

**Network Rail  
CP4 Delivery Plan 2009  
Enhancements programme:  
statement of scope, outputs  
and milestones**

March 2009



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## Introduction

This document sets out our enhancements plan for CP4. For each enhancement programme funded through ORR's final determination it sets out:

- our obligations consistent with the final determinations;
- the proposed scope of the programme or project;
- the outputs that the scope is intended to support;
- key assumptions and interfaces; and
- milestones.

This document also includes a definition of the programme of "on network works" we are expecting to deliver in CP4 in support of the Crossrail project, subject to completion of the proposed funding arrangement and protocol. The project is therefore assumed to be delivered for the purposes of this plan.

The document does not provide such a statement for all enhancements funded outside of the review. These are termed third party schemes. The volume of third party enhancements we might reasonably expect to deliver in CP4 is described in the CP4 Delivery Plan document. These programmes are subject to separate contractual arrangements and funding agreements.

## Route plans

This document should be read in conjunction with the route plans which provide further information on a route basis including the assumed operational plans in CP4, depot and stabling options, renewals expenditure and volumes and key third party projects.

## Operational plans

We have worked with train operators to agree the operational plans to meet the England and Wales High Level Output Specification capacity metrics. These operational plans are described in the route plans and, where relevant, summarised in the project definition statements in this document.

## Rolling stock, depots and stabling

The default assumption is that in CP4 the existing rolling stock type will operate on the same routes as they do today. Where it has been agreed with train operators that a different assumption should be adopted then this is stated in the key assumptions section of the project definition sheet. Further information on rolling stock assumptions is provided in the route plans.

With regard to depot and stabling proposals in CP4, most funding for additional capacity to support the introduction of more rolling stock is outside the funding provided to us. There are two specific exceptions to this related to the Northern franchise. We continue to work with train operators and funders to develop an agreed depot and stabling strategy for CP4. The current options under consideration for stabling and depot are identified in the route plans.

## Network Rail's obligations

In delivering the enhancement programme funded from the periodic review, we have flexibility to determine the most cost-effective way of delivering the outputs. In terms of the enhancements programme funded through the review, we have distinguished between different types of obligation:

- a number of projects are specified in the HLOSs including the Thameslink Programme, Access for All, King's Cross redevelopment, Birmingham New Street, Reading station area redevelopment, projects on the West Coast, Airdrie to Bathgate and Glasgow Airport Rail Link. Our obligation is to deliver the stated scope for each of the projects;
- we have been provided with a number of funds in CP4 such as the Network Rail Discretionary Fund, National Stations Improvement Programme, Strategic Freight Network funds, and the CP4 Performance Fund. Our obligation is to deliver schemes authorised to draw down from these funds. Where schemes have already been allocated funding we have identified these in the document. Further schemes will be allocated funding as we progress through CP4 and the plan will be updated accordingly;
- we have worked with train operators to agree an operational plan that, if implemented, would deliver the England and Wales HLOS capacity metrics. We have included in our enhancements plan the programmes and projects that we believe are necessary to facilitate these operational

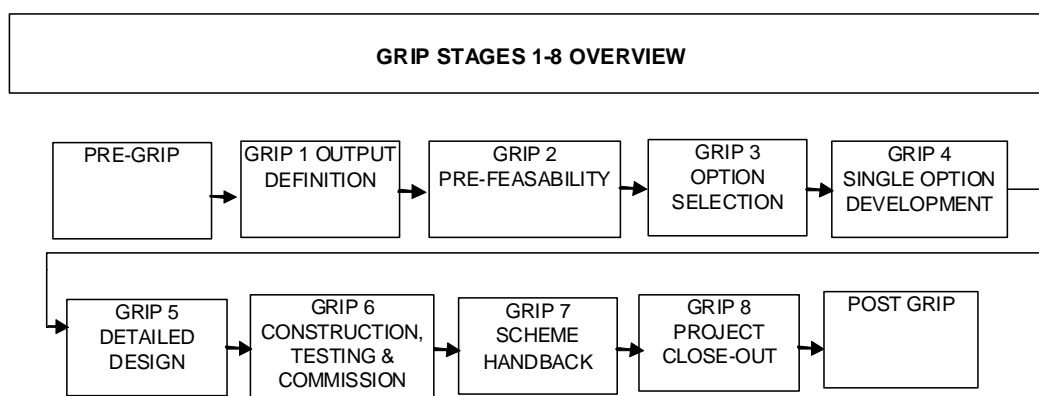
plans. Our obligation is to deliver the necessary infrastructure to facilitate the operational plans; and

- we have received funding for schemes that, although not required to meet the HLOS outputs, are justified on wider criteria including value for money. The schemes are defined by ORR and our obligation is to deliver these schemes.

At the start of each project definition we have provided a statement of our obligation.

### Project development

Our projects are developed through the Guide to Railway Investment Projects (GRIP) framework. The constituent projects within the programmes for CP4 are at varying stages of development within this framework. The final specification for each project and the construction plan are not confirmed until completion of GRIP stage 4.



Projects are being progressed to develop single option definitions and to allow value management reviews to be undertaken. Where there is the potential need for more complex work, projects are being developed to a more advanced GRIP stage in order to inform decision making. More straight-forward schemes require less development work to get a similar level of confidence regarding the potential costs and to examine value management opportunities. At sites with particularly high cost forecasts relative to the available funding, more detailed reviews are required. This approach is reflected in the individual project milestones included in this document.

We have included in our plan, where appropriate, dates by which we will be able to commit to definitive scope and timescales for projects which require further development work and to provide further opportunity for consultation with operators.

### Project delivery

Each project has a set of key dates and milestones. The dates are all calendar year dates. The dates represent the completion date for each activity or milestone except where dates are defined specifically as commencement dates. Key milestones are:

- GRIP 3 completion, where the single option for the project is chosen;
- GRIP 4 completion, when scope will become more detailed; and
- GRIP 6 completion, once construction is complete the works can, in the majority of cases, be commissioned and taken into use. It is generally at this stage, rather than at the end of GRIP 8, when the project benefits will be realised.

For some schemes the project needs to complete further development work before a full set of milestone dates can be provided. The plan will be updated accordingly.

We will continue to refine our delivery programme recognising the need to balance:

- achievement of our obligations and the outputs within the control period;
- alignment with customer and funder delivery programmes for rolling stock and service change introduction dates;

- the impact of the construction programme on the operational railway and the need to minimise disruption to train services;
- efficient delivery of the overall capital investment programme including the asset renewals programme through exploitation of synergies;
- resource and capability constraints; and
- the development and delivery timescales.

Any material changes to the delivery milestones, and in particular, output change dates will be subject to consultation and change control.

### **Ongoing engagement with our customers**

We will work with our customers to ensure that they are involved in the ongoing development of the programmes and projects. The key interface within Network Rail for the ongoing development of the overall plan for each route is with the Route Planning team and, in particular, the Principal Route Planners.

Within Network Rail's project development framework there are three key roles:

- the client is responsible for the business need, defining the output to be delivered and is accountable for identifying funding and providing the remit for the sponsor;
- the sponsor acts on behalf of the client(s), representing their interests, defining deliverables, securing funding authority and providing the remit for the project manager; and
- the project manager is responsible for development and delivery of the project consistent with the remit.

For most of the enhancement schemes the route planning team fulfils the role of internal client. This includes projects related to the achievement of the HLOS capacity metrics. A key element of this role is to remit sponsors to develop the necessary infrastructure schemes to support the operational plans.

The established Route Investment Review Group meetings provide a regular forum at which to monitor and discuss overall delivery of the CP4 Delivery Plan with our customers. They will, where necessary, be supplemented by programme and project meetings to discuss specific project issues such as scope, timing of milestones, possessions plans and alignment with rolling stock proposals. Such fora already exist for a number of large-scale projects, such as the Thameslink programme, which requires significant customer participation for it to be successfully implemented.

### **Monitoring and change control**

We will monitor delivery of our obligations and report progress on a routine basis to our customers and stakeholders. As we refine our plans, we will consult customers on changes to the plan and seek their endorsement to material changes. We will record changes to the plan on our website with a clear audit trail showing how the change was agreed or decided.

Certain projects have bespoke change control arrangements in place, such as the Thameslink programme. For material changes to other elements of the plan the following mechanisms will apply:

- defined enhancement funds: industry governance processes for funds, such as the National Stations Improvement Programme and the Strategic Freight Network, will be used to agree changes and ORR will be notified;
- schemes required to meet HLOS capacity metrics: proposed changes to the schemes will be subject to consultation with affected operators and funders. We will provide ORR with the results of this consultation and analysis to demonstrate the proposal is consistent with the achievement of the HLOS capacity metrics. ORR will approve the change if it is satisfied that it meets the HLOS requirements, unless it believes there are legitimate grounds for refusing the change based on objections from consultees; and
- other enhancement projects: proposed changes to the schemes will be subject to consultation with affected operators and funders. We will provide ORR with the results of this consultation. ORR will approve the change if it is satisfied that it is consistent with the principles on which it was originally included in the determination, unless it believes there are legitimate grounds for refusing the change based on objections from consultees.

### **Funding packages and expenditure limits**

In managing our enhancement programme for CP4 and the need to deliver the required outputs within the funds available, we have defined work packages based on their contribution to the outputs required and the synergies and dependencies between projects. The grouping of projects into packages therefore in many cases covers a common geographical area.

Within the packages of projects our obligations may be different for each project. For instance the package of projects on the East Coast Main Line includes projects defined by ORR that we must deliver and also projects where we have flexibility to determine if they are the most cost-effective way of delivering the operational plans that meet the HLOS capacity metrics.

The purpose of grouping these projects in this way is to help us to manage the delivery of the outputs within the funding available at a programme-level rather than at an individual project-level. We have used this packaging to create expenditure limits within which the packages of projects must be managed to ensure we have an affordable portfolio of projects.

Set out below are the expenditure limits we have set for each of the programme packages to deliver our obligations within the funding available. The expenditure profile reflects the current plan for each project but constrains the available funding to that provided for within the final determinations.

There are two exceptions to this approach to setting expenditure limits. The first is the King's Cross project where we have assumed that given the advanced stage of the work there is limited opportunity to reduce the cost of the project to within the funding made available. The forecast cost of the project in CP4 is nearly £40 million above the funding provided by the final determinations (in 2009/10 prices). We have included the total forecast cost of the project in the plan. The funding for this is offset by a reduction in projected expenditure on the operational property renewals programme in CP4.

The second exception is the WCML committed schemes package. The forecast expenditure for this package of projects in CP4 is £252 million (in 2009/10 prices) less than the funding provided for in the review. This is a consequence of our re-assessment of the delivery programme and the timescales required to obtain Transport and Works Act powers for the Stafford / Colwich re-modelling project. We recognise the need to carry forward this under spend to CP5 to support delivery of the project in the next control period.

For the King's Cross, Reading and North London Line projects, agreed renewals funding associated with these works has been added to the enhancements funding in order to give a single funding stream for each project.

Currently, the forecast aggregate cost of the projects in CP4 of the portfolio is significantly in excess of the funding available. The packaging of the projects allows us to examine at a package-level the opportunities to prioritise projects, and identify efficiencies in terms of costs, scope and delivery, and to manage the overall portfolio in a way that allows us to control costs and to deliver the outputs within the funds available. This will be done in close collaboration with our customers and the packaging of projects should facilitate this dialogue.

The programme with the most significant gap between the funding available and the anticipated final cost is the programme to support the train lengthening proposals in London and the south east. There is currently a funding shortfall of approximately £210 million in 2009/10 prices. However, we are developing these plans and have not provided for the additional current cost estimate in this plan since we intend to manage within the funding available.

In Scotland, ORR will undertake a specific ex post efficiency assessment on GARL, Borders and Glasgow to Kilmarnock to determine the value of expenditure for which we receive funding.

**CP4 enhancements – expenditure limits**

<b>Delivery Plan (£m 09/10 prices)</b>	<b>09/10</b>	<b>10/11</b>	<b>11/12</b>	<b>12/13</b>	<b>13/14</b>	<b>CP4 Total</b>
<b>England &amp; Wales</b>						
Network Rail Discretionary Fund	50	50	50	50	50	248
National Stations Improvement Programme	22	18	18	21	21	99
Intercity Express Programme	8	24	60	92	90	275
Strategic Freight Network	30	46	38	50	55	220
Performance Fund	22	18	19	20	21	101
Seven day railway	0	52	53	55	56	217
Safety and Environment rollover	97	14	5	0	0	116
CP5 development fund	2	4	9	15	24	53
Access for All	49	43	47	49	45	232
King's Cross	126	106	72	11	14	329
Thameslink Programme	541	598	756	517	501	2,913
Birmingham New Street Gateway project	1	2	16	85	31	135
East Coast Main Line overhead line electrification	2	6	9	10	10	37
St Pancras - Sheffield linespeed improvements	5	30	30	2	0	67
Nottingham resignalling	0	1	1	8	0	11
North London Line capacity enhancement	20	19	24	3	0	67
Station security	5	3	3	4	3	18
Crossrail and Reading*	45	91	146	139	93	514
Train lengthening - southern	28	68	98	109	47	350
Power supply upgrade	12	23	32	35	29	131
Southern capacity	3	7	6	13	16	45
East Coast Main Line improvements	12	52	133	177	183	557
Western improvements programme	32	41	10	6	5	95
West Coast Main Line committed schemes	25	56	129	105	180	495
Midlands improvements programme	6	13	16	23	25	83
Northern urban centres - Yorkshire	8	27	34	19	0	88
Northern urban centres - Manchester	4	14	22	26	20	87
Liverpool – Leeds linespeed improvements	1	6	8	9	6	30
<b>Total England and Wales</b>	<b>1,155</b>	<b>1,433</b>	<b>1,846</b>	<b>1,653</b>	<b>1,525</b>	<b>7,612</b>

\* The amounts shown here only include the Reading element of the integrated Crossrail and Reading programme since Crossrail is not funded through the periodic review.

<b>Delivery Plan (£m 09/10 prices)</b>	<b>09/10</b>	<b>10/11</b>	<b>11/12</b>	<b>12/13</b>	<b>13/14</b>	<b>CP4 Total</b>
<b>Scotland</b>						
Airdrie – Bathgate	151	50	1	0	0	202
Glasgow Airport Rail Link	40	54	47	14	0	155
Borders Rail	0	0	1	1	1	3
Glasgow to Kilmarnock	15	0	0	0	0	15
Tier 3 project development	3	3	3	2	2	14
Scottish small projects	4	4	4	4	4	21
<b>Total Scotland</b>	<b>214</b>	<b>111</b>	<b>56</b>	<b>21</b>	<b>8</b>	<b>410</b>

<b>Grand total</b>	<b>1,369</b>	<b>1,544</b>	<b>1,902</b>	<b>1,675</b>	<b>1,532</b>	<b>8,022</b>
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The expenditure limits for each package are subject to further refinement. As projects are developed and delivered we will manage the allocation of available funding through internal, Network Rail change control.

### The programme packages

In the next section of this document we set out:

- a definition of each work package; and
- a definition of each constituent project defining any project-specific obligations, project scope, outputs, significant interfaces, key assumptions and project activities and milestones.

The packages are summarised in the tables below.

