



## Office of Rail Regulation

Advice on assessing enhancement projects proposed in Network Rail's Initial Strategic Business Plan (ISBP)

# Final Report

*3<sup>rd</sup> January 2007*



## **Scott Wilson Railways**

“Scott Wilson Railways wishes to be recognised by the UK rail industry as the preferred source of high quality, multi-functional consultancy services and plans to become a significant and reputable emerging player in an international context”.

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## 1. INTRODUCTION

This report sets out an initial analysis of the contents of the list of projects nominated by Network Rail for implementation during the Regulatory Control Period 4 (CP4). The Control Period runs from April 2009 until March 2014. The review has been carried out by Scott Wilson Railways (SWR) as part of an overall review of the proposals put forward by Network Rail to the Office of Rail Regulation (ORR) for enhancement project funding. The proposals were contained in Network Rail's Initial Strategic Business Plan (ISBP) published in June 2006.

In November 2006, Network Rail produced a 'Project Refresh' document restating the projects with latest information. A high level review of the changes is included in this report.

Scott Wilson Railways has worked in close co-operation with another consultancy, Steer Davies Gleave (SDG), which has carried out a review of the programme outputs and the overall funding requirements of the submission. This report should be read in conjunction with SDG's report, and is complementary to it. Much of the data used in both reports has been shared between the two teams, though SWR assumes full responsibility for all the work described in this report.

In the standard methodology adopted by both review teams, the projects are numbered according to the page number of the original Network Rail ISBP project list, which means that not all projects have consecutive numbering.

SWR has used the Network Rail GRIP Manual to define the way in which we evaluate the compliance of individual projects with the agreed process.

### 1.1 REMIT

SWR was required to review the engineering content of the enhancement projects proposed by Network Rail, focussing on the following issues:

- Are the price and delivery arrangements proposed efficient?
- Will the project deliver the outputs specified by Network Rail?
- What are the key risks and uncertainties associated with the estimated costs and outputs?

It was initially envisaged at project inception that the focus of the appraisal would be on Network Rail's Major Projects. These are categorised as those with a total estimated project spend in excess of £50m. Medium projects (estimated spend between £5m and £50m) and Minor Projects (estimated spend below £5m) would be subject to a less comprehensive review on a sampling basis.

For reasons explained in this report, in the eventual analysis carried out, we have not been able to investigate the projects in any great depth at any level, and accordingly the project review has focussed more on those projects where a reasonable degree of definition is possible, rather than those that belong to specific categories.

## 1.2 METHODOLOGY

A small team of Scott Wilson senior managers, with extensive experience of Network Rail project procedures and implementation, has carried out the study. In addition, Turner and Townsend have acted as a sub consultant to carry out specific reviews of the cost content of nominated projects. Turner and Townsend carry out cost scheduling for Network Rail, and is fully acquainted with Network Rail costing methodologies and the GRIP procedures.

SWR is in parallel providing design advice to Network Rail on a number of the projects nominated in the list. While it was agreed with ORR that this did not create any specific issues of a conflict of interests, the team has ensured that its review has not been influenced by specific knowledge of development issues held by other teams within the company.

Project execution has fallen into 3 main phases. Firstly, the initial data supplied by Network Rail to ORR has been analysed. Initial comments were fed to ORR and SDG to identify project synergies and exclusivities, areas of specific concern, and key mismatches.

Secondly, meetings were held with Network Rail to discuss the initial review findings, and to identify a number of sample Major Projects suitable for more detailed reviews. Data was supplied by Network Rail, and subjected to further analysis.

Finally, overall conclusions were formulated based on the data analysis, and shared with SDG to form a co-ordinated overall view of the validity of the project list.

In the course of this study, informal reports on specific subjects have been provided to ORR and SDG in response to client requests. A statement of data provided by Network Rail has also been supplied to ORR

## 1.3 DATA GATHERING

In June 2006, Network Rail formulated an overall Initial Strategic Business Plan (ISBP), containing its view on the amount of money required to operate, maintain and renew the current railway, together with the sources of funding. Within the ISBP, Network Rail has also carried out an analysis of the likely growth of passenger and freight demand across the network, and makes proposals for the projects it views as essential to develop the network to meet this demand.

The data provided by Network Rail falls into two categories. Firstly, there is general project information contained in Network Rail's Initial Strategic Business Plan issued in June 2006, and the Route Refresh document issued in November 2006. Secondly, there is data specifically sent to Scott Wilson by Network Rail following face-to-face meetings with Calvin Lloyd, Strategic Planner Network Rail, who has acted as the main focal point for the Network Rail team.

## 2. CONTEXT

### 2.1 PROJECT DEVELOPMENT

The projects described in the ISBP Project List are due to be implemented between 2009 and 2014. Given that at the time of writing this is nearly 2 ½ years away, it is to be expected that these projects are in the very earliest stages of development. Many projects are being developed in consultation with Train Operating Companies (TOCs) and Freight Operating Companies (FOCs), and in close co-operation with funding bodies such as DfT, Scottish Executive and Welsh Assembly. Network Rail is also engaged on a Route Utilisation Strategy (RUS) process. This seeks to provide an analysis of demand pressures, current performance, and key initiatives to increase route capacity to provide additional seats or freight paths. Though a collaborative exercise, the RUS findings are not binding on any party, and do not represent commitments. Therefore, given that many of the projects are derived from RUS proposals, there is no certainty that they would ever be implemented in full or in part.

The RUS process continues, and therefore it is not surprising that the projects described in the June 2006 ISBP Project List should change, be replaced or new ones started over the subsequent year. Many of the projects described in this document are at the conceptual stage, and have not yet had any significant analysis. Therefore, these projects by definition will change as soon as proper project processes are applied to them, and it should not be a surprise if significant variations are seen in the list over the next 12 months.

However, given that the list represents a major funding submission by Network Rail, it is reasonable to expect that all projects included in it have at least been filtered centrally. This would ensure that Network Rail endorses inclusion as part of nationwide strategies, and that key issues of consistency and accuracy have been addressed.

### 2.2 GUIDE TO RAILWAY INVESTMENT PROJECTS (GRIP)

Network Rail develops and implements all projects in accordance with a laid down process known as the Guide to Railway Investment Projects (GRIP). SWR has evaluated the ISBP projects in terms of compliance with GRIP procedures, and has therefore sought to understand whether the GRIP outputs have been prepared, and whether the stated level of development of the project is consistent with the GRIP Stage nominated.

The GRIP process defines a series of stages of project development. At each stage, GRIP determines the outputs the project must achieve, and the project personnel required.

The GRIP project stages are as follows:

GRIP Stage 1	Output Definition.
GRIP Stage 2	Pre-Feasibility
GRIP Stage 3	Concept Selection
GRIP Stage 4	Single Option Development
GRIP Stage 5	Detailed Design
GRIP Stage 6	Construction, Testing and Commissioning
GRIP Stage 7	Project Handback
GRIP Stage 8	Project Close Out

GRIP is mandatory for all Network Rail projects, though the requirements vary for different project categories. Network Rail treats enhancement projects (all the projects contained in this review are categorised by Network Rail as enhancement projects) as a specific category. This section deals solely with the GRIP requirements for enhancement projects. Normally Network Rail treats enhancement project as being originated, and more importantly funded, by outside bodies. Internal enhancement projects are normally those that generate a sufficient payback to recover the capital investment within 5 years (for example through reduced performance penalty payments or through achievement of reduced operational costs).

Many of the projects in the ISBP list are classified as being at GRIP Stage 0. This stage does not exist in practice, and such projects are in effect at the 'notional' stage and are not subject to formal investment procedure guidelines.

## 2.2.1 Project Roles

Under the GRIP process, a number of clear project roles are defined, and clear responsibilities are assigned to each party. In enhancement projects, the Client is defined as the funder of the enhancement, who is in effect 'buying' the investment. The Client defines what is required and by when. Network Rail appoints a Sponsor, who is the internal manager within the investment team responsible for overall project management, obtaining investment approvals and supervision of the project process. The Sponsor carries out the high level initial project analysis during GRIP Stage 1, and determines whether a viable project exists, and if so what its key features might be. The Sponsor appoints a Project Manager at the commencement of GRIP Stage 2. The Project Manager assembles a project team consisting of key functional specialists, and manages the project development through to completion, delivering the key specified outputs.

