that the RUS included capacity projections only to 2011, partway through CP4, but we have seen no evidence that either DfT or the PTE envisages lengthening on the scale costed by Network Rail. We were also concerned that other factors, such as station car park capacity, might become the binding constraint before platforms had been lengthened to the extent described in the RUS. We provisionally assumed that the platform lengthening scheme could be achieved for at most 75% of the ISBP cost estimate of £25 million during

CP4 and £45 million in CP5, and would expect the programme delivered to be linked to specific train service proposals.

- 4.47 Platform lengthening in itself is of little value unless there is investment not only in a rolling stock fleet but also in associated depot and stabling facilities. The ISBP included a £15 million scheme for new stabling at Duddeston but this would be linked to resignalling in 2014 and hence would not be available until at least some of the platform extension work was complete. We would expect Network Rail to link these projects and to avoid lengthening platforms before stabling is available for longer trains.
- 4.48 Since we submitted our Final Report on 22 December, Network Rail has advised us that the PTE has a programme of car park expansion, which may mean that platform length remains the dominant capacity constraint. However we have seen no further information supporting the extent of lengthening set out in Network Rail's cost estimates.

#### **November Refresh**

- 4.49 Network Rail's November Refresh of the ISBP makes a number of changes in this area, including reducing the projected cost to Network Rail of Birmingham New Street, already at GRIP Stage 4, from £142 million to £122 million. More importantly, it doubles the estimated expenditure on additional stabling at Duddeston from £15 million to £30 million, although this proposal remains at GRIP Stage 0. This reinforces our concerns both that the scope and hence cost of the project is still not clear, and that platform lengthening may be unused until stabling for longer trains is complete. The estimate of £70 million for platform lengthening is unchanged at £70 million, despite our conclusions that this figure appears to be excessive relative to credible requirements.

#### **North West urban: platform extensions, Manchester Victoria/Piccadilly**

- 4.50 Work on the North West RUS began in May 2005 with the stated aim of covering a 10-year horizon from 2007 to 2017 including all of CP4, and a Consultation Document was published on 7 November 2006.
- 4.51 The ISBP includes a GRIP Stage 0 scheme to lengthen urban platforms in the North West, with an apparent expenditure of £71.5 million of which £43 million would be in CP4. The Project Summaries document lists "example" platforms which might be lengthened from 4 x 23 metre coaches to 6 x 23 metre coaches. It explicitly states that lengthening would be linked with train lengthening which would be funded by third parties and that the RUS would seek to have "a full assessment of the business case, its fundability, strategic fit and any other operational considerations before a decision being made on which platforms to lengthen".
- 4.52 Given the low GRIP Stage of the scheme and these explicit statements, we assume that the work may be required, and may proceed, but the overall scope, cost and timing of the scheme must be seen as relatively uncertain.

- 4.53 The ISBP also includes a GRIP Stage 0 scheme to optimise utilisation of Manchester Victoria and Piccadilly stations, with a budget of £60 million, of which £20 million would be spent in CP4. We understand from discussions with ORR, Network Rail and DfT that the issues include the desire to rebalance the distribution of train services between the two stations and in particular to transfer services from Piccadilly to Victoria, which is better placed to serve the expanding north side of the city centre.
- 4.54 We examined a number of related schemes including the extension of Platform 0 at Manchester Piccadilly to serve 3-car trains. The ISBP states that this would be completed by 2013 but assumes that expenditure would be during 2009/10 and 2010/11. While the projected expenditure is only £3.5 million, it seems unlikely that creation of a 3-car platform is likely to produce sustainable benefits if the main local objective is lengthening trains beyond 4-car.

#### ***November Refresh***

- 4.55 Network Rail's November Refresh of the ISBP introduces a number of minor new proposals but the proposals for a Platform 0 at Manchester Piccadilly remain unchanged. The projected cost of platform lengthening has been reduced although there is no description of how the new figure of £35.75 million, exactly half the original ISBP figure, was reached. All these projects remain at GRIP Stage 0 and their estimated cost and scope must therefore continue to be seen as uncertain.
- 4.56 Since we submitted our Final Report on 22 December, Network Rail has confirmed that the proposals for a platform 0 at Manchester Piccadilly are no longer being taken forward.

#### **Freight to/from Southampton: gauge enhancement, western alternative**

- 4.57 Network Rail began work on the Freight RUS in September 2005 and published a Consultation Document in September 2006. Key issues are providing connections from the major ports of Southampton and Felixstowe to the West Coast Main Line (WCML) in the Midlands to facilitate rail freight to the North West and Scotland.
- 4.58 The principal route from Southampton to the WCML, via Basingstoke, Reading, Didcot, Oxford, Leamington Spa, Coventry to Nuneaton, passes through a number of constraints. The ISBP budgets £60 million during CP4 to increase the gauge on this route to W10 which would enable it to carry the increasingly common 9 foot 6 inch high deep sea containers on standard railway wagons. However, the RUS forecasts that this gauge enhancement will attract more freight traffic than the route can handle and proposes clearance to W10 gauge of a Western Alternative. Two routes are mentioned:
- via Andover to Basingstoke, a distance of under 60 miles
  - via Melksham to the Great Western Main Line near Chippenham and thence to Didcot, a distance of around 140 miles
- 4.59 Despite the fact that these routes differ so much in length, and arguably should be presented as two competing alternatives, the ISBP provides a single cost estimate of £90 million, all to be incurred during CP4, for this scheme.