England & Wales		
Programme – funds	Constituent projects	ID no.
Network Rail Discretionary Fund (NRDF)	Programme to be confirmed during CP4. Candidate schemes have been identified.	1.00
National Stations Improvement Programme (NSIP)	Stations within the programme are determined by cross-industry local delivery groups.	2.00
Strategic Freight Network (SFN)	Felixstowe Nuneaton freight capacity	3.01
	Southampton to Basingstoke W10 diversionary route	3.02
	Channel Tunnel – south of London route fund	3.03
	In-fill gauge projects fund	3.04
	Train lengthening projects fund	3.05
Performance fund	Scope of work still to be determined during CP4. Development of proposals being undertaken with train operators.	4.00
Seven Day Railway	Scope of work still to be determined during CP4. Prioritisation of proposals to be undertaken, overseen by industry governance group.	5.00
CP5 development fund	Candidate schemes to be determined during CP4.	6.00
Safety and Environment (S&E) fund	Carry over of funding from CP3 for projects including level crossing closure, junction lighting and improved access points, and metering to improve energy efficiency.	7.00
Access for All	Stations selected by DfT and Transport Scotland as part of a rolling programme.	8.00

England & Wales		
Programme – major projects	Constituent projects	ID no.
King's Cross	Single integrated project	9.00
West Coast Main Line committed schemes	Bletchley remodelling project	10.01
	WCRM traction power supply upgrade	10.02
	Stafford / Colwich remodelling project	10.03
Thameslink	Programmes of work related to delivery of key outputs 0, 1 and 2.	11.00
Intercity Express Programme (IEP)	Programmes of work on the East Coast and Great Western routes to facilitate introduction of IEP rolling stock.	12.00
Crossrail and Reading	Crossrail	13.01
	Reading area redevelopment	13.02
	Reading southern platforms	13.03
Birmingham New Street	Single integrated project	14.00

<b>England &amp; Wales</b>		
<b>Programme – defined outputs</b>	<b>Constituent projects</b>	<b>ID no.</b>
Train lengthening - southern	Route 3 - Waterloo International integration	15.01
	Route 6 - 12-car capability on the Tilbury Loop and Ockendon Branch	15.02
	Route 5 - West Anglia outer 12-coach trains	15.03
	Route 3 - 10-car south west suburban railway	15.04
	Route 3 - Clapham Junction station capacity and platform lengthening	15.05
	Route 2 - suburban area 10-car operations to Victoria and London Bridge	15.06
	Route 1 - 12-car operations: Swanley to Rochester route	15.07
	Route 1 - 8-car operations: Maidstone East line	15.08
	Route 1 - 6-car operations: Victoria to Bellingham route	15.09
	Route 1 - 12-car operations: Hayes and Sevenoaks (stopping) services	15.10
	Route 1 - 12-car operations: Sidcup and Bexleyheath routes	15.11
	Route 1 - 12-car operations: Greenwich and Woolwich route	15.12
	Route 1 - 12-car operations: Dartford to Rochester including Gravesend	15.13
Power supply upgrade	Route 1 - Power supply enhancements	16.01
	Route 1 - New Cross enhancement to power supply	16.02
	Route 2 - Power supply enhancements	16.03
	Route 3 - Power supply enhancements	16.04
	Route 5 - Power supply enhancements	16.05
	Route 6 - Power supply enhancements	16.06
	Route 7 - Power supply enhancements DC regeneration	16.07 16.08
Southern capacity	Route 2 - Gatwick Airport remodelling and passenger capacity	17.01
	Route 2 - East Croydon passenger capacity scheme	17.02
	Route 5 - Seven Sisters improved access	17.03
East Coast Main Line improvements	Route 8 - Capacity relief to the ECML (GN/GE Joint Line)	18.01
	Route 8 - Peterborough station area capacity enhancements	18.02
	Route 8 - Alexandra Palace to Finsbury Park 3rd Up line project	18.03
	Route 8 - Finsbury Park – Alexandra Palace 3 <sup>rd</sup> Down line improvements	18.04
	Route 8 - ECML level crossings	18.05
	Route 8 - Hitchin grade separation	18.06
	Route 8 - York Holgate Junction 4th line	18.07
	Route 8 - Shaftholme Junction re-modelling	18.08
	Route 8 - Moorgate branch improvements project	18.09
Route 8 - FCC train lengthening	18.10	
ECML OLE	Route 8 - To be delivered as part of the renewals programme	19.00
St Pancras - Sheffield linespeed improvements	Route 19 - Stand alone scheme	20.00
Nottingham resignalling	Route 19 - To be delivered as part of the renewals programme	21.00
Midlands improvements programme	Route 17 - Bromsgrove electrification	22.01
	Route 17 - Redditch branch enhancement	22.02
	Route 16 / 17 – line speed improvements: Wrexham to London Marylebone	22.03
	Route 16 - Chiltern train lengthening	22.04
	Route 17 - Train lengthening	22.05
	Route 19 - East Midlands train lengthening	22.06

<b>England &amp; Wales</b>		
<b>Programme – defined outputs (continued)</b>	<b>Constituent projects</b>	<b>ID no.</b>
Northern urban centres (a) Yorkshire	Route 10 - Capacity improvements (Leeds area)	23.01
	Route 11 - South Yorkshire - train lengthening	23.02
	Route 11 - South Yorkshire - stabling for Northern	23.03
Northern urban centres (b) Manchester	Route 20 - Platform lengthening	24.01
	Route 20 - Stabling for Northern	24.02
	Route 20 - Salford Crescent station redevelopment	24.03
	Route 20 - Capacity enhancement package	24.04
Northern urban centres (c) Liverpool – Leeds LSI	Route 10 / 20 – Trans-Pennine line speed improvements	25.00
Western improvements programme	Route 15 - Barry - Cardiff Queen St corridor	26.01
	Route 13 - Cotswold Line re-doubling	26.02
	Route 13 – Westerleigh Junction - Barnt Green linespeed increase	26.03
	Route 13 - Maidenhead and Twyford (relief lines)	26.04

<b>England &amp; Wales</b>		
<b>Programme - other</b>	<b>Constituent projects</b>	<b>ID no.</b>
North London Line capacity enhancement	Route 6 - Single integrated project	27.00
GSM-R coverage of freight only lines	To be delivered as part of the renewals programme	28.00
Station security	Enhanced station security at Network Rail's managed stations	29.00

<b>Scotland</b>		
<b>Programme - funds</b>	<b>Constituent projects</b>	<b>ID no.</b>
Tier 3 project development	Schemes to be developed are to be agreed with Transport Scotland	30.00
Small projects fund	Candidate schemes to be determined during CP4	31.00

<b>Scotland</b>		
<b>Programme - specified</b>	<b>Constituent projects</b>	<b>ID no.</b>
Scotland projects	Route 24 / 26 - Airdrie - Bathgate	32.01
	Route 26 - Glasgow Airport Rail Link	32.02
	Route 24 - Borders Rail	32.03
	Route 26 - Glasgow to Kilmarnock	32.04

<b>Scotland</b>		
<b>Programme - other</b>	<b>Constituent projects</b>	<b>ID no.</b>
Other Transport Scotland Tier 3 schemes	EGIP, Highlands Main Line Improvements and New Rolling Stock projects	33.00

**England and Wales  
CP4 enhancement programme**

## Network Rail Discretionary Fund (NRDF)

### Network Rail's obligation

The fund is a mechanism for funding minor schemes which can either be linked to renewals or stand-alone schemes, which have a positive whole-industry business case. It is primarily aimed at schemes that will result in an increase in the capacity or capability of the network.

For a scheme to be eligible for this fund it must meet the following criteria:

- it provides a positive industry-wide business case in terms of the NPV; and
- the net cost of the scheme (i.e. the amount that will be drawn down from the NRDF) must not exceed £5 million, without the prior agreement of DfT.

Our obligation is to work with stakeholders to identify the best use of available funds and to deliver the schemes that are funded through NRDF. As part of the process of updating the CP4 Delivery Plan we will routinely provide a list of schemes authorised to draw down from the fund as we progress through the control period.

### Governance

The Head of Route Planning is the fund holder for NRDF. Authorisation of draw down and spend is as set out in Network Rail's Investment Regulations but schemes are required to have been supported at the appropriate Route Strategy Planning Group (Network Rail's internal cross-functional group where local investment opportunities are reviewed) and will generally have been discussed at Route Investment Review Group (at which Network Rail shares its forward renewals plans with TOCs and FOCs and discusses opportunities for enhancements to the network). This process involves consultation with the relevant train operators.

### Eligibility rules

Schemes with a total cost in excess of £5 million are eligible where additional funding is provided by Network Rail or others to ensure the draw down on the NRDF is within this limit.

The fund is not intended to support investments where the benefits to individual stakeholders are sufficient to warrant them funding the scheme directly. Therefore where the benefits of a scheme:

- will accrue wholly to a single third party, it would generally be funded as a third party scheme; or
- are sufficient for Network Rail to justify funding the scheme, we would be expected to fund it ourselves.

Approval from ORR is not required before an individual scheme is progressed. However, the independent regulatory reporters will assess a sample of schemes to ensure compliance with the criteria. It is therefore important that all relevant details relating to the scheme are retained as part of the project file. As ORR's acceptance criteria includes efficient delivery it is most important that the efficiency rigour that is applied to all stages of a renewal scheme are also applied to NRDF schemes.

Dialogue with ORR may be required where the implementation of a scheme would have an adverse impact on the profits or cash flow of an industry partner.

### Appraisal

The appraisal is based on a value for money assessment (using a methodology agreed with ORR and DfT) and considers the financial impact on each affected industry partner and the socio-economic benefits to society.

An outline (qualitative) appraisal of the likely value to be delivered by the scheme should be carried out as early as possible in the development of the scheme, no later than the completion of GRIP stage 1. A more detailed (usually quantitative) appraisal should be completed at the end of GRIP stage 3.

Schemes will be judged against a "hurdle rate" expressed in terms of a target Benefit to Cost Ratio and other criteria set from time to time to assist in the allocation of the available funding.

### **Draw down from the fund**

The amount that will be drawn down from the NRDF as a result of implementing the scheme (the scheme cost) is determined as follows:

- for stand-alone schemes, the scheme cost is that determined at the completion of GRIP stage 5 (including risk and contingency allowances and net of any third party contributions); and
- for enhancements linked to a renewal scheme the percentage of the overall scheme cost which is attributable to the enhancement is identified at GRIP stage 3. This percentage would then be applied to the actual completed scheme cost to determine the amount of NRDF funding required.

### **Schemes which can be funded by the NRDF**

It is expected that most schemes will involve incremental enhancements linked to renewals as this is likely to provide the greatest value for money. However, stand-alone enhancement schemes are also possible, including those part-funded by third-parties.

The fund can be used for improvement initiatives that deliver:

- improvements in train service performance that will benefit more than one party. This does not include initiatives that deliver sufficient schedule 8 benefits within a five year period to cover the scheme costs, as we would be expected to fund these schemes;
- reduction in train journey times, possibly as a result of line speed improvements. Schemes that reduce walking journey times at stations are also eligible. The latter can result from new entrances and exits to the station, which will be used by rail passengers;
- station facilities improvements such as providing waiting rooms, shelters and customer information systems. The benefits are attributed to the passengers who board or interchange at the station;
- platform lengthening (when part of a larger capacity change scheme); and
- enlargement of freight capability in a specific area for which there is specific demand.

This list is not intended to be exhaustive.

### **Schemes to be implemented in CP4**

Candidate NRDF schemes are identified in the route plans. A list of schemes authorised to draw down from the fund will be provided as we progress through the control period.

## **National Stations Improvement Programme (NSIP)**

### **Network Rail's obligation**

The NSIP programme is a joint industry initiative funded primarily by the DfT. The five year programme aims to deliver £165 million worth of station improvements to a minimum of 150 medium sized stations in England and Wales (excluding Network Rail managed stations) through CP4.

Our obligation is to work with stakeholders to identify the best use of available funds and to deliver the proposed programme of station works developed by the cross-industry local delivery groups.

### **Objective**

The core objective of the NSIP programme is to achieve a noticeable improvement to the passenger perception of stations by focusing on high footfall, low passenger satisfaction stations. A wider aim of the programme is to develop a more effective, coordinated approach for the planning and delivery of activities at stations by all stakeholders, thereby improving efficiency and value for money in station investments.

### **Governance**

The Director, Operations and Customer Service is the fund holder for NSIP. Authorisation of draw down and spend is as set out in Network Rail's Investment Regulations.

### **Scope of works**

In order to ensure that the NSIP programme delivers lasting improvements, a design guide was produced. The design guide makes recommendations of the types of works which should be considered in order to ensure that the core objective of the NSIP programme is achieved. Examples of the types of works recommended for the NSIP programme include:

- customer comfort, security and safety e.g. good standard of seats, good standard of station canopies, adequate CCTV;
- customer information and way finding including core station signage, concentrated passenger information and help points and clocks;
- customer facilities including customer toilets, retail facilities and customer waiting shelters; and
- introduction of modular assets.

Any works that are being undertaken as part of the NSIP programme of works must be incremental and not part of the TOCs' or Network Rail's wider obligations.

### **Significant interfaces**

Each Local Delivery Group (LDG), as part of the NSIP programme, will attempt to maximise third party funding.

Each LDG will integrate with, and gain synergies from, other programmes of works e.g. Access for All, 3<sup>rd</sup> party works, commercial developments, other projects (e.g. Thameslink), TOC franchise commitments and renewals to deliver the right and efficient overall solution for the station.

Each LDG has its own specific programme.

The current list of stations being considered for NSIP funding is shown below, by Station Facility Owner (SFO).

## 2.00 Programme definition – National Stations Improvement Programme

<b>SFO</b>	<b>Stations</b>
Arriva Trains Wales	Abercynon, Abergavenny, Aberystwyth, Bangor, Barry Dock, Bidston, Caldicot, Cardiff Central, Cardiff Queen Street, Carmarthen, Chester, Dinas Powys, Dinas Rhondda, Frodsham, Haverfordwest, Helsby, Hereford, Heswall, Llanbradach, Llandudno Town, Llanelli, Llwynypia, Ludlow, Milford Haven, Nantwich, Neston, Penrhiwceiber, Pontypool & New Inn, Pontypridd, Port Talbot Parkway, Porthmadog, Pyle, Quakers Yard, Phyl, Severn Tunnel, Shrewsbury, Swansea High Street, Ton Pentre, Trefforest, Ty Glas, Wern, Whitland, Ystrad Rhondda.
Arriva Trains Wales (CIS locations)	Chepstow, Chirk, Church Stretton, Craven Arms, Dingle Road, Eastbrook, Gobowen, Hengoed, Leominster, Lydney, Maesteg, Mountain Ash, Pembrey and Burry Port, Pencoed, Pontyclun, Rhymney, Ruabon, Runcorn East, Tenby, Tonypany, Treorchy, Welshpool, Whitchurch.
C2C	Basildon, Chalkwell, Chafford Hundred, Limehouse, Ockendon, Shoeburyness, Southend East, Upminster.
Chiltern Railways	Aylesbury Town, Gerrards Cross, Leamington Spa, Princes Risborough, Warwick, Wendover.
EM Stagecoach	Alfreton, Burton on Trent, Derby, Kettering, Leicester, Long Eaton, Loughborough, Skegness.
First Great Western	Castle Carey, Cheltenham Spa, Chippenham, Didcot Parkway, Exeter Central, Exeter St Davids, Gloucester, Newbury, Newton Abbott, Penzance, Slough, Swindon, Truro, Westbury, Weston-super Mare.
First Capital Connect	Bedford, Finsbury Park, Flitwick, Harpenden, Haringey, Hatfield, Hitchin, Kentish Town, Leagrave, Mill Hill Broadway, Potters Bar, Royston, St Albans, Stevenage, Welwyn Garden City, West Hampstead.
London Midland	Berkhamsted, Bloxwich, Bloxwich North, Cannock, Hednesford, Kidderminster, Landywood, Milton Keynes Central, Rugeley Town, Tamworth, Telford, University, Watford Junction, Worcester Foregate Str.
Merseyrail	Hall Road, Hooton, Kirkdale, Liverpool Central, Ormskirk, Rice Lane, Rock Ferry, Walton, Waterloo.
National Express	Berwick upon Tweed, Darlington, Grantham, Newark, Peterborough, Retford.
National Express - East Anglia	Billericay, Bishops Stortford, Brentwood, Mark Tey, Cambridge, Chelmsford, Colchester, Gidea park, Harold Wood, Ilford, Rayleigh, Romford, Seven Sisters, Southend Victoria, Waltham Cross, Wickford, Witham, Wood Street.
Northern	Accrington, Altrincham, Blackburn, Bolton, Bradford Interchange, Halifax, Harrogate, Hartlepool, Huyton, Manchester Oxford Road, Manchester Victoria, Mexborough, Rochdale, Skipton, Wakefield Kirkgate.
South West Trains	Andover, Basingstoke, Clapham Junction, Earlsfield, Eastleigh, Fareham, Farnham, Fleet, Fratton, Haslemere, Havant, Hershaw, Honiton, Hounslow, New Malden, Putney, Salisbury, Southampton Central, Staines, Surbiton, Twickenham, Vauxhall, Wandsworth Town, Weymouth, Wimbledon, Winchester, Wokingham.
Southeastern	Ashford International, Brixton, Bromley South, Canterbury West, Chatham, Crayford, Dartford, Denmark Hill, Deptford, Dover Priory, Folkestone Central, Gillingham, Gravesend, Lewisham, Margate, Northfleet, Paddock Wood, Rochester, Sevenoaks, Sittingbourne, Strood, Swanley, Tonbridge, Tunbridge Wells, Waterloo East, Woolwich Arsenal.
Southern	Ashted, Balham, Crystal Palace, East Grinstead, Gipsy Hill, Hassocks, Horsham, Norbury, Norwood Junction, Peckham Rye, Queens Road Peckham, Selhurst, Smitham, Streatham Hill, Uckfield, West Croydon, West Norwood.
TransPennine Express	Barrow in Furness, Dewsbury, Grimsby, Huddersfield, Middlesbrough, Northallerton, Scarborough, Selby, Salybridge, Warrington Central.
Virgin Trains	Carlisle, Preston, Runcorn, Wigan, Wolverhampton.

## Strategic Freight Network (SFN)

### Network Rail's obligations

Our obligation is to work with stakeholders to identify the best use of available funds and to deliver schemes that are funded by the SFN programme.

### Objective

The DfT announced in its HLOS (July 2007) funding to facilitate the implementation of a strategic freight network. The objective is to enhance the network used by freight trains and reduce conflict between freight and passenger traffic.

### Governance

The Head of Route Planning is the fund holder for SFN. Authorisation of draw down and spend is as set out in Network Rail's Investment Regulations but schemes are required to have been supported by the Strategic Freight Network Steering Group (SFNSG). This cross-industry group oversees the development of the SFN and consists of representatives from DfT, the Welsh Assembly Government, Transport Scotland, Freightliner, DB Schenker, GB Railfreight, DRS, the Freight Transport Association, Rail Freight Group and ATOC.