## 2.2.2 Outputs

GRIP requires that certain deliverables should be in place by the end of each GRIP project stage. As far as this review is concerned, the key deliverables are as follows:

### Remits

At all stages of the project, there should be a Sponsor's Remit. In Network Rail terms, this is the remit set by the Client to the Sponsor. This should set out what outputs the Client wishes to achieve, and the

project parameters (maximum budget, project duration, level of disruption etc.) The Sponsor's Remit will develop during the progress of the project, as engineering detail becomes understood and the achievable outputs become clearer. At the end of GRIP Stage 3, the Sponsor will produce an Option Selection Report, recommending a certain course of action, which the Client should endorse and should be issued as a reference design.

From GRIP Stage 2, the Sponsor will appoint a Project Manager to manage the development of the project through to completion. The Project Manager's remit will consist of the Sponsor's instruction on management and implementation of the project, which in turn will guide the way the Project Manager defines and implements the project, and what reporting procedures he should set up to inform and involve both the Client and the Sponsor. At all stages of the project, the Sponsor should retain overall control of the project.

### Output specification

The Sponsor's Remit should refer to a statement of the specific project objectives and desired outcomes. This should be in the form of a Development Remit in GRIP 1, where the project is defined, through a Functional Specification at GRIP Stage 2, where specific outputs are defined, leading to agreement of a Reference Design by GRIP Stage 4, where the outline design details are set. Ideally, the Client should sign off these documents. The Reference Design will be supported by an agreed Options Selection report at the end of GRIP 3, whereby Network Rail will have recommended a selected option for development, and the Client will have endorsed the selection.

### Project programme

A project programme, setting out the time required for key activities, should be provided for all projects at every GRIP Stage of development. The level of detail of the programme will increase as the project progresses, from simple entries into Network Rail's business plan for projects in GRIP Stage 1, through production of simple bar charts for GRIP 2 and leading to fully developed P3 Primavera project schedules during GRIP Stage 4. At each project stage, there should therefore be a statement available explaining when the project is due to be implemented, the timing and interdependency of key consents such as investment authorisation and securing planning powers, and the time required for key activities.

### Financial estimate (with tolerances)

At each project stage, the Sponsor should be in possession of a financial estimate for the project. GRIP proscribes the detail required at each stage, as well as the degree of confidence of estimates at each stage.

Under GRIP, the following levels of costing confidence are required:

GRIP Stage	Level of cost confidence
1	± 40%
2	± 30%
3	± 20%
4	± 15%
5	± 10%

We would expect to see confirmation of the degree of cost confidence (together with an account of where the unit costs used have been derived) for every project under consideration.

### Risk register

The Sponsor is required to assemble a risk register through the life of the project. At GRIP 1, this is merely a list of likely risks, together with possible areas of mitigation. From GRIP 2 onwards, as the project is properly defined and scoped, this risk register should be assembled following Quantitative Risk Assessment reviews, which should identify and evaluate the impact of key project risks. Again, this risk assessment will develop in detail as the project gains definition.

### 2.2.3 GRIP Stage 0

It should be noted that there is no GRIP Stage 0. This is effectively the phase in which a project is conceived and a series of outline options and outputs defined, before entering the formal investment management process. Projects at GRIP Stage 0 are therefore not subject to the formal process, and no reliance could be placed on the confidence of estimates provided. No Sponsor is appointed, and conceptual design scoping is carried out by the Client or an informal group within Network Rail. This is significant, since the majority of projects described in the ISBP list are at GRIP Stage 0, and therefore incapable of full project definition. , Given that the proposed implementation of many projects is 5-8 years away the large number yet to enter the GRIP process is understandable.

### 2.2.4 Stagegate Reviews

GRIP lays down a series of outputs required for each project at each stage of development. Crucial to the process is a Stagegate review, held when the project reaches the end of each GRIP Stage, and before progression to the next stage. The review is intended to ensure that the required project documentation is in place, and that key issues have been identified and properly dealt with.

The Stagegate Review is in effect a project review by senior line managers, and should be attended by the Project Manager, Sponsor and where appropriate the Client. Successfully clearing a GRIP Stagegate is an important element in the investment authorisation process, and authority to proceed to the next GRIP Stage is not normally granted before the review takes place.

We would normally expect to be able to review the information pack produced by the Sponsor to support the Stagegate review, as this should contain all the key documents required to support the stated level of project development and the key outputs of cost, time and scope. There is however a key issue of the volume of data involved, which reinforces the need to review key projects only to date Network Rail has not been able provide such data to the project team from central resources

### 3. INITIAL REVIEW – ISBP PROJECT LIST

#### 3.1 PROJECT COMMENTARY

Network Rail provided ORR with a list of all enhancement projects that it considered necessary. The list totalled 129 projects, and was broken down by route. ORR advised Scott Wilson that they were reviewing certain projects internally, and that they should be reserved from the list. Each project was described on one page of the project list, with data being supplied in a consistent format, with sections dealing with

Problem definition

Context and strategic fit,

Project definition,

Outputs and benefits,

Timescales, interfaces and responsibilities

Initial cost estimates (quoted at 2006 prices), sets out as a breakdown of project spend by Control period,

Project GRIP Stage

It should be noted that Network Rail has confirmed that the list defines the GRIP Stage for each project as the stage it was within at June 2006. Therefore, if a project is quoted as being at GRIP Stage 2, (pre-feasibility) it means that the project is currently being assessed, and has not yet reached the end of this stage, ready to pass through a Stagegate review to the GRIP Stage 3. The outputs of a project in GRIP Stage 2 may therefore only be the results of the GRIP Stagegate 1 review.

Where Network Rail describes a project as being ‘standalone’, this means that it does not rely on a renewals opportunity to proceed.

An example of the data provided by Network Rail is shown on the next page.

**Typical data sheet from the Network Rail ISBP Project List**

**Suburban Area 10 Car Operations**

**Problem Definition**

The problem is a lack of capacity and overcrowding on suburban services into/out of Waterloo station. A large number of services currently run at sub-optimal length, including four and eight car formations, particularly on the Windsor and Reading lines.

The SWML RUS has forecast a 20% growth in passenger numbers over the next 10 years. Lengthening trains and platforms are the recommended solution to providing the additional capacity required to meet this growth.

**Context and Strategic Fit**

This is a Base Case project. The project is dependant on the Waterloo Masterplan project delivering a hub station with the capacity and platform lengths to handle the longer trains and increased passenger loads. The project should be considered of the highest priority and is a key recommendation of the SWML RUS.

**Project Definition**

The SWML RUS considered the case for suburban train lengthening. One of the outputs of the Waterloo redevelopment would be the removal of platform constraints on the length of suburban trains. The analysis concludes in favour of progressively lengthening trains and platforms to twelve cars throughout the SWML area. With the provision of some 310 additional coaches, this would provide a 50% increase in capacity; in the order of 300 additional seats on each suburban train. However, twelve-car operation would require infrastructure alterations that would be justified most readily at the time of the Waterloo area signalling renewal in the 2020s.

The station development would be much earlier than this, and provides an opportunity to deliver benefits of ten-car operation during the period of the SWML RUS (2007-17).

This would require a significant number of platform lengthening projects at suburban stations, and the provision of approximately 160 extra coaches, but no work additional to the development project at Waterloo. This increase would create real improvements for commuters in the medium term, given growth forecast to be 23 per cent over the ten-year period of the RUS. It is recommended that the first lengthening project should be the Windsor/Reading lines, which are the most crowded at present, and should be timed to make use of the first phase of the Waterloo station development project. This should be followed by the other suburban routes in accordance with the development of project business cases and the interface with the ongoing work at Waterloo, but all suburban routes should have ten-car trains in the peak by 2014. In view of the anticipated longer-term requirement for twelve-car operation, where appropriate the platform lengthening works for ten-car operation will include passive provision for further lengthening to twelve cars.

**Outputs and Benefits**

In conjunction with the Waterloo Masterplan project, the Strategic Route 3 - suburban area 10-car operation project will enable the lengthening of all peak hour services from Reading, Windsor, Woking and Guildford to operate at 10-car length. This delivers substantial (50 to 100 per cent) increases in capacity on the routes, varying as to the current platform length restrictions that exist.