- 4.60 At the southern end of the existing route, trains must pass through a tunnel under central Southampton, which restricts capacity and gauge and would be expensive to modify, although we understand that workable plans to do so have been devised. They then join and cross the Great Western Main Line (GWML) between Reading and Oxford. The Western Alternative route avoids Southampton Tunnel and, if via Melksham and Chippenham, avoids Reading before rejoining the existing route at Didcot.
- 4.61 At the northern end of the route there is a major constraint at Coventry station, where the trains must cross the Rugby and Birmingham line. The ISBP also proposed a scheme to carry out similar gauge clearance through Sutton Park in the West Midlands which would allow freight trains to continue from Leamington Spa to the WCML at Stafford, avoiding Coventry and Nuneaton.
- 4.62 Network Rail's overall strategy for reaching the WCML is unclear. Reference to "alternatives" and "diversionary routes" ignore the fact that all the routes are common between Didcot and Oxford or Leamington Spa and over long stretches of the WCML to Scotland.
- 4.63 South of Didcot there are three possible routes. The Western Alternatives appears to be a useful way of providing additional capacity and/or avoiding costs at Southampton and constraints at Reading, but are longer and slower than the existing route and we have been told that they might not be commercially attractive. If this is the case, there seems little point in building either under any circumstances: if not, it still begs the question of whether one or two routes are needed and which is or are the most cost-effective.
- 4.64 North of Leamington Spa the ISBP discusses two possible routes, one of which avoids the constraint at Coventry. It is not clear whether or when both are needed and, if they are not, which should have priority. The ISBP does not discuss a third possible route which could be provided through the aspirations of the East West Rail Consortium to develop the 30-mile route from Oxford to Bletchley. This could be built to W10 gauge and enable trains to freight reach the WCML sufficiently far south to bypass Coventry on the Trent Valley Line.

#### ***November Refresh***

- 4.65 Network Rail's November Refresh of the ISBP makes changes to both the main and the alternative route. The main route has been downgraded from GRIP Stage 3 to GRIP Stage 2 but explicitly including works to Southampton Tunnel, and its projected costs are reduced from £60 million to £52 million. The western alternative route has progressed from GRIP Stage 0 to GRIP Stage 2, with completion brought forward a year to 2011/12, and its projected costs, for a route via Laverstock, have fallen from £90 million to £33 million. This apparently represents a decision that both routes should converge at Basingstoke, providing an alternative only over a relatively short distance. It also begs the question of whether both routes are needed, particularly when the main route requires work at Southampton Tunnel. There is no further clarification of the route northwards from Didcot to the WCML.

### **Freight to/from Felixstowe: gauge enhancement, capacity enhancement**

- 4.66 The ISBP also includes two schemes to connect Felixstowe, Britain's largest container port, to the WCML. One is a £400 million GRIP Stage 3 scheme to increase capacity between Felixstowe and Nuneaton, the other a £70 million GRIP Stage 1 scheme to extend W10 gauge clearance from Peterborough to Nuneaton. Work on the two schemes would begin in 2009/10 and we would expect that Network Rail would find efficiencies through combining elements of both schemes into single work packages. We understand that a final decision on these schemes will depend on the outcome of the Freight RUS.
- 4.67 One apparent omission from the ISBP is the need to provide a new connection at Nuneaton to allow northbound or down freight trains to join the WCML without needing to cross it. Another is any discussion of whether electrification of the route would ever be justified or whether provision should be made for it.

### ***November Refresh***

- 4.68 Network Rail's November Refresh of the ISBP radically changes the projected budget for these schemes, which are now described as a £133 million TIF bid. The gauge element, a £70 million project, has progressed from GRIP Stage 1 to GRIP Stage 2, but the capacity element, formerly a £400 million GRIP Stage 3 project, has reverted to GRIP Stage 0 and apparently relates only to two locations. This appears to mean that the gauge element has been retained but it is completely unclear what capacity elements are retained and how they contribute to the cost of £133 million.
- 4.69 The Refresh refers to Freight RUS forecasts for approximately 25% growth in freight train numbers on the network, but suggests not only that fewer additional paths will be provided but also that work will be needed to confirm how many. The impression is that the project has been cut back so that the cost inputs are consistent with an anticipated TIF affordability, but the capacity outputs are now largely unknown.

### **Great Western: ERTMS enabling works**

- 4.70 We were advised by Network Rail that a notional amount of £100 million had been included in the ISBP for ERTMS enabling worked on the Great Western Main Line (GWML) but that no detailed scheme description was available.
- 4.71 We discussed with ORR the extent to which we should examine this notional estimate for expenditure on ERTMS development. ORR indicated that it would be appropriate to include this amount in Base Case CP4 expenditure and according we carried out no further analysis.

### ***November Refresh***

- 4.72 Network Rail's November Refresh of the ISBP provides no material information on ERTMS.

## 5. FINANCIAL ESTIMATES

### Introduction

5.1 In parallel with our examination of the major schemes described in Section 4, ORR was providing preliminary advice to the Department of Transport (DfT) on a number of matters including Network Rail's revenue requirements for CP4. Following an internal ORR meeting on 26 October 2006 we were asked to provide what estimates we could, from our analysis to that point, on emerging estimates of Network Rail's likely level of expenditure during CP4 on the Base Case including not only the major schemes but also other medium and minor schemes. The only schemes we were asked to exclude were:

- Thameslink, a single large scheme, with an overall projected cost in excess of £3 billion, which ORR advised us would be dealt with separately
- Major schemes in Scotland for which funding responsibility would lie with the Scottish Executive rather than DfT

5.2 A summary of the relevant figures for all schemes is shown in Table 5.1 below.

**TABLE 5.1 ESTIMATED EXPENDITURE DURING CP4 (2009/10-2013/14)**

<b>Cost category</b>	<b>Cost (£ billion, 2006 prices)</b>
<b>Total</b>	<b>£7.491</b>
Baseline	£1.040
Thameslink	£3.163
Major Scottish schemes	£0.725
All other Base Case schemes	£2.563

5.3 In essence we were asked to provide further guidance on the estimated cost of £2.563 billion of Base Case schemes.

### Our approach

5.4 We reviewed our analysis of interactions and duplications between the major schemes discussed in Section 4. We made adjustments to estimated cost of Base Case schemes during CP4 taking into account:

- The analysis of the major schemes described in Section 4
- Adjustment to the estimated cost of one other scheme
- Removal of estimated costs of five other schemes