The SFNSG will oversee the prioritisation of schemes and allocation of funding for scheme development and delivery.

### Scope of works

The first stage of the SFN is defined as:

- capacity for 16 train paths per day from Ipswich to Peterborough; and
- W10 gauge clearance of a diversionary route between Southampton and Basingstoke.

Funding has been allocated for the delivery of the following:

- in-fill gauge schemes;
- schemes to enable running of longer freight trains; and
- a scheme to facilitate operation of freight trains south of London.

Freight studies will be commissioned and delivered as directed.

As part of the process of updating the CP4 Delivery Plan we will routinely provide a list of schemes authorised to draw down from these funds as we progress through the control period.

### **Project definition: Felixstowe to Nuneaton freight capacity scheme**

#### **Network Rail's obligation**

Our obligation is to deliver the scope of works described below.

#### **Scope of works**

The scope of works is to be determined in the GRIP stage 3 study which will be produced in March 2009. It is anticipated that it will include the following works, although this is to be confirmed by further development work:

- line speed or capacity improvements in the Bury St Edmunds area;
- capacity improvements between Soham and Ely;
- Peterborough area loop capability; and
- level crossing mitigations between Ipswich and Peterborough.

#### **Outputs**

The principal output expected in CP4 is capacity to enable 16 freight trains per day to operate in each direction between Ipswich and Peterborough. Active provision will be made for 775m trains.

#### **Significant interfaces**

There are interfaces with:

- the HPUK Ltd scheme to provide lengthening at Ipswich Yard and double Felixstowe branch line capacity;
- Peterborough station remodelling;
- Leicester area signalling renewals;
- Midland Main Line line speed improvements;
- Leicester-Trent slow line speed improvements;
- Peterborough Nuneaton gauge (W10); and
- Nuneaton North Chord.

#### **Key assumptions**

A Transport Works Act (TWA) is likely to be required at multiple points along the route including Ipswich (Bacon Factory Curve), Ely (if double tracking is pursued) and Syston-Wigston for provision of a grade separated junction at Wigston.

#### **Activities and milestones**

The GRIP stage 3 study is due to be complete in March 2009. The project will be implemented by March 2014.

**Project definition: Southampton to Basingstoke W10 diversionary route**

**Network Rail's obligation**

Our obligation is to deliver the scope of works described below.

**Scope of works**

The project will be at GRIP stage 3 in March 2009. It is anticipated that the works will include the following, although this will be confirmed during further development work:

<b>ELR</b>	<b>From</b>	<b>To</b>
BML2	Millbrook 80m 27c	Redbridge Junction 81m 76c
RTJ1	Redbridge Junction 23m 31c	Romsey 18m 16c
RTJ2	Romsey 80m 35c	Laverstock South Junction 95m 61c
LAV	Laverstock South Junction 82m 39c	Laverston North Junction 82m 05c
BAE1	Laverstock North Junction 82m 05c	Worting Junction 50m 21c
ECR	Eastleigh East Junction 73m 35ch	Romsey 80m 35ch

<b>ELR</b>	<b>Structure</b>	<b>Proposed Solution</b>	<b>Mileage</b>
BAE1	Overbridge 144, St Johns Road	Track lower or bridge reconstruction	51m 48c
BAE1	Overbridge 146, Church Acre	Bridge reconstruction	52m 02c
BAE1	Overbridge 147, Dickers	Slue required, Up Line	52m 17c
BAE1	Overbridge 151, Dean	Bridge reconstruction	52m 51c
BAE1	Overton Station	Clear	55m 39c
BAE1	Overbridge 156, Foxdown	Track lower or bridge reconstruction	55m 58c
BAE1	Overbridge 157, Court Drove	Track lower or bridge reconstruction	56m 07c
BAE1	Overbridge 158, Northington Farm	Track lower or bridge reconstruction	56m 55c
BAE1	Overbridge 162, Taskers	Bridge reconstruction	57m 57c
BAE1	Overbridge 163, Frefolk	Bridge reconstruction	57m 75c
BAE1	Overbridge 164, Lunn	Bridge reconstruction	58m 16c
BAE1	Overbridge 167, Newbury Road	Bridge reconstruction	59m 00c
BAE1	Whitchurch Station	Canopy alteration required	59m 08c
BAE1	Overbridge 176, Apsley	Bridge reconstruction	61m 71c
BAE1	Overbridge 178, Wyke	Lower, slue, re-sleeper U/Lower, relay Down or bridge reconstruction or close	62m 55c
BAE1	Andover Station	Canopy works	66m 19c
BAE1	Overbridge 188, Weyhill Road	Track lower or bridge reconstruction	66m 55c
BAE1	Overbridge 193, Sarson Down	Bridge reconstruction	70m 16c
BAE1	Overbridge 204, Allington Road	Close or bridge reconstruction or track lower	76m 01c
BAE1	Overbridge 215, Burts	Bridge reconstruction	79m 45c

**3.02** Project definition – Southampton to Basingstoke W10 diversionary route

<b>ELR</b>	<b>Structure</b>	<b>Proposed Solution</b>	<b>Mileage</b>
BAE1	Overbridge 219, Broken Cross	Bridge reconstruction	80m 59c
RTJ2	Overbridge 40, New Road	Bridge reconstruction	90m 12c
RTJ2	Dean Station	Canopy alterations	88m 10c
RTJ2	Overbridge 33, Lockerly Green	Track lower or bridge reconstruction	86m 01c
RTJ2	Overbridge 29, Hat Hill Farm	Track lower or bridge reconstruction	84m 59c
RTJ2	Overbridge 25, Rookwood Copse	Close or bridge reconstruction	82m 11c
RTJ2	Overbridge 24, Lone Barn	Track lower or bridge reconstruction	81m 65c
RTJ2	Overbridge 23, Old Salisbury/Dukes Mead	Track lower or bridge reconstruction	81m 59c
RTJ2	Romsey Station	Canopy alterations	80m 47c
RTJ1	Overbridge 32, Ashfield	Track lower or bridge reconstruction	19m 27c
RTJ1	Overbridge 33, Four Lanes	Track lower or bridge reconstruction	19m 63c
RTJ1	Overbridge 34, Lee Drove	Close or track lower or bridge reconstruction	20m 26c
RTJ1	Overbridge 35, Coldharbour Lane	Bridge reconstruction	20m 53c
RTJ1	Overbridge 38, Belvers	Bridge reconstruction	22m 02c
RTJ1	Overbridge 40, Bournemouth Road	Minor Slue to get W10 + 50 or relay and slue to get W10 + 100	23m 19c

**Outputs**

The project will clear the diversionary route from Southampton to Basingstoke via Andover to W10 gauge.

**Significant interfaces**

Works will be planned to minimise disruption in conjunction with the W10 gauge clearance Southampton to West Midlands project.

**Key assumptions**

All works will be carried out by Network Rail under permitted development rights.

**Activities and milestones**

<b>Activity</b>	<b>Indicative date</b>
GRIP 3 authority	Q1 2009
Commencement of work on site	Q4 2010
Completion of work	Q1 2014

### **Project definition: Channel Tunnel south of London route fund**

#### **Network Rail's obligation**

Our obligation is to work with stakeholders to identify the best use of available funds and to deliver schemes that are funded by this programme. As part of the process of updating the CP4 Delivery Plan we will routinely provide a list of schemes authorised to draw down from the fund as we progress through the control period.

#### **Objective**

The fund is aimed at schemes that will be progressed as the first step towards the development of the CT3 route enabling Channel Tunnel traffic to go via Redhill, Reading and beyond.

#### **Governance**

The fund holder is the Head of Route Planning. Authorisation of draw down and spend is in accordance with Network Rail internal regulations but schemes are required to have been supported at the Strategic Freight Network Steering Group.

#### **Eligibility rules**

For a scheme to be eligible for this fund it must meet following criteria:

- it must provide a contribution to the development of the above route; and
- it must be consistent with the development of the Strategic Freight Network as defined in Section 5.6 and Map 15 of the Strategic Freight Network supporting document to the SBP update.

It is desirable that the schemes will provide re-routeing benefits. These will be measured with respect to the following criteria:

- improvement in traffic mix; and
- reduction in route mileage.

The total cost of the selected schemes to the SFN should not exceed the value of the fund. If third party contributions are available then the fund can exceed this value to the extent of the contributions, provided these contributions are committed before the end of GRIP stage 3.

Approval from ORR is not required before an individual scheme is progressed. However, the independent regulatory reporters will assess a sample of schemes to ensure compliance with the criteria. It is therefore important that all relevant details relating to the scheme are retained as part of the project file. As ORR's acceptance criteria includes efficient delivery it is most important that the efficiency rigour that is applied to all stages of a renewal scheme are also applied to SFN schemes.

Dialogue with ORR may be required where the implementation of a scheme would have an adverse impact on the profits or cash flow of an industry partner.

#### **Appraisal**

The appraisal is based on a consideration of costs and scoring system for benefits as outlined in Appendix B of the Strategic Freight Network supporting document for the SBP update in April 2008. Other criteria may be set from time to time to assist in the allocation of funding as agreed by the Strategic Freight Network Steering Group.

#### **Schemes to be implemented in CP4**

A list of schemes authorised to draw down from the fund will be provided as we progress through the control period. Further information will be provided by Q4 2009.

### **Project definition: In-fill gauge projects fund**

#### **Network Rail's obligation**

Our obligation is to deliver the schemes that are authorised to draw down from this fund. As part of the process of updating the CP4 Delivery Plan we will routinely provide a list of schemes authorised to draw down from the fund as we progress through the control period.

#### **Objective**

The fund is primarily aimed at schemes that will result in an increase in the W10 gauge (and wherever possible W12) cleared network in England and Wales.

#### **Governance**

The fund holder is the Head of Route Planning. Authorisation of draw down and spend is in accordance with Network Rail internal regulations but schemes are required to have been supported at the Strategic Freight Network Steering Group.

#### **Eligibility rules**

For a scheme to be eligible for this fund it must meet following criteria:

- the scheme must provide additional capacity for W10 / W12 traffic. This could be on a core or diversionary route; and
- the scheme must be consistent with the development of the Strategic Freight Network as defined in Section 5.6 and Map 15 of the Strategic Freight Network supporting document to the SBP update.

Wherever possible schemes will provide re-routeing benefits. These will be measured with respect to the following criteria:

- improvement in traffic mix; and
- reduction in route mileage.

The total cost of the selected schemes to the SFN should not exceed the value of the fund. If third party contributions are available then the fund can exceed this value to the extent of the contributions, provided these contributions are committed before the end of GRIP stage 3.

The fund is not intended to support investments where the benefits to individual stakeholders are sufficient to warrant them funding the scheme directly. Therefore where the benefits of a scheme:

- will accrue wholly to a single third party, it would generally be funded as a third party scheme; or
- are sufficient for Network Rail to justify funding the scheme, we would be expected to fund it ourselves.

Approval from ORR is not required before an individual scheme is progressed. However, the independent regulatory reporters will assess a sample of schemes to ensure compliance with the criteria. It is therefore important that all relevant details relating to the scheme are retained as part of the project file. As ORR's acceptance criteria includes efficient delivery it is most important that the efficiency rigour that is applied to all stages of a renewal scheme are also applied to SFN schemes.

Dialogue with ORR may be required where the implementation of a scheme would have an adverse impact on the profits or cash flow of an industry partner.

#### **Appraisal**

The appraisal is based on a consideration of costs and scoring system for benefits as outlined in Appendix B of the Strategic Freight Network supporting document for the SBP update April 2008. Other criteria may be set from time to time to assist in the allocation of funding as agreed by the Strategic Freight Network Steering Group.

#### **Schemes under consideration**

It is expected that most schemes will involve gauge enhancements to W10 to allow the carriage of 9'6" containers on conventional wagons. It is recommended that W12 gauge (which in many cases involves

only a small amount of incremental work over W10 clearance) is considered as a starting point when a structure is renewed on the routes chosen.

A number of schemes are currently being considered for funding from this source. The list below sets out the industry agreed prioritisation of these schemes. The funding is subject to confirmation that the scheme complies with the rules above:

- Water Orton to Doncaster via Castle Donnington, the Erewash Valley and Beighton;
- London to Peterborough via the Hertford Loop on the ECML;
- European gauge from Exchange Sidings near barking to terminals in the vicinity; and
- ECML north to Berwick upon Tweed.

### **Project definition: Train lengthening projects fund**

#### **Network Rail's obligation**

Our obligation is to deliver the schemes that are authorised to draw down from this fund. As part of the process of updating the CP4 Delivery Plan we will routinely provide a list of schemes authorised to draw down from the fund as we progress through the control period.

#### **Objective**

The fund is aimed at schemes that will increase the network on which longer freight trains can operate in England and Wales.

#### **Governance**

The fund holder is the Head of Route Planning. Authorisation of draw down and spend is in accordance with Network Rail internal regulations but schemes are required to have been supported at the Strategic Freight Network Steering Group.

#### **Eligibility rules**

For a scheme to be eligible for this fund it must meet following criteria:

- it must provide additional capability for the operation of longer trains, if possible to 775m in length; and
- it must be consistent with the development of the Strategic Freight Network as defined in Section 5.6 and Map 15 of the Strategic Freight Network supporting document to the SBP update.

It is desirable (but not essential) that the schemes will provide re-routeing benefits. These will be measured with respect to the following criteria:

- improvement in traffic mix; and
- reduction in route mileage.

The total cost of the selected schemes to the SFN should not exceed the value of the fund. If third party contributions are available then the fund can exceed this value to the extent of the contributions, provided these contributions are committed before the end of GRIP stage 3.

Approval from ORR is not required before an individual scheme is progressed. However, the independent regulatory reporters will assess a sample of schemes to ensure compliance with the criteria. It is therefore important that all relevant details relating to the scheme are retained as part of the project file. As ORR's acceptance criteria includes efficient delivery it is most important that the efficiency rigour that is applied to all stages of a renewal scheme are also applied to SFN schemes.

Dialogue with ORR may be required where the implementation of a scheme would have an adverse impact on the profits or cash flow of an industry partner.

#### **Appraisal**

The appraisal is based on a consideration of costs and scoring system for benefits as outlined in Appendix B of the Strategic Freight Network supporting document for the SBP update April 2008. Other criteria may be set from time to time to assist in the allocation of funding as agreed by the Strategic Freight Network Steering Group.

**Schemes under consideration**

It is expected that schemes will ensure that selected routes on the national network will be made capable of carrying longer trains from key origins to selected destinations.

A number of schemes are currently being considered for funding from this source. The list below gives two examples of these schemes. It is not exhaustive and the funding is subject to confirmation that the scheme complies with the rules above:

- Mendips to Acton; and
- Hope Valley to London.

A list of schemes authorised to draw down from the fund will be provided as we progress through the control period with further detail available Q4 2009.

## Performance Fund

### Network Rail's obligation

Our obligation is to deliver the schemes that are authorised to draw down from this fund. As part of the process of updating the CP4 Delivery Plan we will routinely provide a list of schemes authorised to draw down from the fund as we progress through the control period.

### Objective

The objective of the fund is to facilitate performance improvement activity to deliver performance levels beyond that anticipated to be achieved by our core asset management policies and enhancement projects in order to achieve the performance targets for PPM and Cancellations and Significant Lateness (CaSL). The fund relates to the achievement of the regulatory outputs for England and Wales.

### Governance

The fund holder is the Head of Operational Planning. Authorisation of draw down and spend is as set out in Network Rail's Investment Regulations. There are two key elements to the process for use of the funds:

- distribution of the fund to routes (plus a small central fund) as budget holders in relation to initiatives on each route and on behalf of operators; and
- creation of business cases by measuring the value of trains that achieve the PPM and / or CaSL thresholds.

Route teams will be responsible for management of the investment, prioritising activity towards key areas and services and coordinating work for lead TOCs. A positive business case is likely to form only part of the investment criteria and not all schemes with positive business cases will be implemented.

### Potential initiatives for 2009/10

A portfolio of initiatives is expected with a range of ease of application and benefits. Specific opportunity is expected to be taken to consider larger schemes or progress some analytical / data improvement work which may take longer to implement but will yield higher eventual benefits. Both opex and capex based schemes are applicable. The following list highlights potential initiatives (not prioritised) planned for delivery in 2009/10.

### Short term focus

- Localised cable theft and fatality reduction work;
- ARS improvements;
- autumn and weather mitigation;
- UPS and alert monitoring equipment;
- better equipment for response teams; strategic spares;
- staff training and competence;
- focussed component replacement;
- cable replacement before life expiry to reduce performance risk; and
- line speed improvements in depots.

### Longer term focus

In the longer term the focus will be on capital investment – e.g. fleet maintenance improvements, better placed accommodation and analysis and development of longer term solutions such as improved data, autumn effects and climate.

### Schemes to be implemented in CP4

A list of schemes authorised to draw down from the fund will be provided as we progress through the control period.