**Timescales, Interfaces and Responsibilities**

The SWML RUS calls for the Strategic Route 3 suburban area 10-car operation project to commence in CP4.

Interfaces: The South Western Approaches Group, chaired by Gavin Johns (Wessex Route Enhancements Manager) is the internal group controlling this project and includes all relevant Network Rail engineers as well as representatives from the TOC.

**Indicative Cost Estimate (£millions, 2006 prices)**

Figure 28 Indicative Cost estimate – suburban 10 car operation						
CP3	CP4	CP5	Total Project Cost	CP4 Funding Mechanism	GRIP Stage	BCR
0.0	199.0	1.0	200.0	PR2008	1	-

The sheet above illustrates the problems with the level of data of the data supplied. The description of both the project and the business case it seeks to resolve are relatively high level, and do not contain much specific information. In this instance, there is no scope data on the total number of stations or platforms to be lengthened. There is also little definition of the lines where 10-car operation is planned to be implemented (for example services from Windsor and Reading can run via Hounslow or Richmond, while calling patterns may mean that not all stations are required to be extended to 10 car length). The business linkage is far from clear, as although the project is required to support the conclusions of the RUS, there is no actual indication that there is clear agreement that the client (in this case DfT) accepts the conclusions of the RUS in full. This is important, as without a matching commitment by the TOC or DfT to provide 10 car train formations for services on these routes there is no reason to progress the scheme.

Implementation timescales and project definition are quoted at a global level, which makes it unclear as to the detail of the project plan, while there is no data available as to what the project cost includes (for example what level of risk elements has been included).

The team has however carried out a high level review of the data sheets, looking at a number of areas within the data.

### 3.1.1 Initial observations

The quality of data provided varies in line with Network Rail's Route organisation that provided it. Some routes have split projects down into smaller component parts (notably Route 1, Kent), while others have retained projects at a more global level. Generally, route wide projects (such as platform extensions) are not specific as to scope, number of stations or length of platforms (by metre or square metre) that require to be lengthened.

It is also noteworthy that certain Route teams have highlighted areas that other teams have ignored. For example, the Route 1 (Kent) and Route 17 (West Midlands) teams have highlighted small scope projects to carry out enhancement works during PSB renewals. This is clearly the best opportunity to carry out such selective upgrades. Other routes have however not highlighted such opportunities. It is not clear whether this is because they have not identified any opportunities, have sought to fund such work from the NRDF, or view them as included within the overall renewals scope on the basis of replacement with modern asset equivalents.

A number of routes have no projects assigned to them, which we find surprising. Some of these Routes have yet to be subjected to the RUS process, and it may be that the definition of projects awaits completion of these reports. In addition, while there is a full list of Scottish Executive Sponsored projects contained in the list, there is no corresponding list for Welsh Assembly Sponsored projects, even though it is known that the Welsh Assembly is also taking a positive view of rail development in South and North Wales.

## 3.2 PROJECT LINKAGES

A number of projects were reviewed and found to be linked. In effect, these projects were either part of an overall project, or had a dependency, where one project was not needed unless another one proceeds. The significance of this is that these projects are joined in terms of the authority process. In other words, if one part of the project is not authorised, the other components will also not be required. The projects that fall into these categories are as follows:

Project No.	Description	Cost £ m	GRIP Stage
10	12 Car Operation Dartford Loop	50.0	1
11	12 Car Operation Hastings Line	10.0	1
12	12 Car Operation Dartford - Rochester	10.0	1
14	12 Car Operation Hayes - Sevenoaks	5.0	1
	Total	75.0	

These projects are all aimed at creation of 12 car capacities on routes radiating from London Bridge and should be linked as one project (as is already the case for the neighbouring Brighton and South West Main Line projects (23 and 31)). The logic used elsewhere by Network Rail is that individual projects are difficult to implement, as the TOC will find the maintenance of different formations for different routes hard to operate efficiently. This logic should apply here and the projects linked to a single unit.

Project No.	Description	Cost £ m	GRIP Stage
30	Waterloo Masterplan	400.0	2
31	SW Suburban 10 Car Operation	200.0	1
	Total	600.0	

63	Reading Station Redevelopment	127.0	2
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These projects are completely reliant on each other to provide the necessary platform capacity to operate 10 car trains on SW suburban services and should be linked as a single project. Note also that there is a dependency on delivery of the following project which will provide 12 car platforms for SW services at Reading, without which the value of Project 31 is greatly reduced:

Project No.	Description	Cost £ m	GRIP Stage
38	Hitchin Grade Separated Junction	60.0	2
39	Shaftholme Jn Remodelling	30.0	2
40	Upgrading GN/GE Joint Line for Freight	30.0	0
54	Yorkshire Horseshoe electrification	70.0	2
55	Yorkshire Horseshoe electrification - Add on	40.0	0
	Total	230.0	

These projects are all required to provide additional path capacity on the East Coast Main Line (though Network Rail has recently announced in advance of RUS publication that additional paths may already be available with timetable changes). Although separated, the benefits of any individual project are minimal on its own, and all should be linked as a whole. Though project definitions are not

clear, it is assumed that project 55 is a marginal add on to the base project to establish electrified routes from Micklefield to Selby and Colton Jn, and should be viewed as an increment to the base project.

Project No.	Description	Cost £ m	GRIP Stage
41	Finsbury Park additional Platform	18.5	3
39	Alexandra Palace – Finsbury Park additional Line	8.0	2
	Total	26.5	

These 2 projects are in fact a single project, involving conversion of the Up Goods Line from Bounds Green to Finsbury Park to passenger use, and building an additional platform at Finsbury Park station. The project would benefit Hertford Loop services (which run to Moorgate) and keep them off the ECML, improving path availability, but it is not clear what provision would be made for these trains to continue to serve Alexandra Palace, Hornsey and Haringey stations, which have no platform access to the new line. The project as described may therefore be underscoped, and costs may rise as a result. There is also a mismatch of stated project completion dates, as the ISBP quotes the platform as being completed in 2010, but the line is not converted to passenger use until 2013.

Project No.	Description	Cost £ m	GRIP Stage
46	Hertford Loop Capacity Upgrade	10.0	2
39	Stevenage Station S&C Remodelling	7.0	1
	Total	17.0	

Both these projects are driven by the need to increase capacity on the Hertford Loop for weekend diversions past engineering works (as well as during operational disruption). They should be linked as a single project.

Project No.	Description	Cost £ m	GRIP Stage
38	Kings Cross station platform Y	3.0	2
39	12 Car Platform Lengths KX - Cambridge	16.0	4
	Total	19.0	

The ISBP project plan attributes the need for an additional 12-coach platform at Kings Cross to the need to platform longer suburban trains rather than ECML services, and these two projects should therefore be linked as a single project.

Project No.	Description	Cost £ m	GRIP Stage
45	Wakefield Westgate Station Upgrade	10.0	1
52	Hemsworth Loops Upgrade	2.3	2
	Total	12.3	

The ISBP project plan states that both projects are required to increase Doncaster – Leeds capacity to increase the number of local services that can be run, and therefore should be linked as one project.

Project No.	Description	Cost £ m	GRIP Stage
57	Brought East Capacity Improvements	5.3	0
58	Selby Bi-directional working	3.4	0
	Total	8.9	

Both projects are required to increase freight capacity for traffic (mainly coal) generated at Hull Docks and should be linked as a single project.

Project No.	Description	Cost £ m	GRIP Stage
70	Platform Lengthening West Midlands	70.0	0
72	New Train Stabling Duddeston	15.0	0
	Total	85.0	

The new train stabling facilities are required because New Street station cannot stable the increased train lengths running as a result of the platform extension project, and these two projects should be linked.

Project No.	Description	Cost £ m	GRIP Stage
118	Glasgow Airport Rail Link	170.0	3
125	Deanside Branch Upgrade	1.0	3
	Total	171.0	

Though minor, the only logic for the Deanside Branch project is to reduce junction times for freight traffic and thereby increase route capacity, which is required for the GARL project, and project 125 should therefore be linked to GARL (118).