## Findings

5.5 The results of these adjustments to the costs of the Base Case schemes in CP4 are set out in Table 5.2.

**TABLE 5.2 ISBP BASE CASE SCHEMES: STEER DAVIES GLEAVE ASSUMPTIONS**

Scheme	Cost during CP4 (million)		Steer Davies Gleave rationale for adjustment
	ISBP	Assumed	
<b>Total Base Case in CP4</b>	<b>£2,563</b>	<b>£2,062</b>	
Other schemes	£1,601	£1,601	
<b>Sub-total in ISBP and with assumptions</b>	<b>£962</b>	<b>£461</b>	
Gatwick Airport station	£55.0	£27.5	
West Croydon station	£25.0	£18.7	
East Croydon station	£20.0	£15.0	
12-car operation on East Grinstead line	£20.0	£15.0	
West Anglia Route Development (WARD)	£50.0	£37.5	
West Midlands platform lengthening	£25.0	£18.8	Uncertainty of need and scope (See Section 4).
Train stabling at Duddleston	£15.0	£7.5	
Birmingham New Street power box upgrade	£15.0	£11.3	
Waterloo Masterplan	£384.5	£192.3	
10-car suburban operations on SWML	£199.0	£99.5	
Crewe station remodelling	£29.9	£15.0	Scott Wilson view that outputs could probably be achieved at lower cost.
Pleck Junction	£3.5		Not needed if Round Oak to Walsall reopening carried out.
Southampton to WCML alternative route	£90.0		Alternative route might not be commercially attractive or needed.
Freight upgrade via Cambridge to bypass GEML	£19.0	£0.0	Not needed if Felixstowe to Nuneaton gauge and capacity work completed.
Hitchin Junction remodelling	£3.5		Not needed if grade separation proceeds.
Carnforth to Carlisle freight diversion	£7.5		Scott Wilson view that it was unlikely that there was a case for the scheme.

5.6 We stress that our downward adjustments of the assumed cost of some schemes are not necessarily intended to imply that the intended outputs could be delivered for less money. In some cases, they reflect the uncertainty in whether the outputs will be required, such as at Gatwick Airport, or delivered, such as the Waterloo Masterplan, in their entirety or at all.

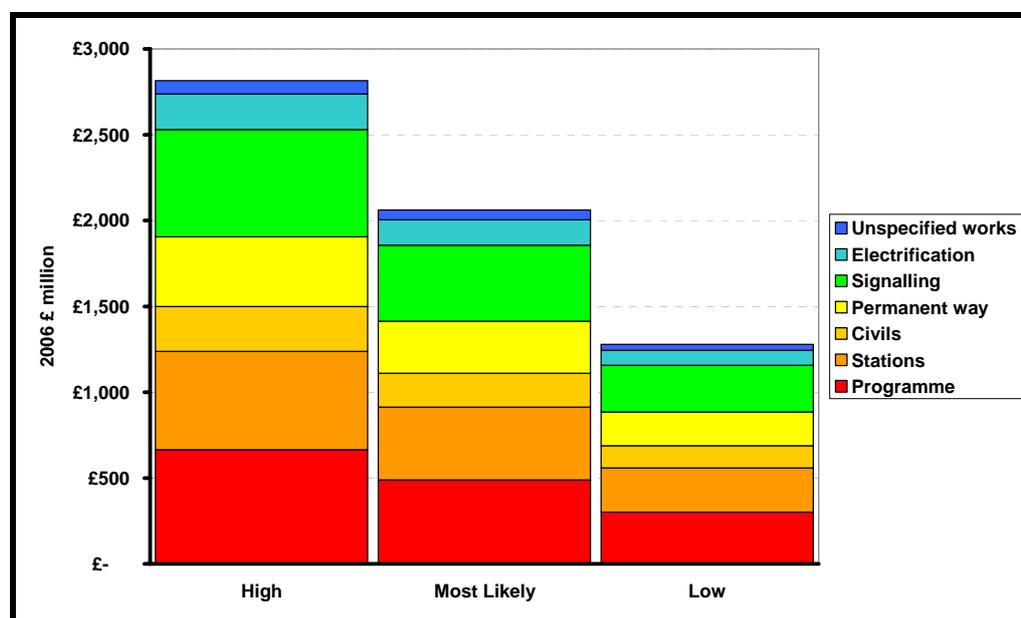
5.7 However, on this basis we estimated that a more reasonable “most likely” level of expenditure on Base Case schemes during CP4 was £2.062 billion rather than £2.563 billion. Note also that we have not applied any adjustment to the remaining £1,601 million of schemes, although Scott Wilson indicated that, on the basis of the sample of schemes they had been able to examine, it might typically be possible to reduce the costs of these schemes by 10%.

5.8 We also attempted to estimate the possible range in expenditures taking into account three additional factors:

- Estimates, provided by Scott Wilson, on the proportion of costs of each scheme associated with electrification, signalling, permanent way, civil engineering, station work and general programme costs
- Advice, provided by Scott Wilson, on the range of uncertainty which should be attached to each type of cost at each GRIP Stage
- Further adjustments, not detailed in Table 5.2 above, to the “high case” of low case costs or uncertainties, based on discussions with Scott Wilson and ORR

5.9 Figure 5.1 below compares this “Most Likely” estimate of expenditure on Base Case schemes during CP4 with the resulting High (£2.8 billion) and Low (£1.3 billion). Both of these High and Low figures should be interpreted with caution: they do not represent a credible outcome as it is extremely unlikely that every scheme’s outturn cost would be either the highest or lowest estimate.