It is expected that projects to be implemented in 2009/10 will be agreed with train operators by 31 March 2009 as part of the Joint Performance Improvement Plan (JPIP) process.

## Seven Day Railway fund

### Network Rail's obligation

Our obligation is to deliver the schemes that are authorised to draw down from this fund. As part of the process of updating the CP4 Delivery Plan we will routinely provide a list of schemes authorised to draw down from the fund as we progress through the control period.

### Objective

The purpose of this fund is to provide incremental funding to provide investment and operating expenditure to make progress towards delivering the seven day railway concept. The precise output will evolve in light of further discussion with operators at a local level.

The possession disruption measures are new and there remains considerable uncertainty about the trajectories that can realistically be achieved. ORR will therefore need to assess whether the availability targets are reasonable based on actual results as CP4 progresses.

### Governance

The fund holder is the Head of Route Planning. Authorisation of draw down and spend is in accordance with Network Rail internal regulations.

The planning and implementation of the seven day railway project is organised on a line of route basis, with an Operations & Customer Services programme manager responsible for each route. The programme managers have worked at local level with TOCs and FOCs to define the type of network availability outputs which would meet their aspirations, and with colleagues in Maintenance and Infrastructure Investment to understand the types of interventions which would be required to deliver these aspirations.

This information has been captured in a portfolio of route remits. Indicative estimates for the costs of these enhancements are in the process of being calculated. However, it is already known (from the estimates received to date) that the total forecast cost will be higher than the funding available. A set of criteria has been agreed by the Industry Governance Group (the cross-industry group which includes TOCs, FOCs, ORR, DfT, Transport Scotland and Network Rail) for determining the suitability of enhancements and the prioritisation of funding for delivering the network availability outputs.

### Eligibility rules

The industry governance group will determine those routes (or sections of route) for which the seven day railway funds can be applied. National projects will demonstrate that they will provide particular benefits to those specific routes. Specific route based projects will demonstrate that they contribute to an improvement in the availability of the infrastructure as measured by the PDI-P (passenger possession disruption index) and at worst hold constant the PDI-F (freight possession disruption index).

Network Rail will undertake modelling, and provide a summary of the results of the modelling on each route, to demonstrate the effect the proposed changes will have on capacity, performance reliability and journey times for passenger and freight services and it must be demonstrated that the seven day railway proposals do not have any adverse material effect in any of these areas.

The aim is that no individual operator will be materially disadvantaged as the result of a proposed seven day railway project.

Some projects will have been assessed on the basis of delivering benefits in other areas (e.g. performance projects), but may also provide benefits towards the seven day railway. Seven day railway funds will not be used to support these projects. If the project scope is extended beyond the original scope and budget is provided for additional seven day railway benefits then the funds may be used for this.

Seven day railway funding will be available only where there is a systemic change in a methodology or process that brings long term sustainable benefits. Funding will not be permitted for one off projects that do not deliver longer term benefits.

Where funding is sought due to an increase in costs as a result of a change in possession arrangements then the evaluation will analyse the costs using the current access regime compared with a seven day

railway access regime. Seven day railway funding will not be considered for projects where the possession regime is determined as part of the normal consultation/negotiation process between Network Rail and the affected operators.

Funding will not be provided when the project can demonstrate it is self funded i.e. by offsetting all project costs against savings on performance/Schedule 4 payments.

### **Scope of works**

Securing some of the benefits relies on national initiatives which are already planned, such as changes to maintenance processes, modular track renewals and high output. Others require additional enhancement funding, and proposals now exist for all the routes as to the projects for which they would see this funding being used. The types of enhancements considered are:

- additional crossovers to facilitate bi-direction operation;
- infill bi-directional or Simbids signalling;
- installation of additional tracks (or upgrading of existing loops or sidings to passenger standard);
- provision of platform faces at stations that do not have platforms on all lines;
- minor capacity improvements (e.g. additional signal);
- changes to OLE sectioning to facilitate isolations for possessions;
- motorising ground frames;
- providing independent electrical feeds to depots;
- providing controls at level crossings for reverse direction running;
- additional lineside access points;
- junction lighting (to enable night-time inspections);
- new/additional plant required as a result of changing working methods/adjacent line operation;
- provision of protective warning systems (LOWs etc); and
- upgraded remote condition monitoring systems.

### **Schemes to be implemented in CP4**

A list of schemes authorised to draw down from the fund will be provided as we progress through the control period. We are currently developing a number of candidate schemes to GRIP stage 3. It will take approximately six months to develop the schemes to this GRIP stage, at which point greater definition of project proposals, including milestones and costs, will be provided.

## CP5 Development fund

### Network Rail's obligation

Our obligation is to deliver the schemes that are authorised to draw down from this fund. As part of the process of updating the CP4 Delivery Plan we will routinely provide a list of schemes authorised to draw down from the fund as we progress through the control period.

### Objective

The fund will be used to develop schemes which are considered likely to be required and funded for delivery during CP5 as part of the next periodic review (CP5).

### Governance

The Head of Route Planning is the fund holder for the CP5 Development Fund. Authorisation of draw down and spend is as set out in Network Rail's Investment Regulations. Schemes will be prioritised by Network Rail following discussion with customers and funders at the appropriate industry planning forums including the CP5 Planning Oversight Group and with DfT at the Joint Strategy Board. Qualifying schemes will generally have been discussed with DfT as part of the HLOS(2) development process or will be in support of joint industry activity to plan for CP5. The Head of Route Planning is responsible for maintaining a forward programme for disbursement of the fund to provide clarity on the use of the fund throughout CP4.

### Eligibility rules

The fund will be used to develop schemes not otherwise funded in CP4 through the PR08 settlement, and which are considered likely to be required, and funded for delivery primarily during CP5. The fund would generally cover early stage development costs and separate funding would generally be required for detailed design work and other significant costs such as TWA processes.

### Appraisal

CP5 Development fund schemes will be subject to the value for money test appropriate to the type of scheme under consideration.

### Schemes to be developed in CP4

A list of schemes authorised to draw down from the fund will be provided as we progress through the control period.

### Safety and Environment fund

#### Network Rail's obligation

Our obligation is to deliver the schemes that are authorised to draw down from this fund.

#### Objective

Network Rail's funding for CP3 included a fund for safety and environment enhancements to meet legal requirements. Our objective is to deliver the remaining schemes authorised from this fund/

#### Scope of works

However, recognising that some safety enhancement schemes initiated within CP3 would not be completed until CP4, the PR08 final determination includes a safety and environment roll-over fund of £116 million. This is for specific schemes started in CP3 and programmed for completion early in CP4. These are identified in the table below.

Category	Description
Energy efficiency	<ul style="list-style-type: none"> <li>- on-train metering (Network Rail contribution)</li> <li>- non-traction metering</li> <li>- carbon reduction strategy</li> <li>- photovoltaic cells on Blackfriars Station roof</li> </ul>
Environment protection	<ul style="list-style-type: none"> <li>- pollution prevention</li> <li>- sites of special scientific interest</li> <li>- lineside vegetation and habitat management</li> </ul>
Infrastructure failure	<ul style="list-style-type: none"> <li>- post Lambrigg improvements</li> <li>- Peascliffe Tunnel flood mitigation</li> <li>- Hampole Dyke scour protection</li> </ul>
Level crossing closure	<ul style="list-style-type: none"> <li>- UWC closure programme</li> <li>- closure of footpath crossings</li> <li>- closure of barrow crossings</li> <li>- closure of Kirknewton AHB crossing</li> </ul>
Passenger safety	<ul style="list-style-type: none"> <li>- trap point mitigation</li> <li>- fitment of enhanced security cameras at FGW stations</li> </ul>
Crime	<ul style="list-style-type: none"> <li>- fitment of forward facing cameras to trains</li> <li>- demolition of redundant lineside buildings</li> </ul>
Security	<ul style="list-style-type: none"> <li>- enhancements to BTP HQ CCTV control hub</li> <li>- enhanced security at key operational locations</li> </ul>
SPAD mitigation	<ul style="list-style-type: none"> <li>- SPAD mitigation</li> </ul>
Vegetation management	<ul style="list-style-type: none"> <li>- lineside tree surveys</li> </ul>
Workforce safety	<ul style="list-style-type: none"> <li>- enhanced Network Rail fleet servicing and maintenance facilities</li> <li>- junction lighting improvements</li> <li>- access point improvements</li> <li>- enhanced catchpit covers</li> </ul>
Workforce health	<ul style="list-style-type: none"> <li>- excessive lever pulls in signal boxes</li> <li>- hoists at access points</li> </ul>

Safety and environment improvements during CP4 are included in the asset policies and strategies and associated renewal funds. Other safety improvements will be delivered through specific enhancement schemes and their associated funding, identified within this document. There is therefore no specific safety and environment fund for CP4.

## **Access for All**

### **Network Rail's obligation**

Our obligation is to deliver the schemes that are authorised to draw down from the Access for All fund. See the scope of work defined below.

### **Objective**

The Access for All Programme Consultation targeted a five per cent (125 stations) increase in accessible stations across the network by March 2015. At this time, Network Rail projected output suggests six per cent (145 stations) of the network will be made accessible with one per cent completed in CP3 and the remaining five per cent completed in CP4 and the first year of CP5. The Programme has now reached a stage at which 25 completions per year is achievable. However the move to Integrated Station Planning (ISP) requires a review of the CP4 Access for All portfolio against other Programmes such as renewals. It is expected that as part of this review the number of completions in the first year of CP4 will dip but this will be recovered to maintain the original output.

### **Station-specific outputs**

The main output from this Programme is, for each station in scope, to achieve an unobstructed and obstacle free 'accessible route' within Network Rail controlled infrastructure, from at least one station entrance (usually the main one) and all drop-off points associated with that entrance, to each platform and between platforms served by passenger trains.

An accessible route is defined as:

- meeting all applicable areas of 'Accessible Train and Station Design for Disabled People Code of Practice' technical standards, except where dispensations have been agreed;
- a distance, ideally not exceeding 400m, from station entrance (or drop off point if further) to the appropriate point of entry/exit of trains at platforms; and
- a route for a manually self-propelled wheelchair user to negotiate.

### **Scope of works**

The specific infrastructure required to achieve the output will be determined on a station by station basis. In the majority of cases the scope will be the provision of lifts or ramps to an existing, or new, footbridge/subway. In addition to new works, existing infrastructure on the accessible route will, as far as is practical, be upgraded to comply with the code. Examples of such upgrades include provision of colour contrasting compliant handrails to existing stairs; non slip surfacing to footbridges/stairs; and extended CIS and CCTV coverage on the accessible route.

**Stations selected by DfT**

Abergavenny	Finsbury Park	Laindon	Rotherham
Alnmouth	Fleet	Leighton Buzzard	Selly Oak
Audley End	Forest Hill	Leominster	Severn Tunnel Junction
Berkhamsted	Gloucester	Letchworth	Shirley
Bingley	Gospel Oak	Limehouse	Sittingbourne
Blackburn	Gravesend	Liverpool Central	St Erth
Blackheath	Grimsby Town	Long Eaton	Staines
Brentwood	Grove Park	Loughborough	Stalybridge
Bridgend	Harpenden	Luton	Staplehurst
Brockenhurst	Hassocks	Manchester Oxford Road	Streatham Common
Brockley	Hatfield	Marple	Strood
Bromley South	Hemel Hempstead	Metro Centre Gateshead	Sutton Coldfield
Burnham	Henley in Arden	Middlesbrough	Swanley
Camden Road	Hereford	Morpeth	Thornton Heath
Canterbury West	Highbury & Islington	Neath	Tilbury Town
Carlisle	Hitchin	New Cross	Tottenham Hale
Chadwell Heath	Honor Oak Park	New Cross Gate	Twickenham
Cheadle Hulme	Hooton	New Eltham	Vauxhall
Chippenham	Horley	New Malden	Walthamstow Central
Clapham Junction	Huddersfield	Northfield	Waterloo (Merseyside)
Denmark Hill	Huntingdon	Orrell Park	West Hampstead Thameslink
Dorking	Ilford	Peterborough	Winchester
Earlsfield	Ipswich	Pitsea	Worcester Park
Elstree & Borehamwood	Keighley	Prestatyn	Worcester Shrub Hill
Farnborough	Kew Gardens	Putney	Wrexham General

**Stations selected by Transport Scotland**

Cupar	Dalmuir	Linlithgow	Perth
Easterhouse	Hyndland	Montrose	Stirling

In respect of the Access for All Programme Network Rail is accountable to its customers and funders. Network Rail is responsible for;

- the development, planning, management and delivery of the customer's reasonable requirements for the Access for All Programme; and
- consultation with the customer and with train operators on its plans for delivery of the Access for All works to achieve the accessible route.

Physical works will be undertaken by various delivery groups including Network Rail and Train Operating Companies.

**Significant interfaces**

Access for All works are to be included in the ISPs developed by Network Rail and TOCs. Where no plan exists for stations in scope, the Access for All Programme will review all opportunities for integration with renewals, other enhancement works and works by TOCs.

A communications strategy is in place for the Programme and is reviewed on an ongoing basis to ensure all stakeholders issues and enquiries are being managed in an effective manner.

**Key assumptions**

A number of key assumptions have been made in arriving at the scope of works for CP4. These are:

- stations will be added or removed, subject to available funding;
- unallocated funding in CP3 is rolled into CP4;
- stations due to complete in late CP3 are not included (no slippage considered); and
- if the accelerated programme, completion March 2014, is adopted then budget can be drawn forward from CP5.

**Activities and milestones**

The ten year programme agreed with Government extends to March 2015, the first year of CP5. Subject to being allowed to draw forward budget from CP5 into CP4, we are developing an accelerated plan to complete all sites in CP4, namely march 2014. If this revised plan is agreed an additional five per cent of stations will have their access improved by the end of CP4.

## King's Cross

### Network Rail's obligation

Our obligation is to deliver the scope of works described below.

### Scope of works

The enhancements at King's Cross station include a new western concourse with a significant increase in the footprint of the structure. A new mezzanine level will be created within the western concourse to provide retail and leisure facilities. The train shed and platforms will be refurbished and their roofs strengthened, painted and re-clad. Work beneath the station will take place to widen the services tunnels and modernise facilities. The key volumes of work are summarised below.

<b>Volume</b>	
<b>Track</b>	
Rail (km)	0.7
Sleepers (km)	0.7
Ballast (km)	0.7
S&C units	2
<b>Signalling</b>	
SEUs	17
<b>OLE</b>	
OLE (km)	0.7
<b>Civils</b>	
New platform (m)	300
New concourse and associated operational facilities (sq m)	8,000
Refurbished office space (sq m)	4,000
Photo-voltaic panels on roof (sq m)	2,500
Excavation for basements and service yards (cubic m)	52,000
Renewed main train shed roof (sq m)	20,000

### Objective

The primary objective of the King's Cross project is to provide station capacity to handle passengers at peak times within a more attractive retail and transport interchange environment. It will provide a new western concourse, three times the size of the existing one. As well as providing better passenger circulation within the station, connectivity with London Underground and with St Pancras International will be substantially improved. This is in recognition of the growing overall demand coupled with the generative effect of the transfer of Eurostar and Thameslink services to St Pancras International.

It will also provide additional peak capacity into King's Cross by allowing the operation of additional long distance high speed and 12-car outer suburban services into King's Cross. A new 12-car platform will be provided within the main train shed, planned for 2010, with the remainder of the work staged over the rest of CP4.

Other outputs of the King's Cross project include increased station capacity via a new concourse and increased commercial development. The redevelopment is being delivered in several stages with new or refurbished facilities handed over in a rolling programme between 2009 and 2013.

### Significant interfaces

The station works form part of the redevelopment on the King's Cross lands and there are a number of interfaces with works being carried out by the other land owners and property developers, notably the enhancement works being carried out to the Underground station by LUL and construction of shared service facilities being undertaken in conjunction with Argent.

### Key assumptions

The delivery programme relies on the construction of the additional platform Y ahead of starting any substantial works on the existing platforms in order to retain train throughput at current service levels. Platform Y does not open up additional capacity until works on the existing platforms has been completed.

There are some interdependent projects being carried out by third parties. The Western concourse requires Argent to complete works to the ground floor arcade of the adjacent Great Northern Hotel. The

passenger interchange arrangements rely on London Underground completing works on their sub-surface Northern Ticket Hall under the Western concourse.

Consents are being managed on a rolling programme as and when detailed designs are completed for the various elements. The industry consents (Station Change, Network Change, possession strategy) are close to being finalised. Over half of the Planning and S106 conditions are completed.

**Activities and milestones**

The milestones for the works are planned around avoiding major disruptive works during the London 2012 Olympics. The final phase Southern Square package is not planned to start until after the Olympics. The legal agreements contain backstop dates for start of the works on the western concourse (December 2012).

Planning permission for the new facilities was granted in November 2007. As the station is Grade 1 listed, Listed Building consents are being sought as and when detailed designs are completed. The station works form part of the redevelopment on the King’s Cross lands and there are a number of property agreements with the DfT, other land owners and the developers. Both the enhancement and renewals works on King’s Cross station are being carried out by a Network Rail delivery team.