Project No.	Description	Cost £ m	GRIP Stage
129	Southampton – WCML W10	60.0	3
127	Southampton – WCML alternative route	90.0	0
79	Sutton Park W10	6.9	0
75	Water Orton Corridor Resignalling	12.0	2
	Total	168.9	

The base Southampton – WC project provides for a W10 route on the classic container route via Winchester, Reading and Oxford to the WCML at Nuneaton, with a branch for W10 traffic to Lawley Street Terminal at Birmingham. The additional projects are required to cope with traffic growth that cannot be accommodated on the classic route, but can only be achieved if the base project is implemented. The Sutton Park project provides a link to the gauge cleared Grand Junction route at Walsall, but imposes additional traffic onto the Water Orton corridor, and this freight driven project should be included. All the above projects should therefore be linked in one project.

Project No.	Description	Cost £ m	GRIP Stage
88	WCML Power Supply Upgrade	471.2	3
135	Class 6 Capacity WCML North	7.5	1
	Total	478.7	

Only 1 option of project 135 requires physical Network Rail works, to provide additional electric freight train paths over Shap. This requires that the Power Supply Upgrade (Scheme 88) project has been completed to overcome current traction power load restrictions, and it is considered that this should be linked as one project.

Project No.	Description	Cost £ m	GRIP Stage
128	Peterborough – Nuneaton Gauge	70.0	1
126	Felixstowe – Nuneaton Capacity	400.0	3
	Total	470	

The gauge project creates a new route for container traffic from the East Coast ports to key markets in the north of England, avoiding the congested North London Line (although note that it is not considered that this project cancels the need for project 35 – North London Line Capacity Improvements). However, the route itself is not capable of handling more than a small proportion of the existing traffic, while the new junction layout at Nuneaton due in 2008 makes access to the WCML extremely difficult. Therefore, it is considered that there is little logic to the gauge project unless the capacity project is added to it. These two projects should therefore be linked as a single project.

### 3.2.1 External linkages

A number of projects were found to have key dependencies on other initiatives or projects external to the ISBP process. These projects equally depend on the external project for their justification. We believe that these external projects should recognise the cost of these projects. At the very least, the project risk register should reflect the fact that the project depends on external actions, and the overall project cost and scope may vary considerably as a result. It is also likely that these projects will not be able to proceed beyond GRIP Stage 3 until any uncertainty with the external project is resolved.

Project No.	Description	Cost £ m	GRIP Stage
24	Gatwick Station Capacity	55.0	1

This project is standalone, but the outcome is dependent on the adoption on the Brighton Main Line RUS proposal to withdraw Gatwick Express services and use the additional capacity for long distance services from the South Coast. If this decision is not taken and Gatwick Express continues, the project will have to be enlarged to accommodate a significant layout remodelling with an estimated *additional* project cost of between £30 and £40 million.

Project No.	Description	Cost £ m	GRIP Stage
25	West Croydon Remodelling	25.0	0

The need to redevelop West Croydon station is driven largely by the station becoming the destination for East London Line services (not specified in the ISBP list as it is a TfL driven project) and this project should be linked directly to that project rather than being treated as a standalone project. There is also a dependency on the Thameslink project, whose services will also use the station, but this is viewed as being a secondary driver.

Project No.	Description	Cost £ m	GRIP Stage
28	East Grinstead Line 12 car operation	20.0	1

This project is actually closely linked to (but not driven by) project 27 East Croydon station capacity upgrade. However, it appears to be a peculiarly justified project. The business driver is stated to be the need to standardise the maximum length for all services out of London Bridge and Victoria to 12 cars (the last 3 East Grinstead line stations are currently 8 car).

Network Rail's commentary makes it clear that there is actually no business need for 12 car capacity at these stations but that there are operational issues with attaching and detaching units at Grove Park. There is therefore no need to extend the platforms at Lingfield and Dormans and trains could run on from Grove Park with the rear 4 cars either out of use or with the unit doors locked out using SDO, and the train platformed for the first 8 cars only. This reduction in scope would be likely to save up to £5m or 25% of the overall project cost.

Project No.	Description	Cost £ m	GRIP Stage
54	Paddington Station Platform Extensions	40.0	0

This project is only required if Crossrail (not covered in the ISBP) does not proceed as the Crossrail project diverts Thames Valley local services away from Paddington.

### 3.2.2 Mutual exclusivity

The following projects are mutually exclusive – in other words if one project proceeds, the other cannot or is not required.

Project No.	Description	Cost £ m	GRIP Stage
71	Round Oak to Walsall Reopening	40.0	0
82	Pleck Jn run round facility	3.5	0

These two projects are mutually exclusive, as the run round is created on the formation of the Round Oak (South Staffs) line at Pleck Jn, which cannot happen if the route is reopened. The total project values should therefore be reduced by £3.5m.

Project No.	Description	Cost £ m	GRIP Stage
128	Peterborough – Nuneaton Gauge	70.0	1
126	Felixstowe – Nuneaton Capacity	400.0	3
	Total	470	

Project No.	Description	Cost £ m	GRIP Stage
133	Alternative W10 Route Felixstowe - London	10.0	0

The creation of a W10 route from Ipswich to the North London Line via Cambridge, to provide diversions during engineering possessions, would not be required if the Felixstowe - Nuneaton project were implemented in full or part, and therefore the overall projects list total should be reduced by £10m as a result.

### 3.2.3 Renewals dependency

A number of the projects specified are dependent on overall renewals projects, to which they form an enhancement. We obviously endorse the strategy of adding incremental route capacity at renewal, as it forms the cheapest method of enhancement, and maximises the opportunity created by adding functionality to a planned renewal. Efficiencies over straight ‘standalone’ enhancements mean that the overall cost for such enhancements can be expected to be at least 50% cheaper.

However, two issues are created which Network Rail has provided no guidance on, and which we are uncertain has been addressed in a consistent way in each project. Firstly, the boundary between renewals scope and enhancement is unclear, especially when the renewal is in substantially more modern format. For example, Network Rail now procures switch and crossings in a small range of design speeds, and renewal of, say, a 25-year-old 30 mph turnout may already need to be at 40 mph in modern materials. The incremental cost of renewing at 50 mph may be substantially less as a result.

Secondly, renewals projects form the core justification for these enhancement projects. Put simply, if the renewal is deferred, the enhancement cannot proceed. The timing of the projects within Control Period 4 therefore depends both on the funding Network Rail is provided with for renewals, and the workbank it allocates to CP4 rather than deferral to CP5. There is no hard and fast method for allocating timescales to renewals projects – asset condition, resource and finance availability and possession opportunities all play a part in this. The net result is that the risk that the identified enhancement projects proceed as anticipated has to be greater than for standalone projects, and we would normally expect that a proportion of them (say 20%) would be deferred in practice until the next control period. Partly this may be to provide for other renewals that have to be brought forward on a condition related basis, but if these other renewals have no enhancement spend identified the case for enhancement expenditure has disappeared.

To provide a quantification of the size of the issue, we have analysed the ISBP project list. Out of 129 enhancement projects worth a total of £10.5 bn (including Thameslink), we assess that 30 projects, with a total value of £1.0 bn, are reliant on associated renewals. However there is a serious skew in the value figure, as 2 of the projects, 87 (Stafford remodelling) and 89 (Bletchley & Milton Keynes Remodelling) account for £776 m of the total spend.

### 3.2.4 External Funding

The actual funding of the projects in the ISBP list is from a number of sources. Firstly, there is funding from government departments, notably DfT, Scottish Executive, Welsh Assembly and Transport for London. Secondly, there are other statutory funding bodies, notably the Transport Innovations Fund, from which Network Rail intends to seek funding for a number of key freight projects. We have ignored the funding arrangements for these projects.

However, a number of projects have sources of funding from outside parties, either local authorities or private companies (or both). We have identified 4 projects with a total value of £568.7m in this category. We have concerns about the level of risk inherent in these projects. External funding tends to be well defined in terms of the output purchased, and funders tend to seek to commit to fixed contributions, thereby incentivising Network Rail to make economies and penalising them with disproportionate liabilities for cost overruns. Where the contribution from Network Rail tends to be a small proportion of the total, this leads to a disproportionately high impact of cost variations. For example a 10% overspend of the total costs can involve a 50% increase in Network Rail costs. Similarly, if a funding partner pulls out, Network Rail may be obliged to fund a greater proportion of the total work simply to achieve its own goals.