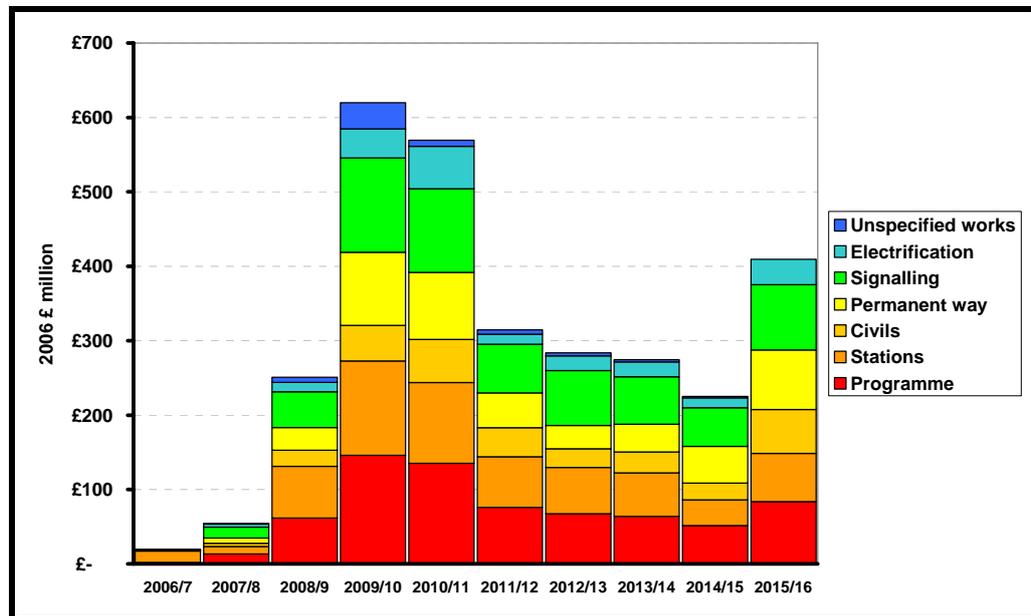
**FIGURE 5.1 ISBP BASE CASE SCHEMES: CP4 EXTREME AND MOST LIKELY COSTS**



5.10 In practice, the estimated proportion of costs in each category should be treated as purely indicative. In particular, ORR advised us that programme costs may represent a higher proportion of total costs than has been assumed in this analysis, and that they would expect programme costs to average close to half of the total scheme costs.

5.11 We also estimated the likely profile of this expenditure on the Base Case schemes over time which is shown in Figure 5.2.

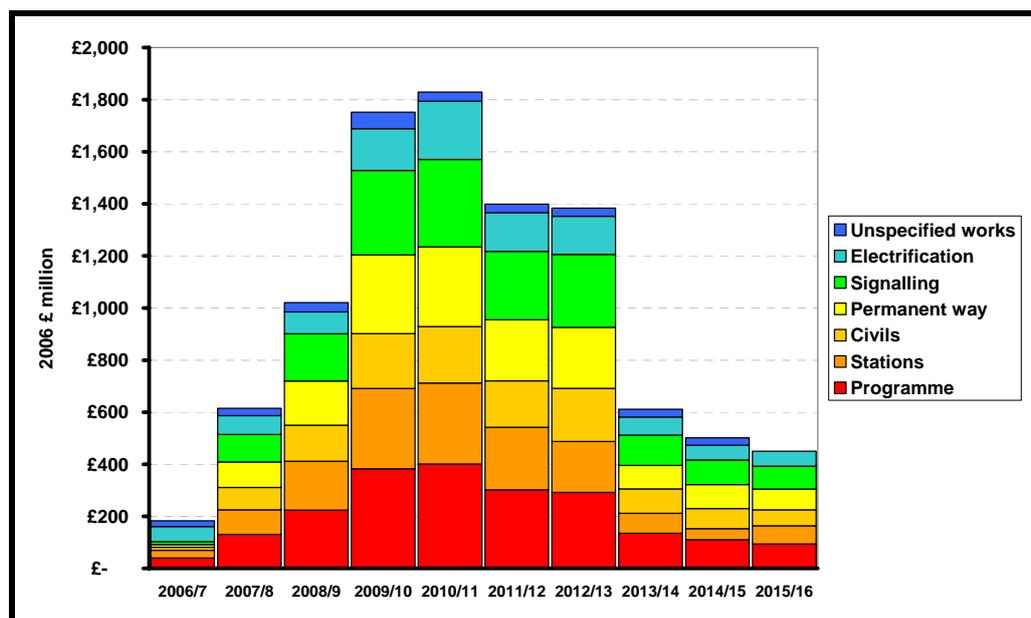
**FIGURE 5.2 ISBP BASE CASE SCHEMES: MOST LIKELY EXPENDITURE PROFILE**



5.12 Figure 5.2 shows that expenditure on Base Case schemes will, with the programme put forward in the ISBP, be highly peaked in 2009/10 and 2010/11 with around £600 million of expenditure in each year, over £350 million more than in 2008/9 and around £250 million more than in 2011/12. There is also a peak of expenditure on 2015/16 dominated by expenditure on the West Anglia Route Modernisation.

5.13 We also examined the projected profile of expenditure including not only the Base Case but also the Baseline and other projects. The results are shown in Figure 5.3.

**FIGURE 5.3 ISBP ALL SCHEMES: MOST LIKELY EXPENDITURE PROFILE**



- 5.14 Figure 5.3 suggests that overall Network Rail expenditure on schemes in the ISBP over the period 2009/10 to 2012/13 may lie in the range £1.4-1.8 billion annually. However, this represents an increase of around £0.8 billion on 2008/9 levels, and a fall of around £0.6 billion to 2013/14 levels. Such large changes in total workload, and in particular the increase between 2008/9 and 2009/10, may require careful planning of Network Rail's project management resources.

## 6. THE CAPACITY OF THE CONSTRUCTION INDUSTRY

### Introduction

- 6.1 ORR asked us to identify whether there was any evidence that Network Rail's proposals for overall expenditure on the railways would place any strain on the capacity of the construction industry, noting that the expenditure shown in Figure 5.3 includes only enhancements and not renewal, maintenance or operations.
- 6.2 We examined three sources of information on construction industry capacity and costs:
- February 2006: "Economics Bulletin" Volume 9.1, Franklin + Andrews
  - June 2006: "2005-2015 Construction Demand/Capacity Study Full Report", OGC
  - July 2006: "The 2012 Olympics – Time to pick up the pace", EC Harris

### Findings

- 6.3 The OGC document notes that the infrastructure sector has contracted sharply since 2002 due a fall of around 10% in demand for road and rail projects. It finds no reasons to expect a significant construction capacity constraint in the economy, although rising demand may result in increased prices.
- 6.4 EC Harris indicate that the Olympics will put pressure on skilled labour resources in the South East and lead to higher tender costs, but that there will not be a significant rise in inflation in construction costs. They point out that the Olympics only represent a 1.5-2% rise in construction workload in the South East and note the expected completion of CTRL in 2007 and Heathrow Terminal 5 in 2008.
- 6.5 Franklin + Andrews' bulletin's "Railway Cost Driver Analysis" projects a peak in railways project annual tender inflation in around 2008, but a decline thereafter until 2010, with annual cost inflation rising steadily to around 5% in 2010.
- 6.6 OGC also carried out a "case study" examination of Crossrail, which they assumed would result in around £6 billion (at 2000 prices) of construction activity. They concluded that even a project of this size would have only a marginal effect on overall construction output.
- 6.7 These observations suggest that projected levels of construction activity will not trigger capacity shortages or price inflation, and that railway-specific construction activity of the rate proposed in the ISBP is small in relation to overall construction activity. Nonetheless, this does not preclude the emergence of short term or local shortages of particular skills, and Network Rail will need to plan and manage its overall portfolio of Operations, Maintenance and Renewal (OMR), Baseline and Base Case workload to take the availability of specific resources into account.