<b>Activity</b>	<b>Output</b>	<b>Date</b>
Eastern Range ready for occupation	Office space for decant of station and TOC operational facilities.	Q1 2009
Platform Y commissioned	Allows work to commence on remaining platforms. Increases train capacity in longer term.	Q2 2010
Plant room and shared service yard commissioned (interim state)	Supports station operations.	Q3 2010
Main train shed interior modifications to link in with Western concourse	Provides new passenger circulation regime for new concourse.	Q4 2011
Western range refurbishment	Provides operational facilities.	Q4 2011
Western concourse in use	Enhanced passenger and retail facilities.	Q4 2011
Main train shed roof renewal	Condition-led renewal.	Q1 2012
Southern Square reconfiguration	Completes reconfiguration of station concourse and a condition of planning permission.	Q3 2013

### **West Coast Main Line committed schemes**

#### **Network Rail's obligation**

Our obligation is to deliver the three schemes described in more detail in the following pages. Namely:

- Bletchley remodelling;
- West Coast power supply upgrade; and
- Stafford / Colwich remodelling.

#### **Objectives**

This package of works are the remaining elements necessary to deliver the West Coast Strategy (Strategic Rail Authority, 2002), required to enhance the capacity on the West Coast Main Line. DfT specified the completion of the remaining strategy elements in the HLOS (July 2007).

The Bletchley remodelling scheme will renew life expired assets and rationalise the layout around Bletchley station to increase the line speed.

As part of the strategy the power supply between London and Glasgow is being upgraded. The first two stages have been completed to support the increases in services and stage three will be phased over CP4 and CP5 as appropriate to meet the power demand projections. When stage three has been completed the full auto-transformer system will be provided between London and Carstairs.

With the traffic increases provided by the West Coast Upgrade, and those from Birmingham to Manchester and the north, the junctions and two track section in the Stafford area will constrain any further traffic growth and hinder train running performance. The Stafford scheme is being developed to mitigate these issues.

### Project definition: Bletchley remodelling project

#### Network Rail's obligation

Our obligation is to deliver the scope of works described below.

#### Scope of works

Currently, the signalling equipment in the Bletchley PSB control area is life expired and the target renewal dates are between 2009 and 2012. There are also some plain line track and S&C renewals imminent. This project, therefore, proposes to maximise the opportunity presented by renewals to remodel the track layout and re-signal with SSI technology in order to provide greater functionality and capability; improved reliability and maintainability. Control of all signalling will be transferred to Rugby Signal Control Centre.

#### Outputs

The key output is an increase in line speed for the Up fast line to 125mph. There will also be performance improvements due to the improved reliability and maintainability of the infrastructure.

#### Significant interfaces

- East West Rail Link - this scheme is independent. However, the Bletchley design will take account of known East West interfaces to the extent practicable; and
- Bletchley Crossways - this scheme is independent. However, the Bletchley design will take account of known Bletchley Crossways interfaces to the extent practicable;
- DfT and Virgin Trains 'Pendolino' project that lengthens the current Class 390 rolling stock formations from 9-car to 11-car during CP4;
- London Midland expansion of out based stabling activity in the Bletchley area which may require infrastructure interventions; and
- London Midland service interventions.

#### Key assumptions

The project will be delivered in conjunction with planned major renewals to signalling and track.

#### Activities and milestones

Activity	Indicative date
GRIP stage 1 - Output definition	Complete
GRIP stage 4 - Single option development	Q3 2009
GRIP stage 5 - Detailed design	Q3 2010
GRIP stage 6 - Construction, test and commission	2012/13
GRIP stage 7 - Scheme handback	2012/13
Full project completion date including snagging	2012/13

**Project definition: WCML traction power supply upgrade project**

**Network Rail’s obligation**

Our obligation is to deliver the scope of works described below.

**Scope of works**

The scope of the overall programme is to deliver an Auto-Transformer (AT) system for the WCML in three phases. Phase one and two were completed in time for the December 2008 timetable change. Phase three is the implementation of AT supply across the balance of the route and is to be completed during CP4 and CP5, as described in the table below.

	Vol	CP4					CP5			
		2009/ 10	2010/ 11	2011/ 12	2012/ 13	2013/ 14	2014/ 15	2015/ 16	2016/ 17	2017/ 18
Distrib. sites and associated wks	21		3	7	8	8	8	6	2	
ESI Connections	2				2					
ATF installation	500 km	50	130	160	160	160	160	130	50	
RSC and cross bonding and SWT contractor 1	250 km	25	65	80	80	80	80	65	25	
Vegetation clearance maintainer	100 0k m	50	130	160	160	160	160	130	50	
Commissionings.	24	1	3	3	3	3	3	3	3	2

The current project scope encompasses the provision of an AT system between North Wembley MPATS (25.95km) to Carstairs MPTSC (599km). This includes the following:

- ESI supply point at Penwortham (Lostock Hall);
- 42 x 25kV AT distribution sites at approx 10km intervals along the route;
- provision of telecoms and SCADA for new distribution sites;
- provision of additional 25kV conductors to form the AT feeder (ATF) throughout the length of the route;
- provision of the return screening conductor throughout the length of the route;
- additional cross bonding throughout the route;
- screening of signals or other structures where required to maintain clearance to the ATF;
- clearance of vegetation to maintain clearance to the ATF;
- re-sectioning of the OLE to reflect the new feeding sections and subsections;
- recoveries of redundant equipment; and
- the replacement of oil filled switchgear and cables in accordance with E&P asset policy.

**Outputs**

The overall programme for the power supply upgrade will support the ‘2020’ design scenario timetable agreed with DfT. The works are phased through CP4 and CP5 to ensure capacity is available in advance of demand in the most cost effective way. The system will have a neutral affect on reliability and reduce the likelihood of train delays due to power supply weakness and will remove the traction power supply as a constraint on line speed and capability.

**Significant interfaces**

- LNW route 25kV switchgear renewals and overhauls, the renewals and overhauls are being carried out as part of this project;
- renewal of 25kV traction power supply connection equipment at Rugby and Stafford. By better integration of the PSU program with LNW electrification renewals, renewal of 50 year old ESI connections can be avoided whilst delivering the enhancement required;
- Crewe remodelling;

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**10.02** Project definition – WCML traction power supply upgrade project

- Stafford remodelling;
- DfT and Virgin Trains 'Pendolino' project that lengthens the current Class 390 rolling stock formations from 9-car to 11-car during CP4;
- London Midland expansion of out based stabling activity in the Bletchley area which may require infrastructure interventions; and
- London Midland service interventions.

**Key assumptions**

Possession requirements are assumed to be covered by the Rules of the Route.

**Activities and milestones**

<b>Activity</b>	<b>Indicative date</b>
GRIP stage 5 – Detailed design commences	Q3 2009
Full project completion date, including snagging	2019

There is a project review underway which is due to complete by Q4 2009. This review will enable development of the plan in consultation with all stakeholders and will lead to further programme milestones.

### Project definition – Stafford / Colwich re-modelling project

#### Network Rail's obligation

Our obligation is to deliver the scope of works described below.

#### Scope of works

At the current stage of development (GRIP 2) no specific scheme has been identified. A series of options are being evaluated.

Work has been progressing on the development of options. These are being evaluated against the option for improvement of capacity within the Stafford area through the upgrading of existing routes, the development of an independent route option or a combination of both. The interfaces of both freight and passenger traffic are being taken into consideration and the impact of external factors has been included within the appraisal process.

The current programme assumption is dependent upon a TWA process and this will impact on the programme in that current projections state that completion may be within CP5 and will be dependent upon the final selection of route. An indicative construction programme will be a GRIP 3 deliverable.

It is proposed to take into consideration the outputs from a series of consultations with stakeholders prior to the submission of a single option being presented as part of the TWA process.

Some of this work should fall within our Permitted Development Rights. However, depending on the scheme selected, there will be an amount that will require additional land purchase.

#### Outputs

The Stafford area has been identified as a 'bottle-neck' limiting the opportunity to fully exploit the capacity offered by the modernised West Coast Main Line infrastructure and causing delay to existing and planned services. These capacity and performance constraints in the Stafford area are due to the number of conflicts that exist between the flows of traffic at Colwich Junction, Stafford and Norton Bridge. The project's remit is to unblock the capacity and performance constraints in the Stafford area, given the requirements of the 2015 traffic flows.

#### Significant interfaces

The Stafford scheme is required to take into consideration the impact of re-signalling projects, the capacity constraints external to Stafford and the demand requirements post 2014. These elements will impact on the final selection of scheme option and subsequent final costs.

The development of this scheme is anticipated to require an application for a TWA order. The output from this process will determine the approach taken for the in depth development of the final scheme and the costs will require updating as the GRIP process proceeds.

#### Key assumptions

The key assumption is that the TWA application will be successful and will support a scheme that will meet the intended outputs.

#### Activities and milestones

Activity	Indicative date
GRIP 3 complete	Q1 2010
Draft TWA order submitted	Q2 2012
TWA order complete	Q3 2014
GRIP 8 completion	2017

## Thameslink Programme

### Network Rail's obligation

A regulatory protocol has been established for the Thameslink Programme. Our obligation under the protocol is to deliver the scope of works described below.

### Scope of works

#### **Key output 0**

Key output 0 scope relates to the railway infrastructure enabling works required to deliver the Thameslink Programme construction period timetable. It includes gauge clearance, Selective Door Operation (SDO), platform lighting and other works to enable class 377 operation on the Midland Main Line and to Brighton.

#### **Key output 1**

The following work packages are required to deliver key output 1:

- Blackfriars – major works to accommodate the expansion and extensive reconstruction of the station and bridge as well as the London Underground station below;
- Farringdon – major works to remodel the station and track layout. Existing platforms will be extended to accommodate 12-car length trains;
- City Thameslink – minor works to the fabric of the station to accommodate an enhanced 12-car service;
- signalling – within the Core Area (between St Pancras International (low level) and Blackfriars stations) the lineside signalling will be optimised for the final 24tph train service and rolling stock. Outside of the core area, modifications to the current signalling system are required to support the enhanced train service;
- operational telecoms – provision of new and enhanced telecommunications equipment to support the delivery of the enhanced train service;
- electrification and plant – provision of new and enhanced equipment including AC electrification, DC electrification, and Supervisory Control and Data Acquisition (SCADA) to support the delivery of the enhanced train service;
- permanent way – mainly within the core and operational inner area and will consist of plain line and S&C works;
- outer areas – provision of platform extensions, power upgrade works, route clearance works and some stabling berthing facilities to deliver the specified train service;
- inner area tunnels – provision of fire fighting water main, emergency lighting systems, improvements to tunnel services and infrastructure in Snow Hill (excluding the fire fighting water main in this tunnel), Clerkenwell and King's Cross tunnels;
- reliability strengthening - asset replacement/enhancement to maintain/increase service reliability during the implementation of Key output 1; and
- St Pancras international (low level) (12-car) – minor works to the fabric of the station to accommodate an enhanced 12-car service.

#### **Key output 2**

The following work packages are required to deliver key output 2:

- London Bridge - reconstruction of station in accordance with TWA consented "Masterplan" station design;
- Borough Viaduct – construction of a new twin-track viaduct on the south side of the existing viaduct;
- Bermondsey Dive Under – to grade separate the Thameslink and Charing Cross lines;
- Tanners Hill Flydown – an additional line to increase network capacity;
- signalling control centre – as part of Kent area signalling control strategy;
- signalling – modifications to the current signalling system are required to support the enhanced train service;
- operational telecoms – provision of new and enhanced telecommunications equipment to support the delivery of the enhanced train service;
- electrification and plant - provision of new and enhanced equipment including AC/DC system changeover, AC electrification, DC electrification, and Supervisory Control and Data Acquisition (SCADA) to support the delivery of the enhanced train service;

- permanent way – substantial remodelling in the London Bridge corridor between Blackfriars Junction (exclusive) and Lewisham/New Cross Gate/Peckham Rye;
- outer areas - provision of platform extensions, power upgrade works, route clearance works and some stabling berthing facilities to deliver the specified train service;
- reliability strengthening – asset replacement/enhancement to maintain/increase service reliability during the implementation of key output 2;
- route wide civils works – structure gauge clearance etc.; and
- Canal tunnels – fit out of the tunnels and connection to the national rail network at St Pancras International (low level) and Belle Isle Junction (ECML).

### Output

The Thameslink Programme has phased delivery over three key outputs. Key output 0 allows for a consistent train service at present levels to run throughout the Thameslink Programme construction periods. The work required to facilitate this is to be completed by March 2009. It is to allow for up to 15 trains per hour to run between St Pancras International (Low Level) and Blackfriars stations.

Key output 1 provides an improved train service capacity of up to 16 train paths per hour between St Pancras International (Low Level) and Blackfriars stations and to allow up to 12 car train length operation between Bedford and Brighton by December 2011.

Key output 2 provides for the completed Thameslink service giving a further improved train service of up to 24 train paths per hour between St Pancras International (low level) and Blackfriars stations by December 2015.

### Significant interfaces

The following major infrastructure programmes are scheduled to be undertaken concurrently with the Thameslink Programme. These include;

- Crossrail;
- East London Line (phases 1 and 2);
- King's Cross Station redevelopment;
- London Underground upgrades;
- 2012 Olympic and Paralympic games; and
- DC power supply enhancement programme.

In addition, three major building developments are scheduled to take place;

- London Bridge Tower (Shard of Glass);
- 25 London Bridge Place; and
- Thornfields development (Smithfield)

### Key assumptions

- Thornfield development at Smithfield Market (Snowhill Tunnel) will have no adverse impact on the proposed Thameslink works;
- the Thameslink Programme will precede any Crossrail works at Farringdon;
- Crossrail will be responsible for all further works at Farringdon required to deliver the Crossrail scheme;
- the East London Line Extension project will precede any works by the Thameslink Programme at New Cross Gate;
- the Thameslink Programme will precede any works by the East London Line project in the Bermondsey and Peckham Rye areas;
- the Network Rail / London Underground Project Agreement for the Thameslink Programme will reflect London Underground's (LUL) acceptance of designs developed at the time of signing;
- any works being undertaken by LUL / Transport for London (TfL) before the start of or during the Thameslink Programme will have no adverse impact on the proposed Thameslink works;
- Thameslink Programme construction requirements can be co-ordinated with construction works relating to King's Cross station redevelopment;

- the Thameslink Programme and London Bridge Tower (Shard of Glass) construction works can either take place concurrently or a mutually acceptable programme will be developed and agreed; and
- the Thameslink Programme and 25 London Bridge Place construction works can either take place concurrently or a mutually acceptable programme will be developed and agreed.

**Activities and milestones**

Key milestones consistent with the protocol agreement with DfT are shown below.

<b>Activity</b>	<b>Date</b>
Infrastructure for KO0 - final	Q1 2009
Farringdon - footbridge	Q2 2009
Blackfriars trackswitch	Q4 2010
12-car operation	Q4 2011
KO1 operation (Blackfriars bay platforms etc)	Q1 2012
KO2 operation	Q4 2015

## **Intercity Express Programme (IEP)**

### **Network Rail's obligation**

Our obligation is to deliver the scope of works described below.

### **Scope of works**

The key elements of scope currently being developed with the DfT relate to power supplies, platforms and gauge clearance. Further work is required to establish if expenditure relating to bridge resonance and aerodynamic work is required, and this depends on train design and proposed solutions.

CP4 funding covers the implementation works on the East Coast route and development and detailed design on the Great Western route.

### ***East Coast Main Line, including Hitchin to Cambridge and Kings Lynn***

The scope of works on this line includes platform works, gauging works, power supply/overhead line works to introduce Inter City Express trains up to 260m long to replace the current IC225 and HST fleet and train services on the routes. The train type (electric or bi-mode) and configuration (full length or half length) depends on service.

### ***Great Western Main Line***

The scope of works on this line includes development, design and advanced implementation works including platform works and gauging works to introduce Intercity Express trains up to 248m long to replace the current HST fleet and train services on the route.

### **Outputs**

Outputs from the programme will include Network Rail infrastructure ready to accept the operation of the Inter City Express trains being procured under a "train service provision" (TSP) contract by the DfT. The stopping patterns assumed are those detailed in the Indicative Timetable planning information pack part 2, issued in February 2008 by DfT.

Operation of the IEP trains will take place over the following routes:

- East Coast Main Line, including Hitchin to Cambridge and Kings Lynn; and
- Great Western Main Line.

### **Significant interfaces**

- Major projects (Thameslink, Crossrail, Reading);
- ERTMS;
- FTN/GSM-R;
- Other CP4 enhancements on the key routes; and
- East Coast Main Line performance enhancements.