This risk would normally be identified in the risk register, and the QRA and authorised sum (inclusive of contingency) should accommodate this where identified. We have no indication from Network Rail either as to the detail of the funding arrangements of these projects, nor the level of risk implied by the funding implications, and we remain concerned that stated project cost to Network Rail might be an underestimate as a result.

### 3.2.5 Property gain

We have identified 3 projects with a total value of £641.5m, which generate or depend on development gain. It is not clear from the level of detail supplied by Network Rail whether this development gain has been offset against the project costs as an internally generated return, and therefore we are unable to verify whether the project cost is quoted at gross or net value. Network Rail should be requested to provide more comprehensive information on the business case and sources of funding and return for each project, as this should already have been ascertained during the GRIP Stage 1 development process.

### 3.2.6 Inconsistencies

The data contained in the sheets is high level, and of a general and relatively indeterminate nature. Ironically, in many respects small projects are better defined than large ones. In most cases, the scope of the project in terms of the work involved and the perceived benefits and other key details is not specified. Timescales are not given in detail, while the cost quoted is a global figure, with no breakdown or assessment of reliability tolerance, contingency funding or other information. In the circumstance, it is not possible to carry out a reliable review of either the effectiveness of the projects in achieving desired outputs, nor the project efficiencies, as originally required in the remit. This has been discussed fully with ORR, who understands and endorses this conclusion.

## 3.3 UNIT COST VALUES

It is not possible within the level of detail supplied by Network Rail to ascertain the consistency of costing applied by the company to its projects. In theory, each project should use standard unit costs for its works, overlaid where appropriate by multipliers or divisors to represent the impact of local influences. We have therefore determined to analyse projects to check whether the approach taken on unit costs has been broadly consistent across projects. It has only been possible, with the data available, to carry out such an analysis on two areas of project enhancement.

### 3.3.1 Electrification projects

A number of projects within the ISBP involve the electrification of routes on the 25kv overhead line system. Electrification projects usually involve a degree of track circuit immunisation to deal with the effect of traction currents interfering with the signalling system. This can be quite severe in certain signalling systems and therefore it can be expected that project costs could vary in these instances. Otherwise, unit costs per track mile electrified should be relatively constant, though larger projects should be cheaper per mile than smaller projects due to economies of scale.

Third rail electrification projects have not been examined, as the level of definition of the projects was not sufficient to permit this.

Each of the ISBP projects was examined to establish the outline scope of the project. The number of route and track miles was calculated using Quail map and Sectional Appendix data and tabulated. The results are shown below:

ISBP Electrification project costs						
Project	Project No.	Route miles	Track miles	£ m cost	Cost/route mile	Cost/track mile
Oxley Chord	81	1	2	4	4.00	2.00
Rutherglen & Coatbridge	119	7	14	25	3.57	1.79
Horseshoe add on	55	15	30	40	2.67	1.33
Leeds - Hambleton	54	16	32	70	4.38	2.19
Nuneaton - Proof House	74	20	50	12	0.60	0.24
Edinburgh - Glasgow	109	82	160	100	1.22	0.63
Average					2.74	1.36

The data demonstrates that there is substantial variation in project costs. Most of these projects are at early GRIP Stages, and therefore we would expect that standard costings would be used. Shorter projects should display larger unit costs due to a higher element being required for set up and design. However while the smaller projects show a consistent approach (the Horseshoe add on project – 55 is assumed to be costed on an incremental basis), the two largest projects, which involve greater complication in terms of junctions and track layouts, are costed at rates below these that we recognise as being appropriate. We believe therefore that the total project costs of these two projects are understated with reference to Network Rail’s own figures, and to our independent high-level estimate of electrification costs of between £1.5 and £2.0m per track mile.

### 3.3.2 Platform projects

Network Rail proposes a number of platform lengthening projects to provide additional capacity on key routes by allowing the running of longer trains. This is a relatively cheap way of providing additional capacity, especially where routes already have long enough platforms at key stations and termini. Network Rail provided additional data sheets for projects in England. The quality of the data varied greatly, but where possible this has been analysed and the results shown in the table below.

It should be noted that platform lengthening usually involves not only civil engineering costs to provide additional platform length, but also frequently signalling costs, where platform end signals need to be moved. Costs for other items such as the moving of electrification equipment, land purchase costs, and alterations to level crossings also vary project by project, to some extent relating to the geography and local conditions of the areas covered. A key piece of information that is not provided is the width of the platforms, which would have provided a cost per square metre.

All this means that direct comparison is not easy to make, though given that all the projects are in early stages of development, unit costs appear to have been applied in many cases. There does not however appear to be much consistency between the unit costs applied, as the table demonstrates.

Only one project (South West Main Line platforms – 31) appeared to have a specific cost element applied for contingency – in this case 25%.

ISBP Platform extension costs									
Platform Lengthening Project	Project No.	Total Platforms	Total Metres	Average metres/platform	NR data cost £m	ISBP Cost £m	Cost / Platform £	Cost / Metre £	
South Yorks	59	22	214	10	0.0	15.0	681,818	70,093	
Thameslink Hitchin-Royston	51	5	220	44	0.0	3.0	600,000	13,636	
Hope Valley	62	14	438	31	3.7	2.6	185,714	5,936	
West Yorks	56	26	643	25	0.0	10.0	384,615	15,552	
W Mids	70	164	6507	40	25.6	70.0	426,829	10,758	
North West	97	214	6772	32	45.3	71.5	334,112	10,558	
South West ML	31	160	8429	53	217.9	200.0	1,250,000	23,728	
South Eastern	10 -12,14	Insufficient data provided					85.0		
Brighton ML	23	Insufficient data provided					100.0		
Average							551,870	21,466	

The data shows some high level inconsistencies, and the South Yorkshire project appears to be estimated at considerably higher unit costs than the others. The SWML project in particular appears to be estimated at a higher level than other projects, though this may be in part due to the location, and also the level of detail of the data. This project has been examined in more detail as detailed below. More worryingly, the data supplied by Network Rail contained costs that did not tally with those supplied in the ISBP list, as shown in the table above. The differences are greater than would be explained by additional items added to cover areas such as project management cost, risk and contingency, and in most cases the ISBP list is actually less than the original estimates.

Given that the data supplied by Network Rail does not fully substantiate the cost levels contained in the ISBP list, it is hard to place too much reliance on the project cost estimates, even within the limits of confidence implicit in the early GRIP Stages these projects are at.

## 4. SELECTED MAJOR PROJECTS – COMMENTARY

At a meeting with Network Rail on 26<sup>th</sup> September, Scott Wilson discussed the limited data availability, and requested more information on a range of major projects held to be typical of the general themes of enhancement project proposed. It was agreed with Network Rail that projects at least developed to GRIP Stage 1 (initial feasibility) would be selected, and that Network Rail would be able to suggest projects for which reasonable data was available. Scott Wilson requested data for one typical project from each of 3 categories identified in the initial stage:

- Station platform lengthening for longer trains
- Upgrade of station facilities (not necessarily involving major track layout remodelling)
- Major route upgrade for freight traffic

The 3 projects selected for detailed analysis were:

- Birmingham New Street station upgrade
- South West main Line 10-car platform extensions
- Southampton – West Coast Main Line W10 Route Upgrade

Data was supplied as follows for each project:

### 4.1 BIRMINGHAM NEW STREET STATION UPGRADE

The project (project 69) is stated by Network Rail to be at GRIP Stage 4 – outline design (meaning that it has not yet passed the GRIP Stage 4 Stagegate review prior to progressing to full implementation). This project covers the rebuilding of the Birmingham New Street station concourse and access to platforms, together with major revisions to the shopping centre above the station. Much of the funding is derived from Birmingham City Council and Advantage West Midlands, though Network Rail is acting as Project Manager and will carry out all works for the funding consortium. The project documentation that we have seen suggests that Network Rail will derive some property gains. We do not know whether these are factored into the overall costs.

There appears to be no change to track, signalling or electrification equipment, suggesting that the operational railway is not affected by the project, which is designed to improve passenger flow and customer perception of the key rail entrance and exit to Birmingham City Centre.

A GRIP Level 4 costing report has been supplied. This report was prepared by Faithful & Gould and dated May 2006. The report provides an overall estimate of detailed unit costs, a bill of quantities for

each work stage, and an indication of the overall contingency applied to the project at P50 and P80 levels.