## 7. THE NOVEMBER 2006 “REFRESH” TO THE ISBP

### Introduction

- 7.1 We listed in Figure 4.1 the major projects in the July ISBP that ORR asked us to examine. The three largest projects were the Waterloo Masterplan, Felixstowe to Nuneaton capacity enhancement and West Anglia Route Development, with an estimated combined cost of almost £1.2 billion. By the time of the Refresh, their status had changed as follows.

### *Felixstowe to Nuneaton capacity enhancement*

- 7.2 On timing, the July ISBP identifies duration of “2009/10 to 2015/16” but the November Refresh appears to have removed a large part of the scheme. On GRIP Stage, the July ISBP identifies the project as being at GRIP Stage 3. Despite being at “option selection” stage, the project has apparently been withdrawn from the Refresh without waiting for the outcome of the freight RUS. There is no statement of why this has happened or what will now be delivered.

### *Waterloo Masterplan*

- 7.3 On timing, the July ISBP identifies need “before 2017” and proposes completion “by March 2014”, but the November Refresh identifies proposed duration “2006/7-2011/12”, which may reflect the franchise plan accepted by DfT. On GRIP Stage, the July ISBP identifies the project as being at GRIP Stage 2, but the November Refresh identifies it as being at GRIP Stage 1. The project has apparently regressed through the GRIP process from “pre-feasibility” to “output definition” but is now expected to be delivered in under 6 years.

### *West Anglia Route Development*

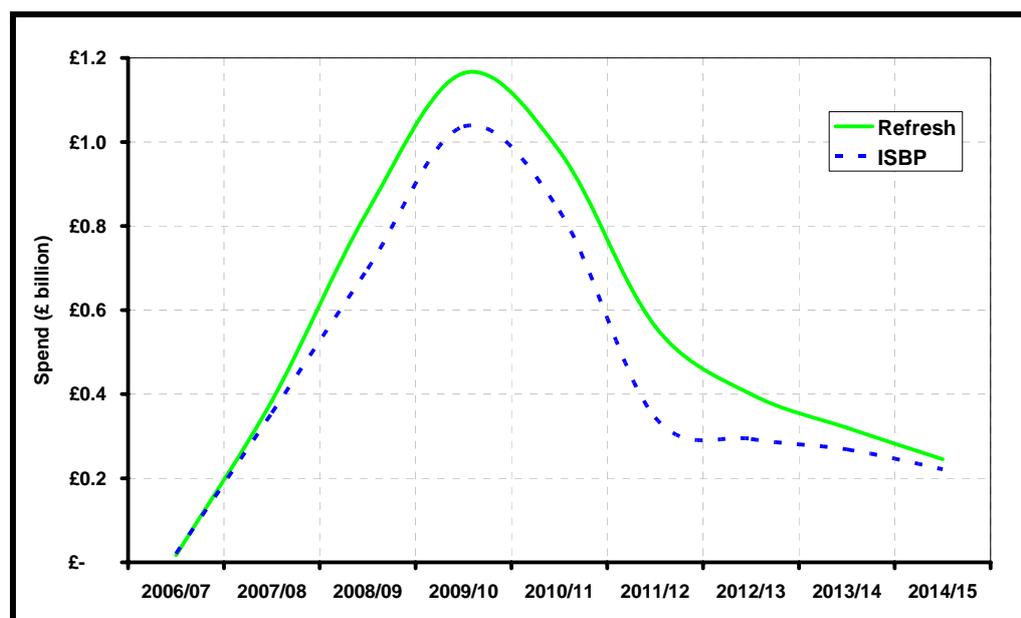
- 7.4 On timing, the July ISBP identifies the project as being built primarily during CP5, the period to 2018/19, but the November Refresh appears to intend to rely initially on the views of the franchisee for the period to 2011 or 2014 and, when available, the RUS for the period to 2017. On GRIP Stage, the July ISBP identifies the project as being at GRIP Stage 2, but the November Refresh identifies a series of sub-projects at GRIP Stage 0. The project has apparently regressed from “pre-feasibility” to an undefined status. There may be no urgency in its delivery but, as we discussed in Section 4, we would expect proposals to add track to handle major increases in demand to be set in the context of a long term strategy to progress towards the ultimate levels of capacity required.
- 7.5 Given the above observations on the progress of these three large projects, we focused our initial analysis on the November Refresh on four principal areas:
- Reviewing the projected profile of Base Case expenditure
  - Understanding the changes in individual scheme costs
  - Reviewing changes in the reported GRIP Stage
  - Understanding the overall progress of the schemes through the GRIP process

7.6 We discuss each of these issues in turn below.

### The projected profile of Base Case expenditure

7.7 We first investigated whether there was any evidence of slippage in the overall programme of expenditure between the ISBP and the Refresh. Figure 7.1 compares the projected profile of expenditure on Base Case schemes in the two documents. (Note that Figure 7.1 differs from Figure 5.2 in that it includes schemes in Scotland and does not apply our adjustments to the Base Case expenditure).

**FIGURE 7.1 BASE CASE EXPENDITURE PROFILE: ISBP AND REFRESH**



7.8 While the overall level of expenditure in the Refresh is slightly greater than in the ISBP, the profile over time is broadly similar, with the expenditure peak continuing to be in 2009/10. If anything, the overall profile of expenditure in the Refresh is slightly smoother, with a more gentle decline in expenditure between 2010/11 and 2011/12.