### **Key assumptions**

- Rolling stock procured by DfT will be compatible with the issued "Train Infrastructure Interface Specification" (TIIS) and the final rolling stock delivery programme is in accordance with the current programme;
- the platform lengthening scope excludes locations where selective door opening operation is assumed;
- all IEP depot and depot access works are excluded from this submission (part of TSP contract requirements);
- the scope of works specifically excludes works on West Coast Main Line South;
- the ECML works exclude works covering traction power and overhead line works associated with a change in operational plan and any future service commitments on the ECML between Hitchin and Edinburgh;
- the Great Western Main Line works specifically exclude works covering traction power associated with the future operation of electric powered Intercity Express trains between Paddington and Maidenhead to align with Crossrail works;
- works exclude the extension of platforms at Paddington to accommodate 260m electric IEP trains;

- Thameslink key output 2 power upgrade between King's Cross and Hitchin is delivered in accordance with the current programme; and
- all works are deemed to be within the current boundary of the Network Rail infrastructure.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
ECML infrastructure ready for IEP operation	East Coast train test route (London / Doncaster)	Q3 2011
ECML Infrastructure ready for IEP operation	East Coast pre series routes (London to Newcastle)	Q1 2013
ECML Infrastructure ready for IEP operation	East Coast series routes (Newcastle to Edinburgh / Aberdeen / Inverness and Hitchin Kings Lynn)	Q3 2014
Great Western Main Line	Development, detailed design and early works for IEP operation.	Q1 2014
ECML balance of implementation	Project completion	Q3 2015
Great Western Main Line significant implementation	Project completion	Q3 2015

## **Crossrail and Reading**

### **Network Rail's obligation**

Our obligation is to deliver the scope of works associated with the Crossrail and Reading area redevelopment projects. The scope of these projects is set out in the following pages. There are significant interfaces between these projects and as such we are delivering them through an integrated programme delivery team.

The Crossrail project is to deliver infrastructure enhancements to enable the operation of 24 trains per hour through central London to destinations such as Heathrow Airport, West Drayton and Maidenhead in the west and Abbey Wood and Shenfield in the east.

Reading station area redevelopment is designed to deliver significant capacity and performance improvements throughout the area for GWML and cross country passenger and freight services.

The Reading southern platform project is an integral part of the Reading station area redevelopment project. This project is required to support the proposed plan to operate 12-car services on the Waterloo lines.

## Project definition: Crossrail

### Network Rail's obligation

Subject to completion of the proposed funding arrangements and protocol, our obligation is to deliver the scope of works described below.

### Scope of works

The constituent parts of the overall Crossrail project are:

- infrastructure enhancement of 76km of existing railway, referred to as the On Network Works;
- construction of 23km of subsurface railway infrastructure; and
- platform extensions for stations from Maidenhead to Abbey Wood and Shenfield to cater for 200m long electric trains.

Stations will include Maidenhead, Taplow, Burnham, Slough, Langley, Iver, West Drayton, Hayes & Harlington, Southall, Hanwell, West Ealing (includes new bay platform), Ealing Broadway, Acton Main Line, Forest Gate, Manor Park, Ilford, Severn Kings, Goodmayes, Chadwell Heath, Romford, Gidea Park, Harold Wood and Brentwood. A new station will be built at Abbey Wood.

The responsibility for the On Network Works (ONW) was transferred to Network Rail when Royal Assent was granted in July 2008. A Letter of Comfort, issued by CLRL, covers a limited Network Rail expenditure of £20 million until the full Implementation Protocol is agreed. GRIP 3 design contracts were let in November 2008. It is not possible at the moment to quantify precise locations and volumes. This level of detail will be provided once Network Rail has completed GRIP 3 designs.

### Outputs

The Crossrail project aims to deliver 24 trains an hour through 23 kilometres of new subsurface railway infrastructure under central London, continuing outwards to the east and west over 76 kilometres of some of the most congested and complex rail infrastructure in the UK. The Crossrail project is jointly sponsored by DfT and TfL and is being developed by Cross London Rail Links (CLRL). The CLRL Client Requirements for Network Rail will cover what we are required to deliver in terms of infrastructure capability as well as our contribution to CLRL's programme management of the project.

### Significant interfaces

There are multiple interfaces within Network Rail with:

- other projects (IEP, ERTMS, FTN-GMRS);
- routes (Western, East Anglia, Kent);
- enhancements;
- renewals;
- maintenance; and
- outside party works.

### Key assumptions

- the Implementation Protocol is agreed; and
- the cost surety estimate demonstrates that the ONW are deliverable within the defined cost boundaries.

### Activities and milestones

Activity	Output	Indicative date
Implementation Protocol	Implementation of agreed funding mechanism	Q1 2009
Cost surety	Initial costing of the ONW	Q2 2009
GRIP 3 stage gate review	GRIP 3 designs for ONW	Q1 2010
Target price	The identification of an overall target price for the ONW	Q2 2010

### **Project definition: Reading station area redevelopment**

#### **Network Rail's obligation**

Our obligation is to deliver the scope of works described below.

#### **Scope of works**

The constituent parts of the project are:

- new Thames Valley signalling centre replacing existing signal boxes in the Thames Valley by December 2010;
- four new platforms on the north side of the station for GWML and CrossCountry services by November 2012;
- a new south side platform and platform extensions for Waterloo line services by November 2012;
- grade separation at the east end of the station via the former dive under from the Waterloo line to the north side of the station by November 2012;
- new train maintenance facility located to the west of Reading station replacing the existing facilities, which will be demolished to enable the track layout reconfiguration by February 2013;
- grade separation at the west end with an elevated railway from Caversham Bridge to Wigmore Lane over the eastern chord and cross country routes facilitating the widening of Cow Lane for improved road traffic access by July 2014;
- a new eastern chord from Oxford Road Junction running under the elevated railway to the north side of the station by April 2015;
- grade separation from Oxford Road Junction to Westbury Line junction by April 2015;
- extensive track layout reconfiguration and resignalling throughout the area; and
- passive provision for a future extension of Crossrail and the introduction of AirTrack.

There is currently a TWA for compulsory purchase of all temporary and permanent land requirements submitted on the 6<sup>th</sup> November 2008. We are actively negotiating with all affected landowners to avoid the need to go to inquiry.

#### **Outputs**

The intended outputs are:

- passenger trains: four to five additional train paths per hour in each direction, five additional platforms, 125 per cent improvement on through line platform capacity, 37.7 per cent improvement in performance (train delay minutes); and
- engineering trains: up to 660m in length and up to five trains per week – two delivering materials and up to three engineering trains plus OTM's per 52 hours of possession.

There will be a 50mph permanent speed restriction for the duration of the works. The project will have intermediate phasing.

#### **Significant interfaces**

- asset renewals programmes for signalling, telecoms and track;
- Crossrail; and
- IEP.

#### **Key assumptions**

- Funding for CP5 is made available;
- current funding for the New Train care facilities are based on a like for like replacement, any further enhancements will require further commitments from the DfT;
- any additional requirements should be made clear in sufficient time to enable delivery of the facilities without negative impact on the programme below.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
Key output 0: enabling works complete	Signalling enabling works Install temporary crossover in Goods lines	Q4 2010
Key output 1: All station platforms commissioned	Southern platforms remodelling Relocate driver academy, Rail Gourmet etc. Station mains works Construction of platforms 12-15 Commission of new platforms 12-15 Station south side works Station western bridge Platforms 7,8,9 and10 New station entrance platforms 1-3 Station upgrade follow-up works Platforms 10 face extension Relief lines east remodelling Relief lines west and temporary/final depot connections Southern tunnel civils works External station works Vastern Road (George Street) bridge widening Caversham Road bridge widening	Q4 2012
Follow-on works: non key output 1 deliverables	Bridge demolition Platform 11 works Canopy works	Q3 2013
Key output 2: FGW depot fully operational	FGW civils enabling works Depot facilities FGW new depot familiarisation Northern embankment depot Main lines east remodelling Cow Lane bridges Wigmore Lane bridge Little John's Lane bridge	Q1 2013
Key output 3: Reading West Junction grade separation	Reading West grade separation part 1 Construction of new HOBC depot Westbury Line junction remodelling part 1 Reading West grade separation part 2 New mainline civils work West Country grade separation (part1)/ Oxford Road Junction re-modelling	Q4 2014
Key output 4: West Country grade separation	Westbury Line junction remodelling part 2 Construction of final depot connections West Country grade separation part 2 Southern viaduct	Q2 2015

### **Project Definition: Reading station southern platforms**

#### **Network Rail's obligation**

Our obligation is to deliver the scope of works described below.

#### **Scope of works**

The constituent parts of the project are:

- a new south side platform and platform extensions for Waterloo line services by November 2012;  
and
- an additional bridge span over Vastern Road.

#### **Outputs**

The project is an integral part of the Reading station area redevelopment project. It will deliver significant capacity and performance benefits with an additional platform and extensions to two existing platforms to accommodate up to 12-car services from the Waterloo lines.

#### **Activities and milestones**

The project will be delivered as an integral part of the Reading station area redevelopment project. The activities and milestones for this project are contained in the overall Reading programme.

## **Birmingham New Street Gateway Project**

### **Network Rail's obligation**

Our obligation is to deliver the scope of works described below.

### **Scope of works**

#### ***Platform level***

The work generally comprises of the removal of all platform accommodation, ramped areas to the West and enclosures. Passenger movements both for access and escape are enhanced by the introduction of new and additional standard escalators, lifts and staircases to platforms.

Seven new train dispatch rooms are to be constructed to accommodate platform level staff.

Passive provision is made for the widening of platform 8/9.

#### ***Concourse level***

The works comprise of the enlargement of the existing concourse and dispersal bridge to cater for increased passenger demand, with associated requirements for additional dwell space, customer information systems and other facilities. The additional space is created by extending the concourse into the area currently occupied by the lowest two NCP car park levels.

Existing staircases and escalators are to be removed. In their place are new vertical circulation cores down to platform level. New entrances to the concourse are created on the northern, southern and eastern elevations.

A new control room / Network Rail customer reception is to be constructed.

Additional retail is provided on the eastern side in the form of a new two storey extension. The concourse areas are to provide amenity facilities such as toilets and a multi faith prayer room.

Rail specific accommodation is to be provided within the concourse area for the ticket office and Centro travel centre, Network Rail reception and a 'Virgin' First Class Lounge.

Public Information Systems are to be provided including a new departure board located on one side of the atrium.

Works to the North West entrance to the Pallasades include lifts, stairs and escalators to the Pallasades level.

#### ***Off station works***

TOC back of house accommodation is to be relocated away from the confines of the operational station. The proposed location being within Ladywood House (part of the Pallasades lease hold demise) this space being within the five minutes walk time provided for in the TOC franchises.

#### ***External works***

The creation of a new North West entrance to the shopping centre will require some external works to be undertaken.

The new walkway (also required to accommodate via a controlled means of access BTP, service and maintenance vehicles) adjacent to the Odeon site will provide connection routes through to both the northern and eastern elevations and the city generally.

Queens Drive is retained on its current alignment but the slab is to be extended to create a public space and a taxi drop off/pick up area. A canopy for the taxi drop off area is to be provided.

Within the station site a new walkway will provide a route from the proposed northern station entrance to the proposed southern station entrance and on to the southern part of the city.

A new short term parking facility is to be created utilising part of the existing NCP lower level car park. At the concourse level a through route will provide drop off / pick up facilities. It is envisaged that the existing alignment and connections at both Navigation Street and Hill Street will be incorporated into this facility.

Part of the existing Navigation Street footbridge will be removed and replaced by a new enhanced section. This new section will extend to Hill Street and provide a new entrance to the station. In addition the footbridge will be modified so as to connect to both platforms 1 and 12 (these are not currently accessible off the existing footbridge).

### Outputs

The high level objectives for the project have been agreed by the key funders, Advantage West Midlands, Birmingham City Council, DfT, Centro and Network Rail. The table below contains all the project objectives (including those funded by others):

Category	High Level Objective
Transport (Rail)	Provide sufficient passenger capacity to meet both short term and forecast longer term needs. Improve passenger facilities and the environment within the station. Installation of ticket barriers. Improve the overall manageability of the station.
Transport (Multi-Modal)	Improve access to/from/in the station for all users. Improve the interchange capability within the station and between transport modes. Improve pedestrian access routes to/from/across the City.
City & Regional Regeneration	Transform the appearance of a major civic amenity and its environs to improve perceptions and stimulate confidence through creating an appropriate gateway to the region. Improve the urban environment and develop the public realm to catalyse the development and take up of new high quality office space in the city core, resulting in new jobs, and resulting productivity gains. Create a major private sector commercial development to the southern aspect. Strategic added value benefits to the city, including initiatives in sustainable development, skills development and training, and information and communication technologies.
Commercial	Maximise commercial value of the scheme. Stimulate the successful re-development of Pallasades shopping centre/car-park. Improve access to commercial facilities for all users.

### Significant interfaces

- Sleeperz Hotel: independent commercial development;
- re-signalling: scheduled to occur after Gateway but, subject to transfer of funding, may provide passive provision and deliver containment systems within Gateway project;
- Centro project linking to Moor Street in Stephenson Street / Stephenson Place directly fronting onto station; and
- potential service diversions in the highways along the proposed Metro route to and past the station.

### Key assumptions

- Stakeholder funding flows are in accordance with the agreed funding and finance plan;
- site assembly proceeds as required by the project; and
- necessary consents and property acquisitions are obtained as planned, including BCC obligations.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Date</b>
Complete GRIP 5	Scheme signed off by funders	Q4 2009
Public local inquiry	Statutory process	Q1 2009
Commence enabling works	Visible works start	Q4 2009
Land transfer to Network Rail	Land available to start works on non Network Rail land	Q1 2010
Start phase 1 (west)	Start main works	Q1 2010
Complete phase 1 (west)	50 per cent of new station complete	Q4 2012
Start phase 2 (east)		Q1 2013
Complete phase 2 (East)	Main concourse open for use by passengers	Q1 2015

**Note**

- Through GRIP 5 the programme is being refined, including sequencing, to increase programme robustness, reduce disruption and the potential for disruption, and reduce costs; and
- dates are based upon Funding & Finance Plan Revision 3 of 24<sup>th</sup> October 2008 (Option 2 – Full CPO process).

## Train lengthening - southern

### Network Rail's obligation

Our obligation is to deliver the enhancement projects necessary to support the operational plans agreed with train operators to meet the HLOS capacity metrics. The agreed operational plans are described in the route plans.

The proposed enhancement projects necessary to support the operational plans are set out in the following pages.

The ORR's final determinations provide us with the flexibility to work with train operators to deliver the most cost-effective plan to meet the HLOS capacity metrics for England and Wales.

### Operational plans

This programme is targeted at allowing the operation of longer trains on key routes within the south east of England. The programme of enhancements within this package, in combination with the Thameslink programme described earlier, will enable the relevant train operating companies to strengthen and lengthen services in the high peak and peak three hours to deliver the HLOS passenger capacity into the following London terminus stations:

- Fenchurch Street;
- Liverpool Street;
- Waterloo;
- London Bridge; and
- Victoria.

Further refinement of the overall delivery strategy is required to ensure that the disruption impact of this enhancement programme and loss of capacity at key locations during construction, for instance at London Bridge, is minimised. This includes examining the potential for earlier staging of other capacity works necessary to meet the HLOS capacity targets to help compensate for the temporary loss of capacity on the network during significant construction works.

The programme of enhancements is intended to provide the following capability:

- A. 10-car capability on certain suburban services on the Wessex route into Waterloo.
- B. 10-car capability on certain suburban services on the Sussex route into Victoria.
- C. 10-car capability on certain suburban services on the Sussex route into London Bridge.
- D. 12-car capability on the Sussex route from East Grinstead into Victoria and London Bridge.
- E. 12-car capability on certain Kent route suburban services into Victoria and London Bridge.
- F. 8-car capability on the Kent route (Maidstone East line) into Victoria.
- G. 6-car capability on the Kent route from Bellingham into Victoria.
- H. 12-car capability on the Anglia route (Tilbury Loop and Ockendon Branch) into Fenchurch Street.
- I. 12-car capability on certain West Anglia services on the Anglia route into Liverpool Street.

The detailed service patterns are subject to further development involving tri-partite discussion with TOCs and DfT to establish the most efficient industry solution when taking into account the cost of infrastructure change, rolling stock strategy and operational requirements. We will continue to develop these detailed plans with TOCs and DfT so that we are able to deliver the required outputs with the funding available.

These capability changes will be delivered to different timescales across CP4, with the operation of longer services possible on or before the December 2013 timetable change date. Further details of the proposed programme dates are included within the individual project definition sheets, and are subject to continuing discussions concerning rolling stock availability.

### Enhancement projects

Set out below are the projects we believe are necessary to deliver the operational plans.

Capability change	Necessary projects
(A)	Waterloo International integration
(H)	12-car capability on the Tilbury Loop and Ockendon Branch
(I)	12-car capability on the Liverpool Street to Cambridge route 12-car capability on the Liverpool Street to Stansted route

Set out below are the projects that require further development to confirm the delivery strategy.