Network Rail has also supplied a December 2004 document detailing the design development remit for GRIP Stage 4, and a Cost Time Resource (CTR) estimate for Network Rail costs for this stage, which demonstrates that Network Rail costs for this stage will be £2.8m. Finally, Network Rail supplied a project programme for GRIP Stage 4 demonstrating the actions to be completed by the start of detailed design and construction in December 2008.

We have not been supplied with any statements of project risk assessments, an overall reference design for the project, or Sponsor or Project Manager's remit or statement of desired client outputs.

According to the ISBP project list the project will cost £387 million, with the outside party contribution set at £246.2m, and the Network Rail cost (for which funding is sought) £141.8m. The ISBP list states that these estimates are at 2005 levels. The cost estimate supplied states that projected construction costs at Q2 2005 levels (inclusive of risk driven contingency) are £236.5m, plus £9.7m of cost solely attributable to an outside parity (Warner Estates). This is stated to be exclusive of Network Rail development costs up to GRIP Stage 4.

It is inconceivable that these development costs equal the £150m (and the data we have seen suggests that the true cost of GRIP Stage 4 is £2.8m). It is therefore not clear to us from where the Network Rail total estimated cost of £387m has been derived, as the supplied figures do not support this.

The cost data and programme provided appears to be fully consistent with what would be expected at GRIP Stage 4. However, the single summary document does not supply all the data that would be required to carry out a full cost review, and other documents such as the Value Management Report, Risk Register and Contract Plan would be required to be studied to gain full confidence on the costing methodology and process. The quickest way to derive this information would have been for Network Rail to provide us with the information presented to the client consortium in justification of commencement of GRIP Stage 4.

Unit costs used to generate the cost estimates appear to be of reasonable values and consistent with rates used elsewhere in the construction industry outside rail projects, though without a reference design the unit volumes cannot be validated. Though risk contingencies appear to be calculated in line with GRIP requirements, the absence of the risk register means that it is not possible to verify the levels of cost confidence applied. The costing confidence level should be plus/minus 15% according to GRIP guidance – the cost report doesn't comment on this, though the methodology used certainly looks consistent with this.

The project programme has been assembled with the level of detail that we would expect to see at this stage of the project, and is compiled using P3 programming. Tasks are well documented, and key project dependencies tabulated. However, as this programme only relates to GRIP Stage 4, it is not possible to validate the construction phase of the project, and comment on whether the overall project timescales are realistic.

Crucially, we have no knowledge of the commercial funding agreements that support the participation of outside parties, and whether contributions are made on a fixed or variable basis. As noted above, Network Rail could possibly be carrying an excessive project risk if others are contributing on a fixed price basis and not bearing any of the risk of overspend. On the other hand, it is possible that Network Rail is benefiting from property based project benefits that are not declared in the cost summary provided to ORR.

No statement of overall client remit, Quantitative Risk Assessments or project specification has been received, nor any details of the funding contributions and scope of the various non Network Rail

funding partners. It is therefore not possible to review the scope of the schema, or the fitness for purpose of the works proposed. The project programme supplied is seriously out of line with the costs quoted in the ISBP data sheet as it states that detailed design work, contract award, and site mobilisation will all have been completed by 4<sup>th</sup> December 2008.

## 4.2 SOUTHAMPTON – WEST COAST GAUGE ENHANCEMENT (SMART)

This project (Project 129) was selected as an example of the major freight routing projects currently being investigated. The project is stated by Network Rail to be at GRIP Stage 3 – option selection (meaning that it has not yet passed the GRIP Stage 3 Stagegate review prior to progressing to outline design). The project relates to the clearance of the route from Southampton to Nuneaton and Birmingham Lawley Street Freightliner terminal to W10 container gauge, involving the raising of key bridges or lowering track under them. Much of the cost will be represented by the difficulties of obtaining gauge clearance through the several tunnels on the route.

The only data that Network Rail has supplied for this project so far is a copy of a TIF Project Business Case document prepared by Steer Davies Gleave and issued in September 2006 to support funding applications. This document states that the project is at GRIP Stage 4, though notes that much of the project documentation is not consistent with this level of development.

No statement of overall client remit, project programme, cost estimates, project scope or risk schedule has been received.

The report cannot be used to analyse project cost build up, though Appendix B of the document does set out a list of structures to be altered to provide W10 profile, with a proposed solution and a spot cost per item. This data contains a number of inconsistencies, which makes it unreliable for examination, even in its high level form. For example certain structures are shown to have a zero cost for clearance, even though works are Associated with them.

In view of the lack of data, it has not been possible to carry out any detailed analysis of the state of progress of this project to date.

## 4.3 ROUTE 3 SOUTH WEST PLATFORM EXTENSION FOR 10 CAR TRAINS

The project (Project 31) is stated by Network Rail to be at GRIP Stage 1 – pre feasibility (meaning that it has not yet passed the GRIP Stage 1 Stagegate review prior to progressing to full feasibility review).

This project consists of the extension of platforms at 80 stations on the South West Trains network, on the routes to Reading, Windsor, Guildford and Weybridge, and the Hounslow and Kingston loops. Extension will permit 10 car trains to call at these stations in place of the 8 car capability they currently have. The project is driven by the conclusions of the RUS process, which identified that the best way to address key peak overcrowding issues was to carry out platform works. Though not explicitly stated in the ISBP list, the project depends on the implementation of similar platform extensions at Waterloo station (Project 30 – Waterloo Masterplan).

The only document that Network Rail has supplied for this project is an excel spreadsheet detailing the project scope. This shows the scope of works and a high level cost estimate for each station for which platforms were to be lengthened, together with a desktop driven cost estimate. The cost estimate details works to be carried out within each discipline, together with global figures for risk and project costs. No figure is provided for Schedule 4 track possession costs that will be required in quantity for each platform extension. In this respect, we believe that the cost estimate is understated.

Network Rail has used a figure of £2,000 per m<sup>2</sup> for platform construction costs estimation. This appears high, and Turner & Townsend have advised the standard figure that they would expect to see would be £875. We also note that the figure used for the North West platforms (project 97) is £750. Though there may be some logic as to why platform extensions in the South East and London areas may be more expensive, the level of unit cost estimation appears unjustified.

No statement of overall client remit, or project programme has been received, and indeed Network Rail has since indicated that it is progressing this project 'at risk' with no firm client agreement, in the absence of confirmed DfT requirements and without a clear idea of implementation timescales.

While consistent with GRIP Stage 1, the data received is very rudimentary and to support better analysis other project outputs (risk register, programme and client remit) would be required.

The basis of costing is not detailed, though the assumptions made for each station can be clearly understood. Consistent with GRIP 1, many assumptions are made (for example a global assumption is that 1 signal per station will be required to be moved).

A key issue clear from the figures supplied is that Network Rail has not made any qualification as to the number of stations which require to be extended, and whether a better solution is available for low volume stations. In this respect, Selective Door Opening (where the train doors do not open for carriages off the platform) is an alternative, though requires the TOC to carry out modifications to the emus. It is clear that the no threshold has yet been generated to justify the selection of such options, though it could be expected that this would be carried out. While this will be addressed in detail at GRIP 2 where detailed visits are made to sites, and GRIP 3, where options for each station will be considered, some recognition of this should have been applied at GRIP 1 as an overlay to ensure that the estimated costs were reasonably representative of the anticipated outcome.

The overall cost per metre of station extension does however appear to be reasonable in our experience of other platform extension projects, and the overall process is consistent with a project currently at GRIP Stage 1.

A meeting was held on 8th November with Network Rail to discuss the findings of the SWR review, and to ask question on key concerns. Network Rail confirmed that they have originated the project without specific DfT instruction as part of the RUS review process. As a result no direct funding agreement has been reached, nor is there proper definition of the list of stations required to be extended or desired timescale. Network Rail is confident enough of the need for the project to be prepared to start it at risk, but we are concerned that there is no guarantee that the full scope of the project put forward is currently justified.