7.9 However, this broadly stable pattern of overall expenditure includes a number of changes:

- Inclusion by Network Rail of a larger number of schemes due to be completed during CP3: we were told that these had been included partly to ensure that interested stakeholders did not think that these schemes had been overlooked or abandoned.
- Removal from the Refresh of 22 Base Case schemes with a total cost of £475 million.
- Addition to the Refresh of 78 Base Case schemes with a total cost of £1,290 million.
- Changes in individual scheme costs.

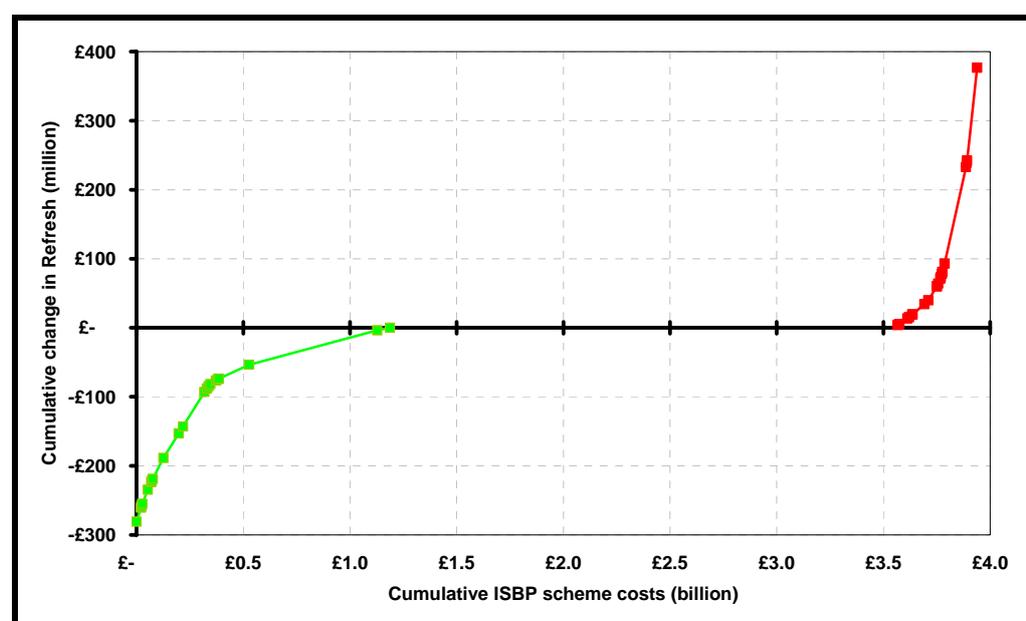
7.10 In practice, the value of 22 Base Case ISBP schemes which do not appear in the Refresh is dominated by the £355 million WARD scheme and the net change is

therefore a removal of around £120 million of schemes and addition of around £900 million of schemes. We discuss changes in individual scheme costs below.

### Changes in individual scheme costs

7.11 Figure 7.2 below shows the cumulative changes in the £3.9 billion costs of schemes in the ISBP which also appear in the Refresh.

**FIGURE 7.2 BASE CASE SCHEME COSTS: ISBP AND REFRESH**



7.12 The Figure shows that, of the schemes in the ISBP, around £1.2 billion (shown on the left) have lower costs in the Refresh, around £2.4 billion have unchanged costs and around £0.4 billion (shown on the right) have higher costs.

7.13 Reductions in the projected costs of schemes in the ISBP amount to around £280 million, of which the largest single components are:

- An 8% reduction in the projected cost of Edinburgh Airport Rail Link (EARL) from £600 million to £550 million. EARL accounts for half the value of the schemes with reductions in projected costs.
- A 50% reduction in the projected cost of the scheme to remodel Clapham Junction from £100 million to £50 million, as discussed in Section 4.
- A 50% reduction in the projected cost of the scheme to lengthen urban platforms in the North West, from £71.5 million to £35.75 million. As we note in Section 4, this reduction does not appear to be based on any refinement based on a detailed review of the actual scope of work.

7.14 Increases in the projected costs of schemes in the ISBP amount to around £390 million, of which the single largest components are:

- A 140% increase in the projected cost of Edinburgh-Glasgow electrification, from £100 million to £240 million.

- A 285% increase in the projected costs of the Reading station scheme from £47 million to £181 million. This may partly reflect a different treatment of a developer contribution of £85 million expected in the ISBP, but even if the project costs in the Refresh include this figure, the projected scheme costs have risen by 38% from £132 million to £181 million.

7.15 These two schemes alone account for £274 million, or nearly 75%, of the overall projected increase in existing scheme costs.

7.16 The overall change in the costs of ISBP schemes in the Refresh is therefore a reduction of around £280 million and an increase of around £390 million, or an overall increase of £110 million on a portfolio of around £4 billion.

### **Changes in the reported GRIP Stage**

7.17 In Section 3 we outlined the GRIP Stages in the investment cycle, which are described in greater detail by Scott Wilson in their report. Schemes to be delivered during CP4 will need to have progressed to GRIP Stage 8 by, at the latest, 2013/14 ending in March 2014, now just over 7 years away. To achieve this the schemes will need, in aggregate, to advance through an average of around 1 GRIP Stage every year.