Capability change	Projects requiring further development to confirm delivery strategy
(A)	10-car capability on the Waterloo to Windsor and Eton Riverside via Richmond route; 10-car capability on the Raynes Park to Epsom route; 10-car capability on the Hounslow Loop; 10-car capability on the Staines to Weybridge route; 10-car capability on the Shepperton branch; 10-car capability on the Hampton Court branch and Kingston Loop; 10-car capability on the Waterloo to Woking slow lines; 10-car capability on the Chessington South branch; 10-car capability on the Leatherhead to Guildford route; 10-car capability on the Hinchley Wood to Guildford route; and Clapham Junction station capacity and platform lengthening.
(B), (D), (E), (F), (G)	Clapham Junction station capacity and platform lengthening; 10-car capability on the Streatham Hill route; 10-car capability on the Norbury route; 10-car capability on the Hackbridge route; 12-car capability on the East Grinstead route; 12-car capability on the Swanley to Rochester route; 8-car capability on the Maidstone East route; and 6-car capability on the Bellingham route.
(C), (D), (E)	12-car capability on the East Grinstead route; 10-car capability on the Sydenham slow lines route; 12-car capability on the Sidcup and Bexleyheath routes (from Dartford); 12-car capability on the Hayes and Sevenoaks (via Grove Park) routes; 12-car capability on the Greenwich and Woolwich routes; and 12-car capability on the Dartford to Rochester route.

Set out in the following pages are definition sheets for the projects within this programme.

### Project scope

The programme of enhancements requires further development to ensure robust decisions are made in order to deliver the outputs within the funding available. Further development of the enhancement programmes is required to examine opportunities to reduce the forecast cost of the proposed schemes in order to make them affordable within the CP4 settlement. This will be achieved through:

- examination of unit cost efficiencies;
- value management and scope challenge to ensure the most cost effective solutions are being progressed;

- standards challenge to ensure consistency of application of company standards with regard to issues such as usable platform lengths and widths, and re-positioning of signals;
- risk assessments to assess the need for scope such as enhanced means of escape;
- further refinement of the operational plan with train operators to examine, for example, opportunities for selective door opening (SDO).

For the programme of works to support train lengthening, platform extensions will be built to comply with the mandatory requirements of relevant Railway Group Standards, except in exceptional circumstances such as a compliant design not being feasible or affordable. In such circumstances we would seek alternative solutions to delivering the capability or derogations from standards through agreement with the Rail Safety and Standards Board.

For the programme of platform lengthening schemes the following facilities will be provided on each platform extension:

- standard back fence;
- adequate lighting;
- signage;
- enhancement to pre-existing CCTV equipment to cover the platform extension if needed; and
- enhancement to the existing PA system if needed.

Additional passenger facilities such as canopies and shelters may be provided at the time of delivery where the Stations Facilities Operator and Network Rail agree to install them and funding is provided through other programmes such as the national stations improvement programme.

**Project definition: Waterloo International integration**

**Network Rail’s obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of works**

The scope of work we believe is necessary to help meet our obligation is set out below. The scope will be more fully defined at the completion of the GRIP 3 study:

- extension of platforms 3 and 4 at Waterloo to 10 car;
- platforms 1 and 2 no longer used;
- track alignment;
- point work alterations to replicate functionality;
- signalling moves and alterations;
- alterations to IECC systems;
- deck over the orchestra pit connecting Waterloo International terminal (WIT) to the concourse;
- possible routing of passengers through WIT directly to LUL;
- CIS system in WIT;
- automatic ticket gates in WIT; and
- PA system in WIT.

**Outputs**

Waterloo International integration project will provide a 10-car compliant Waterloo station and convert Waterloo International for use by domestic services.

**Significant interfaces**

Project interfaces have been identified with the following projects:

- Waterloo automatic ticket gate project;
- WIT conversion of platform 20;
- Reading area station redevelopment;
- Waterloo buffer stop project;
- 10-Car South West suburban railway project;
- retail proposals for development in the ‘Orchestra Pit’ at Waterloo;
- Southern DC traction power supply project; and
- Airtrack (uncommitted).

**Key assumptions**

- The works for the 10-car project will not require a TWA;
- applications for listing the station (Grade II) will not adversely affect the project;
- there is enough power in the system to cope with an upgrade to 10-car operations on the Windsor and Suburban lines;
- significant civil works will not be required to existing structures; and
- significant signalling work is not required.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
GRIP 3 option selection report	Allows a single option to be identified and progressed into design	Q1 2009
GRIP 4	Single option developed	Q4 2009
Submit investment authority for GRIP 5-8	Draw down funds to begin implementation	Q1 2010
GRIP 5	Detailed design completed	Q4 2010
GRIP 6	Construction started	Q4 2010
Construction completed		Q4 2013

**15.02 Project definition – 12-car capability on the Tilbury Loop and Ockendon branch**

**Project definition: 12-car capability on the Tilbury Loop and Ockendon Branch**

**Network Rail’s obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of works**

The scope of work we believe is necessary to help meet our obligation is:

- platforms will need to be extended at Stanford-le-Hope, Tilbury Town, Grays, and Ockendon; and
- other stations under investigation include Pitsea, East Tilbury, Purfleet, Rainham and Dagenham Dock.

Ongoing development works will confirm more detailed scope including which locations will have platforms extended and which require a timetable solution. The detailed scope will also determine the level of associated works such as track remodelling, signalling, OHL and DOO equipment.

**Outputs**

This project is to allow 12-coach operations on the Tilbury Loop based on using class 357 and cascaded class 321 rolling stock.

**Significant interfaces**

- The CP4 enhancement scheme to provide enhanced OHL power supply throughout East Anglia; and
- consideration will be given to synergy with other potential enhancement schemes, notably station improvements (NSIP, Access for All etc).

**Key assumptions**

- DfT has indicated that the rolling stock strategy requires existing class 357 and cascaded class 321 vehicles to operate the 12-coach services over the Tilbury Loop. These are not currently fitted with a functioning SDO system;
- 12-coach trains will be able to be accommodated at Chafford Hundred without any infrastructure works being required; and
- it is assumed that the planning approvals will be forthcoming for the works if required.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Date</b>
Complete single option development and outline design for each location	Relevant GRIP products Successful GRIP 4 stagegate	Q2 2009 (all stations)
Tender for detailed design and implementation phase	Invitations to Tender	Q3 2009
Completion of detailed design	Relevant GRIP products and successful GRIP 5 stage gate	Q4 2010
Implementation phase (on-site works)	Physical works, taken into use upon completion	Q1 2011 – Q4 2011

These works will be completed in time for the December 2011 timetable change.

### **Project definition: West Anglia outer 12-coach trains**

#### **Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### **Scope of works**

The scope of work we believe is necessary to help meet our obligation includes:

- Cambridge will require a new island platform; and
- platforms will need to be extended at Stansted Mountfitchet, Sawbridgeworth, Harlow Mill, Broxbourne and Cheshunt;

Other stations under investigation include Shelford, Great Chesterford, Newport, Elsenham and Roydon.

Ongoing development works will confirm more detailed scope including: which locations will have platforms extended, which ones will be operated under SDO and which require a timetable solution. The detailed scope will also determine the level of associated works such as track remodelling, signalling, OHL and DOO equipment.

#### **Outputs**

This project allows 12-coach operations on the West Anglia route between Cambridge/Stansted Airport and Liverpool Street, based on class 317 and new rolling stock.

#### **Significant interfaces**

- the CP4 enhancement scheme to provide sufficient OHL power supply on this route.

#### **Key assumptions**

Stansted Airport station is to have an additional 12-coach platform (platform 4), to be funded entirely by BAA plc (anticipated circa late 2011). This is an intervention that was agreed to be funded and delivered by BAA subject to certain conditions relating growth being met. If these conditions are not met in time to complete the works by late 2011 then Stansted Airport – Liverpool Street 12-coach operations may not be fully deliverable without other mitigation, e.g. interim timetabling solutions.

Other assumptions are:-

- if SDO is utilised at certain stations then it will need to be fitted to both the new trains and the existing class 317 fleet;
- 12-coach trains will be able to be accommodated at Liverpool Street without there being any infrastructure works required;
- no other alterations to infrastructure away from affected stations will be required;
- the existing 12-coach stations on the route (Whittlesford Parkway, Audley End, Bishops Stortford, Harlow Town and Tottenham Hale) will not require platform extensions;
- if land take is required, this will be forthcoming;
- planning approvals, if required, will be forthcoming;
- no further works in stations (secondary means of escape, platform canopies, additional station entrances, customer information systems, seating, etc.) will be required; and
- any required additional train stabling facilities will be provided outside this project.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Date</b>
Complete single option development and outline design for each location	GRIP 4 stagegate reviews completed	Q3 2009 (Broxbourne) Q2 2010 (Cambridge) Q1 2010 (all other locations)
Tender for detailed design and implementation phase	Invitations to tender	Q3 2009 (Broxbourne) Q3 2010 (Cambridge) Q1 2010 (all other locations)
Implementation phase (on-site works)	Physical works, taken into use upon completion	Q1 2010 – Q4 2010 (Broxbourne) Q1 2011 – Q4 2011 (Cambridge) Q4 2010 – Q4 2011 (all other locations)

The critical path element of this project is the Cambridge new island platform (anticipated circa late 2011). Without this element of the overall scheme 12-coach NXEA services would not be able to commence and this is needed for the 12-coach operation of both NXEA and First Capital Connect services from Cambridge.

We will commit to firm scope for this project during Q4 2009, following the first GRIP 4 stage review.

This project will be completed in time for the December 2011 timetable change.

**Project definition: 10-car south west suburban railway**

**Network Rail’s obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of works**

The potential stations at which platform lengthening and associated works may be required are identified below:

<b>Line of route</b>	<b>Potential stations</b>
Waterloo to Windsor and Eton Riverside via Richmond	Queenstown Road, Vauxhall, Clapham Junction, Wandsworth Town, Putney, Barnes, Mortlake, North Sheen, Richmond, St Margarets, Twickenham, Whitton, Feltham, Ashford, Staines, Wraysbury, Sunnymeads, Datchet, Windsor & Eton Riverside
Raynes Park to Epsom	Raynes Park, Motspur Park, Worcester Park, Stoneleigh, Ewell West, Epsom, Ashtead, Leatherhead
Hounslow Loop	Barnes Bridge, Chiswick, Kew Bridge, Brentford, Syon Lane, Isleworth, Hounslow
Staines to Weybridge	Egham, Virginia Water, Chertsey, Addlestone, Weybridge
Shepperton branch	Fulwell, Hampton, Kempton Park, Shepperton, Strawberry Hill, Sunbury, Upper Halliford
Hampton Court branch and Kingston loop	Berrylands, Earlsfield, Hampton Court, Hampton Wick, Kingston, New Malden, Norbiton, Raynes Park, Surbiton, Teddington, Thames Ditton, Wimbledon
Waterloo to Woking slow lines	Esher, Hersham, Walton on Thames, Weybridge, Byfleet and New Haw, West Byfleet, Woking
Chessington South branch	Chessington North, Chessington South, Malden Manor, Motspur Park, Raynes Park, Tolworth, Vauxhall
Leatherhead to Guildford	Bookham, Boxhill & Westhumble, Clandon, Dorking, Effingham Junction, Guildford, Horsley, London Road Guildford ( <i>Leatherhead, Ashtead, Epsom – link with Sussex Route scope</i> )
Hinchley Wood to Guildford	Claygate, Cobham & Stoke D’Abernon, Hinchley Wood, Oxshott

We have prioritised the individual routes into twelve subprojects split into two delivery tranches. Tranche 1 is currently considered the higher priority. As development progresses it may well be that the priority will change.

The critical path elements of this project are considered to be as follows:

- delivery of Twickenham is crucial to allow ten car operation on the Waterloo to Windsor Line;
- access and operational arrangements at Vauxhall and Clapham Junction are to be integrated with Waterloo works; and
- delivery of Epsom, Leatherhead and Ashtead must meet the requirements of Sussex suburban railway and timescales.

**Outputs**

This project allows 10-car operation on suburban services on the Wessex route into Waterloo.

**Significant interfaces**

There are major interfaces with the following projects:

- possessions plan requirements need to take account of the Olympics;
- the CP4 enhancement scheme to provide additional power supply throughout the South West suburban area;
- Reading station extension of southern platforms;
- Waterloo International intergration; and
- Sussex Route platform lengthening.

**Key assumptions**

- Indicative delivery dates assume no TWA powers required;
- stabling facilities at Feltham (or alternative interim location) are available to South West Trains to accommodate any 10-car fleet as it is rolled out for suburban services;
- power supply will be developed in line with the timescales outlined in this project in order that a 10-car service can be implemented by South West Trains without any compromise to sectional running times, performance and timetable; and
- planning approvals will be forthcoming for the works required.

**Activities and milestones**

<b>Tranche/Priority</b>	<b>Route</b>	<b>Indicative date</b>
Tranche 1 (01)	Waterloo to Windsor-Eton via Richmond	Q4 2010-2013
Tranche 1 (02)	Raynes Park to Epsom (including Ashted and Leatherhead	Q4 2011
Tranche 1 (03)	Hounslow Loop	Q4 2012
Tranche 1 (04)	Staines to Weybridge	Q4 2012
Tranche 1 (05)	Clapham Junction platforms 9,10,11	Q4 2012-2013
Tranche 2 (06)	Shepperton branch	Q4 2012-2013
Tranche 2 (07)	Hampton Court branch	Q4 2012-2013
Tranche 2 (08)	Waterloo to Woking (slow lines to facilitate a stopping service)	Q4 2012-2013
Tranche 2 (09)	Chessington South branch (including Vauxhall 7&8)	Q4 2012-2013
Tranche 2 (10)	Leatherhead to Guildford	Q4 2012-2013
Tranche 2 (11)	Hinchley Wood to Guildford	Q4 2012-2013

We will commit to firm scope for this project at Q2 2010, following the first GRIP 4 stage review.

Tranche 1 is intended to be completed in time for the December 2012 timetable change with elements available for use for the December 2011 timetable change (in line with expected rolling stock availability). Elements of Tranche 1 are also scheduled to be available for use for the December 2012 timetable change to facilitate the implementation of specific SSWT franchise commitments. Tranche 2 is to be completed in time for the December 2013 timetable change.

**Project definition: Clapham Junction station capacity and platform lengthening**

**Network Rail's obligations**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of works**

The scope of works we believe is necessary to help meet our obligation includes:

- lengthening of platforms 14 and 15 to accommodate 10-car trains; and
- improvements to pedestrian access and circulation arrangements on the station to accommodate the growth in passenger numbers, and to relieve the severe congestion which already exists in the station subway.

The following scope of works is indicative and may be subject to change during the ongoing development work and subject to third party funding. Only the work to extend the platforms is absolutely necessary.

Location	Platform extensions	Civil engineering	Track / signalling	Other
Platforms 14 and 15	Extend platform x 2	Lengthening of platforms	Possible slueing of track, relocation of signals	Acquisition of land
Footbridge		Improved access to platforms, new station entrances		

**Outputs**

This project would contribute to the achievement of 10-car suburban operation into Victoria from the Sussex route by May 2013.

**Significant interfaces**

- Route 2 suburban area 10-car operations to Victoria and London Bridge;
- route 3 10-car South West suburban railway; and
- route 3 Waterloo International Terminal conversion.

**Key assumptions**

- That SDO will not be an acceptable alternative to platform extensions at this location;
- that developer contributions may be available within the timescales required;
- that no significant issues will be encountered with the purchase of land;
- it is expected that the land will be acquired as part of the commercial property development. If this does not proceed then it will be necessary to purchase the land either directly or via a Transport and Works Act Order;

**Activities and milestones**

Activity	Output	Indicative date
Confirmation of commercial property development proceeding	Dictates whether TWA will be required to purchase land for the platform lengthening.	Q3 2009
Identifying access requirements	Access opportunities will influence delivery timescales	Q3 2009

We will commit to firm scope for this project at Q4 2009, following the first GRIP 4 stage review.

These works will be completed in time for the December 2013 timetable change.

**Project definition: Sussex route suburban area 10-car/ 12-car operations to Victoria and London Bridge**

**Network Rail’s obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of works**

The scope of work we believe is necessary to meet our obligation is set out in the following table.

The table below lists locations where work is presently planned to deliver the 10-car, and in some cases 12-car, capability. The locations are grouped by the five infrastructure routes plus a separate category for the stations core to all routes on the Victoria slow lines.

Infrastructure route	Associated worksite locations
Norbury route	Epsom Downs, Banstead, Belmont, Sutton (Epsom Downs Branch platforms), Carshalton Beeches, Wallington, Waddon, West Croydon, Selhurst, Thornton Heath, Norbury, Streatham Common
Streatham Hill route	Streatham Hill, West Norwood, Gipsy Hill, Crystal Palace
Hackbridge route	Warnham, Ockley, Holmwood, ( <i>Boxhill, Leatherhead, Ashtead, Epsom – within 10 car South West Suburban Railway scope</i> ), Ewell East, Cheam, Sutton (already 10-car on through platforms), Carshalton, Hackbridge, Mitcham Junction
Stations core to Norbury/ Streatham Hill and Hackbridge slow line routes into Victoria Central	Balham, Wandsworth Common, Clapham Junction (see notes below), Battersea Park
Sydenham slow lines route	Norwood Junction, Anerley, Penge West, Sydenham, Forest Hill, Honor Oak Park, Brockley, New Cross Gate
East Grinstead route	East Grinstead, Dormans, Lingfield, Hurst Green, Oxted, Woldingham, Upper Warlingham, Riddlesdown, Sanderstead

Notes:

- Epsom, Leatherhead, Ashtead and Box Hill and Westhumble sit within the scope of the route 3 project '10-car south west suburban railway';
- Clapham Junction slow line platforms 14 and 15 sit within the scope of the route 3 project 'Clapham Junction station capacity and platform lengthening';
- a solution has not been found at this stage for a viable 12-car scheme at South Croydon (on the East Grinstead route); and
- the scope of Clapham Junction is a separate project contained in an earlier project definition sheet.