The greatest concern that we have is that again the data Network Rail has supplied does not equal the cost contained in the ISBP submission. The cost estimate sheet shows a project cost of £217.9m, while the ISBP list shows a project cost of £200m. In this instance, we have identified that the list of stations does not include Reading, the terminus for key services from Waterloo, but which is on the Great Western Route and therefore outside the scope of the South West Route Team. The platforms at Reading need to be extend over an under bridge, and this is likely to be a significant cost item. Network Rail estimates that this is likely to cost at least £10m to achieve.

The Reading station redevelopment (Project 63) would provide completely new station platforms for Waterloo services as part of a much larger remodelling proposal, and this project has assumed that these would be at least 10 cars long. However, the Project Manager stated that he has included an allowance for the standalone calculation of Reading station. This is not reflected in the cost calculations presented to SWR, and there is therefore a possibility that total project costs are actually as high as £228m rather than the £200m quoted. We are therefore concerned to note that the data we have been supplied with appears to suggest that the project cost quoted in the ISBP plan is 10% less than the costs actually anticipated at this stage by Network Rail.

In terms of risk, there is no indication given that the electrification requirement generated by the longer trains has been priced for in terms of a requirement for a Power Supply Upgrade. There also appears to be no allowance made for possible changes to platform furniture or signage, and risks that DDA access will have to be improved as a result of modifying the existing station have not been factored in.

## 5. CONCLUSIONS

The analysis of data provided to date by Network Rail has illustrated that ORR and its consultants do not possess enough information to fully validate the proposed enhancement projects in line with the original remit. Given that 37 of the 129 projects in the original list are at GRIP Stage 0, and therefore not formally entered in the investment process, this should not be surprising. However, for projects at a more advanced stage of development, Network Rail should be able to provide such data, even at a 'snapshot' level. That such data is not readily available, even for projects selected by Network Rail, has been disappointing, and has meant that the thorough review of projects required in the original project remit has not been fulfilled.

All the projects documented by Network Rail appear to have a good logic in that they meet stated requirements and address the demand pressures that the network is facing. However there appear to be gaps in the submission where some Routes do not appear at all, and standard projects such as enhancements on the back of PSB renewals opportunities are not universally applied. There may be sensible explanations as to why this is, but we are concerned that there is a lack of consistency in approach caused by the different approaches taken by different Route teams.

Generally, the projects which have been reviewed appear to be at a stage consistent with the GRIP Stage stated by Network Rail, though specific GRIP requirements do not appear to be fully observed. The key concern is that Network Rail does not always appear to have a clear output remit from the eventual provider of funding, and therefore it is difficult to judge whether the project represents an efficient delivery mechanism. Many projects within the ISBP list are derived from RUS or TOC initiatives, and therefore do not have the explicit backing or endorsement of DfT, either in terms of scope or timescale. Many projects such as platform extension are only worth providing if parallel actions are taken by other parties, and without clear agreement that this is the case such work would be at best in anticipation of future actions, and at worst abortive expenditure. There appears to be a strong case for Network Rail to develop projects to at least GRIP Stage 1 to help railway stakeholders to understand what is possible and the costs and timescales required to implement a course of action, But project development beyond that stage 'at risk' is of questionable value.

We are concerned that for those projects where Network Rail provided supporting data, the projects costs quoted did not fully correspond with the entry in the ISBP project list. There may be a number of explanations for this, especially where the additional data supplied suggests a lower cost which may

not include additional factors such as contingency or TOC compensation. However, this cannot be the case where the new data suggests higher costs, and the risk of the ISBP being underestimated remains. Given that the ISBP entries are not backed up with any financial analysis, it is not possible to examine the derivation of these costs in detail.

Our examination of the costs for Project 31 (SWML Platform extensions) revealed that there was uncertainty about the treatment of costs for extending platforms at Reading station, and where these had been documented. We have listed in this report other instances where there is a misfit between projects and also projects that are interdependent, and we would recommend that Network Rail should be encouraged to fully document these linkages and group projects together so that both costs and benefits can be properly assessed.

GRIP provides a framework that Network Rail Sponsors and Project Managers are obliged to follow, and outputs that must be produced at a Stagegate review at the completion of each GRIP stage before the project progresses. If these outputs were available, many of the uncertainties and inconsistencies so far noted could be resolved quickly and without further query. It would be advisable for ORR to require that Network Rail provide this data as part of its final Strategic Business Plan submission next year to ensure that its final demand for enhancement investment budget is properly substantiated.

## 6. ISBP REFRESH LIST

### 6.1 INTRODUCTION

In November 2006, Network Rail issued a revised ISBP Project List as part of its 'Route Refresh' document. Apart from general text on aspirations per route, covering a variety of potential improvements, service changes and physical works, this document contained tables setting out each enhancement project. The page relating to the South West main Line platforms project detailed above is as follows:

Table 28 Priority Base Case projects: major projects (≥£50 million)					
Project Name	Project Description	Grip Stage	Description of output changes	Proposed Duration	Total project cost (£000's)
Strategic Route 3: suburban area 10- car operations	Extending all suburban platforms to accommodate 10-car trains (or 12-car if more cost effective).	0	Increases capacity.	2009/10-2014/15	200,000

While some of the additional information supplied was useful in providing a small amount of additional detail, or highlighting changes to the original data (as in the change of GRIP Stage in the example above), the data supplied provides no more opportunities for analysis or review.

However a number of the projects have now changed, some new ones added, and other ones either been deleted or brought forward to CP3. As stated in the introduction, this is to be expected at early

development stage, and is a natural output of the GRIP process. Worryingly however a number of projects have been reduced in GRIP status from 1 to 0. The above example falls into this category. This does not appear to endorse the reality of the statements made in the original ISBP list, as GRIP should be a positive iterative process, with projects proceeding forward only after definition in GRIP Stage 1. It is hard to understand how the same project can have been reduced in status to an ‘anticipated’ stage when it already has cost and scope provision in the Network Rail Business Plan.

## 6.2 HIGH LEVEL ANALYSIS

In total, 7 schemes within the ISBP list have now been brought forward, and will be completed by the end of CP3. Some major track remodelling or reopening schemes within this were shown by Network Rail to be at GRIP 1 in the June ISBP list. There must be some concern whether, given the current level of definition and the resource requirement, Network Rail can complete the majority of works by the end of CP3. This applies in particular to the following, as they require substantial signalling resources and represent multidisciplinary remodelling projects:

No.	Scheme	GRIP Stage	Cost £m
33	West of England Route Improvement	0	44
65	Bristol Parkway – new platform	1	9
104	Halton Chord	2	5.8

11 schemes have been deleted in total, including platform extensions to 12 cars on route 1 (projects 9, 10, 12), the incremental electrification from Hambleton to Colton and Selby (project 55), and remodelling in the Water Orton area (project 75). No doubt, these deletions are because of discussions with DfT and TOC/FOCs, which is also the likely reasoning behind the some of the additional 68 schemes that have appeared in the refresh list.

The original West Anglia Route Development scheme (project 35) has now been split into 7 better-defined component schemes. It is not possible with the descriptions given to make judgement as to the linkage between these component schemes. Nevertheless, it is noteworthy that while the original WARD scheme was stated to be in GRIP 2, these schemes are all at GRIP 0. Given that the combined scheme costs total £350m as against the project 35 total of £355 m, it is reasonable to assume that this is in fact the same scheme split out. In this case, it is hard to see why the development level could have reduced to concept stage.

A new set of 7 schemes for Great Eastern (route 7) has appeared. All these schemes are at GRIP 0, and represent a suite of modest upgrades and a remodelling at Stratford. As Route 7 did not feature in the original ISBP list, we assume that these have arisen from discussions with the TOC, and in the case of Stratford following discussions on the impact of the Olympics.

Equally, 8 new schemes have been added for Route 8 (East Coast Main Line), some of which could be major but are as yet completely uncosted (for example a proposal to remodel signalling in the Doncaster area to introduce further bi-directional working is likely to be expensive in terms of signalling alterations on a relatively old signalling installation). While this provides useful information, the unspecified schemes do not represent a submission that can be evaluated as part of the overall enhancement expenditure.

3 schemes have been added to the list for Route 10 (Trans Pennine) balanced by the withdrawal of 3 previous proposals. One of these, covering Manchester to Leeds Linespeed Increases, is costed at £150m. This is a substantial scheme beyond what would normally be expected for LSP schemes, suggesting that more fundamental remodelling and resignalling, or possibly major curve realignment

on the section between Stalybridge and Diggle Jn, is involved. However there is insufficient data given in the report to enable us to evaluate the scheme content.