7.18 All other things being equal, we would have expected that the portfolio of schemes in the ISBP would have made at least some progression through the GRIP Stages between the ISBP and the Refresh. In practice, of the Base Case schemes in the ISBP we found that:

- £50 million worth of schemes had advanced one GRIP Stage
- £2,700 million worth of schemes had not changed in GRIP Stage
- £1,340 million worth of schemes had regressed by one or more GRIP Stages

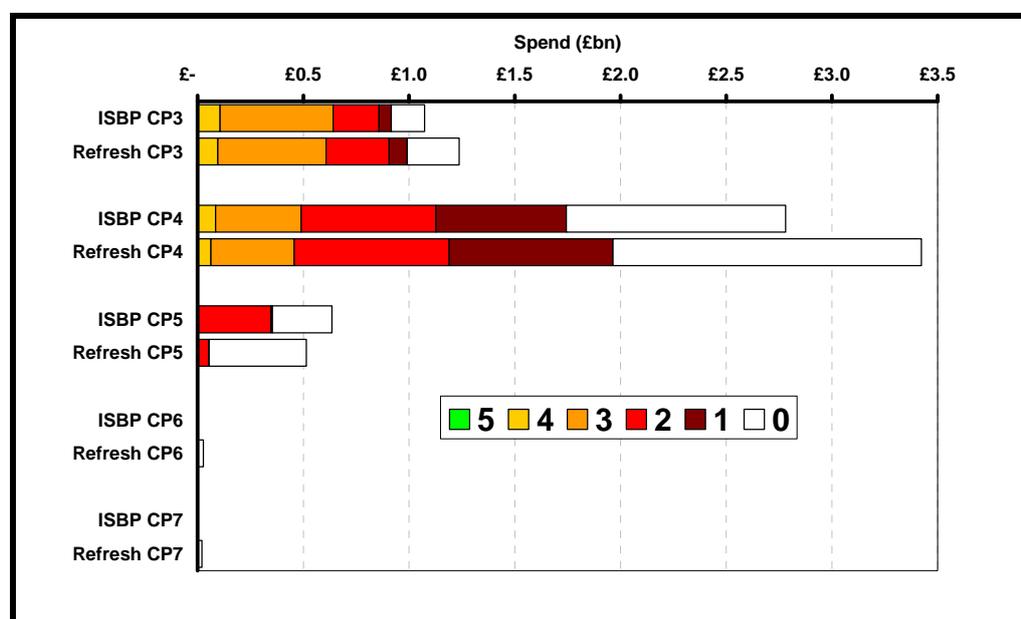
7.19 We noted earlier in this Section that the Felixstowe to Nuneaton capacity enhancement appears to have been withdrawn entirely, although it might be possible to reinstate it at its former GRIP Stage 3. The £400 million Waterloo Masterplan scheme has, apparently, regressed from GRIP Stage 2 to GRIP Stage 1 and is included in the £1,340 million noted above. The £355 million GRIP Stage 2 West Anglia Route Development scheme has been redefined as a series of small schemes at GRIP Stage 0. This implies that in addition to the £1,340 million of schemes which have regressed by one GRIP Stage, a further £355 million have regressed by two GRIP Stages.

7.20 Network Rail advised us that the objectives, scope and hence level of development of a number of existing schemes had changed as a result of discussions with stakeholders including DfT, TOCs, local authorities and third parties. Network Rail is expected to be customer-facing and must adjust, update and, where necessary, rework its proposals to reflect emerging customer requirements. Nonetheless, the ISBP is expected to represent a portfolio of projects which will progress to a Strategic Business Plan in October 2007 and a set of delivered projects over the period to March 2014. Whatever the changing requirements of customers, no schemes can be delivered unless they can be refined, fixed and completed.

### Progress of the schemes through the GRIP process

- 7.21 Figure 7.3 compares, for the ISBP and the Refresh, the projected expenditure in each Control Period categorised by the current GRIP Stage of the schemes to which it relates.

**FIGURE 7.3 GRIP STAGES OF SCHEMES: ISBP AND REFRESH**



- 7.22 We have not examined in detail how the schemes that Network Rail expects to deliver during CP3 to March 2009 are progressing, but note that they have predominantly reached at least GRIP Stage 3, option selection. The value of CP3 schemes at a lower GRIP Stage has increased in the Refresh, but this may merely reflect the mix of established schemes added to the Refresh to reassure stakeholders.
- 7.23 Our concern lies with the work to be delivered during CP4, which is valued at around £2.8 billion in the ISBP and £3.4 billion in the Refresh. Work worth less than £0.5 billion has reached GRIP Stage 3 or further, amounting to 18% of the work scheduled in the ISBP and only 13% of the work scheduled in the Refresh. 59% of the work scheduled in the ISBP, rising to 65% in the Refresh, has not progressed beyond GRIP Stage 1, output definition, and 37% of the work scheduled in the ISBP, rising to 43% of the Refresh, is still at GRIP Stage 0, meaning that no formal process has begun.
- 7.24 The overall position is therefore that 43% by value of the portfolio of CP4 work in the Refresh, up from 37% in the ISBP, have not yet formally entered any of the stages in Network Rail's own process. This may reflect reasons such as changes in, or consultation on, customer requirements which, in principle at least, may appear to be desirable in a customer-facing business. However, Network Rail needs to be able to progress the overall portfolio of schemes through its processes to the point where they can be delivered. On the limited evidence of the ISBP and the Refresh, the portfolio is regressing rather than progressing, which naturally raises concerns over whether, when and how Network Rail will be able to develop, define, design and deliver network enhancements.

## 8. CONCLUSIONS

### Introduction

- 8.1 Network Rail faces a number of challenges in preparing an ISBP intended to identify schemes on which work may not even be started until near the end of CP4, almost eight years away at the time it started work. In doing so it must attempt to anticipate:
- changes in patterns of economic activity and rail demand;
  - the aspirations of train operators and the sponsoring public authorities;
  - public policy regarding objectives for the railway and the specification of particular services;
  - the changing condition of its network;
  - the findings of the Route Utilisation Strategies; and
  - the outcome of regulatory decisions on the outputs it must provide and its revenue from charges.
- 8.2 There are also numerous interactions between schemes, particularly at key network nodes.
- 8.3 In these circumstances, Network Rail faces considerable risk that development and evaluation of individual schemes may need to await decisions on related matters and be reworked or aborted once they are known. Network Rail pointed out to us that the ISBP is necessarily a “snapshot” of the outputs it anticipates being asked to deliver and hence reflects its initial views on the schemes which may be chosen.
- 8.4 This snapshot will continue to change, the actual schemes built during CP4 will depend on the outputs actually requested, and the timing and cost of these schemes will depend on gradual iteration towards an optimum programme as the schemes progress through the GRIP Stages of the overall project cycle. With a complex portfolio of developing schemes it will also be difficult for any “snapshot” such as the ISBP or the Refresh to be both up-to-date and comprehensive.
- 8.5 Nonetheless, we have a number of observations on the ISBP and the Refresh, dealing in turn with:
- Documentation
  - Completeness
  - Consistency
  - Interactions
  - Progress

### Documentation

- 8.6 The level of documentation of many individual schemes appears to be poor. Scott Wilson advised us that Network Rail’s documentation on each of three sample schemes did not comply fully with its own best practice GRIP process. We would expect Network Rail to be able to offer current or recent documentation on scheme development even if, for example, no business case had been completed or the

requirement for the scheme remained uncertain. Scott Wilson advised us that Network Rail did not always appear to have complied with the documentation requirements of their own GRIP processes: in some cases there was insufficient paperwork to support the GRIP Stage attributed to the scheme.

- 8.7 Network Rail told us that in some cases the GRIP Stage might refer to the Stage to which analysis had been authorised. If so, this is unhelpful, as it gives a misleading impression of the extent to which schemes are understood and the time required before they could be completed. We discussed in Section 7 the evidence from the November Refresh to the ISBP on whether schemes are progressing at a rate which would enable them to be completed during CP4.

### **Completeness**

- 8.8 A number of stakeholder aspirations for the network are not referred to in the ISBP, including the Intercity Express project and the proposals of the East West Rail Consortium. Network Rail have advised us that it had agreed with ORR that the ISBP would not examine these issues. In practice, both these projects would affect the case and scope for some of the schemes in the ISBP.

### **Consistency**

- 8.9 The coverage of the ISBP appears to be highly variable and suggests that its production has not been effectively controlled to a consistent approach, particularly on routes where there has been no RUS. On some major routes, no schemes are identified. On others, small schemes are listed separately despite appearing to have a common objective and hence adding little value except as a package. The categorisation of schemes as major, medium or minor is therefore misleading. On some routes, such as in Kent and the West Midlands, resignalling schemes are identified in great detail but on others they are not mentioned.

### **Interactions**

- 8.10 Even where the configuration of, or need for, schemes is highly uncertain, we identified many self-evident interactions between them including:
- Complementary schemes, where two or more schemes would need to be completed to achieve any additional output. In some cases it would appear more logical for such schemes to be treated as a single package.
  - Alternative schemes, only one of which would be necessary or, in some cases, possible.
  - Contingent schemes, which would offer no benefit unless other schemes, with other immediate objectives, were already complete.
- 8.11 Scott Wilson lists a number of specific examples of these interactions in their report.
- 8.12 In practice there is little attempt in the ISBP to present related schemes, or schemes on a single strategic route, in relation to each other so as to identify whether they are complementary, independent, alternative or contingent. The separation of complementary schemes makes it difficult to understand how they are related, which schemes are contingent on others, and hence in what sequence they must be

constructed. The inclusion of alternative means of achieving the same outputs may be necessary before the final choice of scheme has been made, but Network Rail agreed that it means that the total cost of the listed schemes is inherently an overestimate.

### **Progress**

- 8.13 Our terms of reference, summarised in Section 3, broadly assumed that Network Rail would have a range of schemes in various stages of development towards implementation, and that advice would be required primarily on whether it was proposing the right schemes, in the right order, for the right price.
- 8.14 Our comparison of the ISBP with the Refresh, described in Section 7, covers only a short part of the overall project cycle of enhancement schemes to be delivered during CP4. Nonetheless, it raises the concern that Network Rail may not be progressing sufficient schemes, with sufficient speed, to enable them to be delivered. As we noted in Section 7, this may partly reflect changes in, or consultation on, customer requirements. However, a precondition of completion of enhancement schemes is that Network Rail is able to develop, define and design them in a timely manner.
- 8.15 Our principal concern at present therefore relates not to the selection, prioritisation and cost of proposed enhancement schemes but to the rate of progress towards clarifying a programme. Unless this accelerates, particularly over the period to the delivery of the SBP in October 2007, there is a risk that some parts of the emerging plan become undeliverable.

### **Recommendations**

- 8.16 We discussed these conclusions with ORR who asked us to make initial recommendations for immediate action to clarify the position.
- 8.17 We are not in a position to make detailed recommendations regarding all the schemes in the ISBP, or regarding Network Rail's planning processes. We therefore focus on the need to reduce the large uncertainty introduced by a limited number of large schemes. Most immediately, there is a need to provide greater clarity on the three major schemes, worth almost £1.2 billion, discussed at the beginning of Section 7.
- 8.18 On the Felixstowe to Nuneaton capacity enhancement, we would expect that Network Rail's Freight RUS, currently expected in Spring 2007, would either confirm progress on the relatively developed GRIP Stage 3 scheme or at least show rapid progress to defining the outputs, options and rationale for whatever reduced GRIP Stage 0 scheme is currently being considered. We would also expect the Freight RUS to clarify the rationale for the Southampton to WCML enhancements, in particular identifying what was to be the main route and whether, where and why diversionary alternatives were needed and would be acceptable.
- 8.19 On the South West Main Line (SWML), DfT has recently awarded a new franchise and we would expect there to be a clear agreement between DfT and the franchisee over aspirations for capacity development. Network Rail should be encouraged to define more clearly the overall approach, timing and costs of:

- capacity expansion at Waterloo;
- suburban platform lengthening;
- platform lengthening at Reading; and
- costs at Clapham Junction.

8.20 On the West Anglia Route Development, the complexity of the scheme may be such that considerable work is needed on defining the likely package of capacity enhancements. We would, however, expect Network Rail to define a clear strategy, as part of the Greater Anglia RUS process, setting out:

- longer term projections for demand in the corridor;
- the implied capacity requirement, and in particular whether systematic three- or four-tracking will be required; and
- if so, a vision for the “end state” of the infrastructure in the corridor, and a description of the programme as a means to progressing towards this end state.

8.21 We stress that these recommendations are not intended to represent all the immediate actions required by Network Rail. Nonetheless, we would expect rapid progress on clarifying these and other points to be an essential part of development of the October 2007 SBP.

## CONTROL SHEET

Project/Proposal Name: **ADVICE ON ASSESSING ENHANCEMENT SCHEMES PROPOSED IN NETWORK RAIL'S INITIAL STRATEGIC BUSINESS PLAN (ISBP)**

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