The Reading Station Upgrade scheme (Scheme 63) is repeated in the revised list, but it appears that the full project cost (£181.35m) is now quoted as Network Rail expenditure rather than the Network Rail contribution net of 3<sup>rd</sup> party expenditure (£47.0m) previously quoted. We assume that this is an error (though it reduces the overall enhancement budget by £134.35m). We note that the Birmingham New Street (Scheme 69) and Euston (new scheme) station upgrades are not quoted at overall cost. This needs to be clarified with Network Rail.

Network Rail has now specified a series of 6 major schemes for Routes 14 (South & Central Wales and Borders) and 15 (South Wales Valleys). These are stated to be subject to Welsh Assembly Government funding, and no scheme cost is quoted. Each scheme represents a major remodelling of key route sections (for example Wrexham – Chester and Barry – Cardiff Queen Street) and we would expect costs for the 6 schemes might exceed £300m in total, though Network Rail states that each scheme falls into its Medium Scheme (between £5m and £50m) category. We note that the Welsh Assembly currently has an annual rail and air improvements budget of £37.5m per annum until 2008-9, which if carried forward at its current rate would provide *total* funding of £187.5m in CP4, covering all revenue and capital support for both transport modes.

Of the other new schemes, minor or medium expenditure is concentrated on Routes 17 (West Midlands), 19 (Midland Main Line & East Midlands), 20 (North West Urban), and 23 (North West Rural). A brief review of all the schemes suggest that, given the very limited information available, costs appear to be consistent with our understanding of project scope.

Only 4 schemes (all on Route 19) are above GRIP Stage 0, with 2 (Platform extensions at Luton Airport Parkway and Loughborough, and MML LSP) being at GRIP 2. Given that they did not register in the submission 4 months earlier, it is slightly surprising that so much progress has been made in such a time for projects due for delivery in 2012 and 2011 respectively.

One additional dependency between projects has been noted. On Route 17 (West Midlands), a new scheme for electrification of the Sutton Park (Castle Bromwich – Walsall) line has been proposed, costed at £30m, for implementation in 2016 (actually in CP5). This is entirely dependent on the progression of Scheme 74, electrification from Nuneaton – Proof House, as without this project the electrification is useless. We also note that the scheme cost for 13 miles of route produces a cost per track mile of £1.07m, which is far more realistic than the costs for Scheme 74 (as previously noted above).

## 6.3 CONCLUSIONS

The November 2006 refresh document has not provided much more information capable of analysis by ORR. It is inevitable that schemes will change over time, especially at an early stage of development. However, the previous comments on scheme definition still apply. At a very early stage a project should be defined at least by required outputs and basic scope, and this information should have been submitted in support of the expenditure summary. In this respect, the refresh document carried less information on each project than the original ISBP list.

The reduction in stated GRIP Stage (between the original ISBP list and the ‘refresh’ issue) for a large number of projects is a significant concern. It should not be possible to reduce GRIP stage given that expenditure has been incurred and knowledge gained to achieve the previous stage. It is possible that the reduction represents a re-evaluation by Network Rail of the stage of development, and that a more

pragmatic view has now been taken. Given that the majority of reductions have occurred in projects now stated to be at GRIP 0, this does however significantly reduce the confidence that ORR can place in the original analysis provided by Network Rail. This suggests that a more thorough final project review is required than originally envisaged, as the quality of base data so far made available is insufficient to produce reasonable levels of confidence.

Data provided so far is still inconsistent, with mismatches again noted on electrification costs, and station upgrades. As before, data produced by different route teams does not always appear to be provided on a consistent basis. We would suggest that a meeting should be held between ORR and Network Rail within the next month to discuss the basis on which information is to be provided, and specifically to address some of the issues noted. Agreement is also needed on the variations in project information supplied as the year progresses.

## 7. FORWARD PLAN

We have identified concerns in the quality of data supplied by Network Rail to support its preliminary bid for enhancement expenditure from ORR. Network Rail is due to submit its formal bid for expenditure in Autumn 2007. We view it as essential that Network Rail reaches agreement before submission on the data it requires Network Rail to supply to support the bid, and agreement on the quality of the content. This section of the report sets out the basis on which we think Network Rail should supply data.

Projects should be monitored on the basis of their compliance with industry standard practice (in this case GRIP), and their appropriateness for the business concern they are supposed to address. To be able to review projects sufficient information must be available. The GRIP process provides the key to this, as it forms Network Rail's internal project review and control mechanism. We therefore believe that project submissions should be tied to the GRIP required outputs. Provided Network Rail is managing projects in compliance with the process, this will simplify the burden of data requirements.

At high level, we believe that the basis of general data supplied by Network Rail should be expanded beyond the format provided in the original June ISBP Project List. The summary list is essential to allow high-level comparisons to be made. However, the list does not contain enough data to properly understand the project, and the following information should be added for each project to make it more informative:

- A clear statement of client requirements, including identification of the funding party and level of commitment received
- A clear definition of the project deliverables, including track and signalling alterations, number of station platforms, miles of track, sites or other unit values, to allow high level comparisons to be made
- A brief list of key project risks
- Projected project spend year by year
- Key deliverable dates including completion of GRIP stages

It is accepted that the level of detail available will vary significantly in relation to the GRIP stage the project is at.

For all projects that are in GRIP Stage 2 or beyond, a Stagegate review should have taken place. The review will consider the fitness of the project and check that key documentation has been compiled. We would recommend that for all projects at GRIP stage 2 and beyond, ORR should require that Network Rail make these key documents available on the basis specified in our original remit:

- Major schemes All schemes
- Medium schemes sample selected by ORR
- Minor schemes random sample selected by ORR

For each scheme selected at GRIP Stage 2 or beyond, we would expect to be able to see the following documentation:

- Sponsor's Remit or supporting Client endorsed documents
- Details of third party funding arrangements
- Cost Estimate
- Project Plan
- Risk Register + QRA
- Options Assessment / Selection Report (GRIP 2/3)
- Consultation Strategy
- Concept design details

For schemes at GRIP stage 0 or 1, we would expect that Network Rail should be able to provide at least the following:

- Sponsor's Remit or supporting Client endorsed documents
- Details of third party contributions
- Outline or notional Cost Estimate
- Outline Project Plan
- Concept design

The above information would be sufficient for ORR to be able to evaluate whether the project would be likely to achieve the stated objectives, represented an efficient solution set against standard industry practice, and whether risks had been properly captured. This is in line with the original remit set to Scott Wilson Railways.

To reach agreement on this, we would recommend that ORR organise a workshop with Network Rail by the end of February. This should consider the findings of the work complied by both consultants, and agree the standard format for listing schemes, and the specific data required for Major, Medium and Minor schemes. This will allow Network Rail to identify any logistical issues relating to the provision of information, as well as providing ORR to explain what information it needs and the analysis it intends to carry out to support its overall funding conclusion.

Finally, the meeting can agree the timescale for provision of data, as well as the methodology of handling changes to the status of the list as projects develop and are either cancelled or replaced.

## 8. RECOMMENDATIONS

To be able to properly evaluate the content of each project, Network Rail should be required to provide key project outputs in line with the GRIP process. We believe that this is the only sensible way to ensure that projects are properly constituted, and that cost estimates and timescales are both realistic and appropriate. Ideally, Network Rail should be required to provide for each Major Project (and a sample of other projects determined by ORR) the following data:

- Sponsor's Remit or supporting Client endorsed documents
- Cost Estimates
- Project Plan
- Risk Register + QRA from GRIP 2
- Options Assessment / Selection Report (GRIP 2/3)
- Consultation Strategy
- Concept design details

This data should be based on the information pack prepared for the last GRIP Stagegate review, together with a brief note of key issues which have arisen in the current GRIP period and which support the data provided in the enhancement project list.

We would recommend that ORR hold a workshop with Network Rail by the end of February to discuss and agree the data it requires to be submitted in support of the enhancement budget bid.

In the absence of such data, the submission by Network Rail has to be treated with caution, as our initial investigations have revealed a number of inconsistencies and mismatches which do not provide confidence in the ISBP enhancement project list supplied as part of Network Rail's ISBP submission.