Where land is required and cannot be purchased directly, it is intended that Transport and Works Act (TWA) powers be sought.

**Outputs**

This project is to allow 10/12-car operation for the following origin/destination service sets currently in operation on South Central suburban routes. For clarity the eight routes listed are referred to as the 'operational routes'. The eight operational routes feed into five distinct 'infrastructure routes'.

**15.06** Project definition - Suburban area 10-car operations to Victoria and London Bridge

<b>Operational route</b>	<b>Infrastructure route grouping</b>
London Bridge low level – Victoria Central	Streatham Hill route (10-car)
East Croydon / Norwood Junction – Victoria Central	
Sutton / Epsom Downs – Victoria Central via Streatham Common	Norbury route (10-car)
Horsham / Epsom to Victoria via Hackbridge	Hackbridge route (10-car)
East Grinstead – Victoria Central via Clapham Junction (fast lines from Windmill Bridge)	East Grinstead route (12-car)
East Grinstead to London Bridge (fast lines from Norwood Junction)	
East / West Croydon – London Bridge low level	Sydenham slow lines route (10-car)
Epsom – London Bridge low level via West Croydon	

**Significant interfaces**

- Strategic route 2: power supply upgrade project. Key to delivery of lengthened services on all the routes outlined in this project;
- 10-car south west suburban railway at Epsom, Leatherhead, Ashted, Box Hill and Westhumble;
- Clapham Junction station capacity and platform lengthening: platforms 14 and 15;
- Thameslink KO2: interface with Thameslink project as KO2 currently envisages some services on the East Grinstead and Sydenham slow line routes become Thameslink operated from 2015. In the case of the Sydenham slows, Thameslink would require 12-car rather than 10-car by December 2015. Agreement on passive or active provision within CP4 for this 12-car specification would need to be determined site by site; and
- Thameslink works at London Bridge: presently programmed to begin in October 2012. An aspiration exists to have lengthened 12-car services on East Grinstead route and possibly 10-car on the Sydenham route by this point.

**Key assumptions**

- The present working assumption agreed with the DfT is that SDO rolling stock will only be available for all peak diagrams on the East Grinstead route;
- Network Rail has conducted an initial sift of potential SDO locations on other routes but at present platform lengthening works required at these locations are included within the project scope;
- South Croydon is presently excluded from the scope of the East Grinstead route despite presently being a stop on these services. This is because a viable 12-car scheme at the station has not been identified at this stage. If the station does not have platforms lengthened and if SDO cannot be used at the station, then there will be a potential impact in terms of re-organisation of stopping services at South Croydon; and
- no work is presently being undertaken by Network Rail on enhancements to depot and stabling facilities to enable 10/12-car peak suburban operations. As agreed with DfT, proposals for enhancements to depot and stabling facilities to allow peak 10/12 car operation are being tabled by bidders for the South Central franchise. The preferred bidder will be known in June 2009.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
East Grinstead route	12-car operations	Q4 2011
Sydenham route	10-car operations	Q4 2012
Norbury route	10-car operations	Q4 2013
Streatham Hill route	10-car operations	Q4 2013
Hackbridge route	10-car operations	Q4 2013

The delivery dates in the table could be impacted by the outcome of the modelling being carried out on the power supply works necessary to support the 10 and 12-car lengthening. Dates for specific project milestones and GRIP stages will differ depending upon the complexity of stations along each of the routes.

We will commit to firm scope for this project at Q4 2009, following the first GRIP 4 stage review.

### **Project definition: 12-car Swanley to Rochester route**

#### **Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### **Scope of works**

No physical works are anticipated under this scheme. The project will be implemented by carrying out risk assessments to identify any works necessary to allow SDO for 12-car operations on stopping services over this route. Due to the relatively low level of utilisation of the stations affected and distance away from London, SDO is considered to be an appropriate solution over this section of route. However at present it is considered unlikely that the rolling stock strategy will provide SDO equipped rolling stock before the very end of CP4. The timing of this scheme is therefore dependent on the rolling stock strategy providing the necessary vehicles. The works required at Rochester are not included in this scheme.

#### **Outputs**

This project is to allow 12-car operations for stopping services on the route between Swanley and Rochester. Non-stopping services are already 12-car. In the morning high peak hour it is assumed that this scheme would enable 2tph to be lengthened from 8-car class 465 to 12-car class 375 travelling to Victoria.

#### **Significant interfaces**

The significant interfaces for this project are:

- the CP4 enhancement scheme to provide 12-car operations between Dartford and Rochester, since 12-car capability is required at Rochester to enable 12-car at intermediate stations between Swanley and Rochester;
- the CP4 enhancement scheme to provide additional depot and stabling capacity, which is led by DfT; and
- the CP4 enhancement scheme to provide additional power supply throughout the Kent suburban area.

#### **Key assumptions**

- Not all platforms at Victoria (Eastern) can accommodate 12-car trains. However it is considered likely that there will be sufficient flexibility in future timetable development to enable additional 12-car trains to operate;
- trains operating stopping services over this route will be SDO enabled; and
- additional 12-car services into Victoria can be timetabled into platforms with 12-car capability.

#### **Activities and milestones**

It is expected that longer trains will commence operation from the December 2011 timetable change.

### **Project definition: 8-car operation Maidstone East line**

#### **Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### **Scope of works**

No physical works are anticipated. The project will be implemented by carrying out risk assessments to identify any works necessary to allow SDO for 8-car operations on stopping services over this route. Due to the relatively low level of utilisation of the stations affected and distance away from London, SDO is considered to be an appropriate solution over this section of route. This is consistent with Southeastern's rolling stock strategy, which will provide SDO-equipped rolling stock for main line services.

#### **Outputs**

This project would allow 8-car operations for services on the route between Swanley and Ashford via Maidstone East. These services are currently restricted to 6-car maximum length due to short platforms, except for a small number of trains equipped with SDO.

#### **Significant interfaces**

There are no major interfaces with other projects.

#### **Key assumptions**

- Trains operating stopping services over this route will be equipped with a functional Selective Door Opening (SDO) system;

#### **Activities and milestones**

The risk assessments will be completed in time for the December 2009 timetable change.

### Project definition: 6-car operation Victoria to Bellingham route

#### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### Scope of works

The physical works required are an increase in usable platform lengths from 4-car to 6-car at Wandsworth Road and Clapham High Street.

Only one physical platform extension is needed, since there are existing disused sections of platform on the other three relevant platforms which can be brought back into use.

#### Outputs

This project would allow 6-car operations on the proposed service between Victoria Eastern and Bellingham, with lengths based on a class 465 + class 466 formation.

#### Significant interfaces

The major interfaces are with the following, since these are the reasons for implementing the Victoria Eastern to Bellingham service, currently envisaged in December 2012.

- Thameslink Programme, due to the reduction in capacity at London Bridge from the start of construction works; and
- Sussex route suburban train lengthening, since 10-car operation at Battersea Park requires track layout changes which render the current service operating via Wandsworth Road impractical.

#### Key assumptions

It has been assumed that the DfT will amend an existing franchise to include a new Victoria Eastern to Bellingham service.

#### Activities and milestones

Activity	Indicative date
Complete GRIP 4	Q3 2009
GRIP 5-8 authority	Q2 2010
Commence works on site	Q1 2011
Complete works on site	Q3 2011
Commence 6-car Victoria Eastern to Bellingham service	Q4 2012

We will commit to firm scope for this project at Q3 2009, following the GRIP 4 stage review.

These works will be completed in time for the October 2012 timetable change, prior to the introduction of the Victoria Eastern to Bellingham service.

### Project definition: 12-car operations Sidcup and Bexleyheath routes

#### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### Scope of works

The following works would be carried out under this scheme:

- platform lengthening at New Cross, Blackheath, Mottingham, Eltham, Hither Green and Dartford;
- modifications to the turnback sidings at Sidcup and Dartford; and
- modifications to DOO equipment.

The project would be implemented by a combination of the following:

- remodelling of certain stations, with some relocation of S&C and civil engineering works being required;
- construction of several more simple platform extensions, together with associated works such as relocating signals and DOO monitors; and
- relocation of some signals which are not directly associated with platform extensions. This is needed to ensure that signal spacing in certain areas is optimised for 12-car operations.

#### Outputs

This project is to allow 12-car operations on the routes between London and Dartford via both Sidcup and Bexleyheath, based on class 465 Networker rolling stock.

#### Significant interfaces

- The CP4 enhancement scheme to provide for 12-car operations over the Greenwich/Woolwich line to Dartford, Dartford to Rochester and the Hayes and Sevenoaks lines;
- the CP4 enhancement scheme to provide additional power supply throughout the Kent suburban area; and
- Crossrail, for which the safeguarding allows for additional tracks associated with a future extension through the Dartford area to Gravesend.

#### Key assumptions

It is assumed that 12-car class 465 trains will be able to be accommodated at London Charing Cross without any major infrastructure works there being required. Given that this is a critical issue for 12-car operations in general our detailed assumptions are included in the route plan.

It is assumed that the planning approvals will be forthcoming for the works required.

#### Activities and milestones

Activity	Indicative date
Complete GRIP 4	Q3 2010
Commence planning approvals	Q1 2010
Complete planning approvals	Q3 2010
GRIP 5-8 authority	Q4 2010
Commence works on site	Q3 2011
Complete works on site	Q3 2012
Commence 12-car operations	Q4 2012

We will commit to firm scope for this project at Q3 2010, following the GRIP 4 stage review.

These works will be completed in time for the October 2012 timetable change and prior to the removal of any capacity at London Bridge due to construction works for the Thameslink Programme.

**15.11 Project definition – 12-car operations Hayes and Sevenoaks (stopping) services**

**Project definition: 12-car operations Hayes and Sevenoaks (stopping) services**

**Network Rail’s obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of works**

The scope of work we believe is necessary to meet our obligations includes:

- construction of several minor platform extensions, together with associated works such as relocating signals and DOO monitors; and
- enhancement works to provide 12-car capability at Hither Green, Grove Park, Elmstead Woods, Chislehurst and Petts Wood, restricted to the slow line platforms only; and

**Outputs**

This project is to allow 12-car operations on the route between London and Hayes and between London and Sevenoaks on stopping services via Grove Park, based on Class 465 Networker rolling stock.

**Significant interfaces**

- The CP4 enhancement scheme to provide for 12-car operations over the Sidcup and Bexleyheath line, which is needed to provide 12-car capability at New Cross; and
- the CP4 enhancement scheme to provide additional power supply throughout the Kent suburban area.

**Key assumptions**

The DfT has indicated that the rolling stock strategy requires class 465 / class 466 Networker vehicles to operate the majority of services over these routes. These are not fitted with a functioning SDO system suitable for general use. SDO is not therefore an option for stations covered by this project.

It is assumed that 12-car class 465 trains will be able to be accommodated at London Charing Cross without any major infrastructure works there being required. Given that this is a critical issue for 12-car operations in general our detailed assumptions are included in the route plan.

**Activities and milestones**

<b>Activity</b>	<b>Indicative date</b>
Complete GRIP 4	Q1 2010
GRIP 5-8 authority	Q2 2010
Commence works on site	Q1 2011
Complete works on site	Q4 2011
Commence 12-car operations	Q4 2011

We will commit to firm scope for this project at Q1 2010, following the GRIP 4 stage review.

These works will be completed in time for the December 2011 timetable change, to enable a small number of suburban trains on the Kent route to be lengthened to 12-car, in advance of the main 12-car suburban scheme in December 2012.

### Project definition: 12-car operations Greenwich and Woolwich route

#### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### Scope of works

The scope of works we believe is necessary to meet our obligations includes modifications to DOO equipment and platform lengthening at:

- Deptford;
- Westcombe Park;
- Charlton;
- Woolwich Arsenal;
- Plumstead;
- Abbey Wood;
- Erith; and
- Slade Green.

Works that would possibly also need to be carried out include minor platform lengthening at other sites and associated works such as signal relocations.

#### Outputs

This project is to allow 12-car operations on the route between London and Dartford via Greenwich and Woolwich, based on class 465 Networker rolling stock.

#### Significant interfaces

- The CP4 enhancement scheme to provide for 12-car operations over the Sidcup and Bexleyheath lines;
- the CP4 enhancement scheme to provide additional power supply throughout the Kent suburban area; and
- Crossrail, for which the safeguarding allows for a future extension from Abbey Wood to Gravesend.

#### Key assumptions

The DfT have indicated that the rolling stock strategy requires class 465 / class 466 Networker vehicles to operate the majority of services over this route. These are not fitted with a SDO system suitable for general use. SDO is therefore not currently an option for stations covered by this project.

It is assumed that 12-car class 465 trains will be able to be accommodated at London Charing Cross without any major infrastructure works there being required. Given that this is a critical issue for 12-car operations in general our detailed assumptions are included in the route plan.

It is assumed that the planning approvals will be forthcoming for the works required.

It is assumed that not serving Woolwich Dockyard with 12-car trains will be acceptable.

It is assumed that the signalling can be optimised to allow 12-car operations on these routes without a reduction in the numbers of trains which can be run.

#### Activities and milestones

Activity	Indicative date
Complete GRIP 4	Q4 2009
Commence planning approvals	Q1 2010
Complete planning approvals	Q3 2010
GRIP 5-8 authority	Q3 2010
Commence works on site	Q1 2011
Complete works on site	Q3 2012
Commence 12-car operations	Q4 2012

We will commit to firm scope for this project at Q4 2009, following the GRIP 4 stage review.

These works will be completed in time for the October 2012 timetable change and prior to the removal of any capacity at London Bridge due to construction works for the Thameslink Programme.

### **Project definition: 12-car Dartford to Rochester route**

#### **Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### **Scope of works**

The scope of work we believe is necessary to help meet our obligation includes:

- major works at Gravesend;
- major works at Rochester, potentially in conjunction with phase 2 of the East Kent Resignalling Programme;
- minor remodelling of Strood, where platform lengthening is anticipated to require conversion of the Medway Valley line platform 3 to a bay. This could also be undertaken in conjunction with the East Kent Resignalling Programme; and
- construction of several more simple platform extensions, together with associated works such as relocating signals and DOO monitors.

The following works would potentially be carried out under this scheme:

- platform lengthening at Greenhithe; Swanscombe; Northfleet, Higham
- platform lengthening at Gravesend, Strood and Rochester with associated remodelling of the track layout at these stations;
- modifications to DOO equipment; and
- associated works such as signal relocations.

#### **Outputs**

This project is to allow 12-car operations on the route between Dartford and Rochester, based on class 465 Networker rolling stock. The project would also, for no additional infrastructure cost, allow lengthening of the following:

- stopping services over the Swanley to Rochester route, subject to these being operated by vehicles equipped with selective door opening; and
- high speed services between Rochester and St Pancras from 6-car to 12-car.

#### **Significant interfaces**

- Commencement of domestic services on High Speed One to St Pancras from December 2009, with many of these services operating through this area;
- the various CP4 enhancement schemes to provide for 12-car operations west of Dartford on the Sidcup, Bexleyheath and Greenwich/Woolwich lines;
- the CP4 enhancement scheme to provide additional power supply throughout the Kent suburban area;
- the Gravesend Transport Quarter scheme, led by Gravesham Borough council;
- investigations being carried out on behalf of Medway Renaissance regarding enhancements to Strood and Rochester stations;
- the East Kent resignalling programme, a CP4 scheme driven by asset condition, which offers a potential delivery mechanism for track layout changes required to accommodate platform lengthening at Strood and Rochester;
- schemes to facilitate the growth of freight services to the Isle of Grain, possibly including a passing loop on the single track branch; and
- Crossrail, for which the safeguarding allows for a future extension from Abbey Wood to Gravesend, requiring additional capacity and 12-car operation over this route.

#### **Key assumptions**

The DfT has indicated that the rolling stock strategy requires Class 465 / Class 466 Networker vehicles to operate the majority of services over the Dartford – Rochester route. These are not fitted with a SDO system suitable for general use. SDO is therefore not currently an option for stations covered by this project.

It is assumed that 12-car class 465 trains will be able to be accommodated at London Charing Cross without any major infrastructure works there being required. Given that this is a critical issue for 12-car operations in general our detailed assumptions are set out in the route plan.

It is assumed that the planning approvals will be forthcoming for the works required.

**Activities and milestones**

<b>Activity</b>	<b>Indicative date</b>
Complete GRIP 4	Q1 2010
Commence planning approvals	Q1 2010
Complete planning approvals	Q3 2010
GRIP 5-8 authority	Q4 2010
Commence works on site	Q2 2011
Complete works on site	Q3 2013
Commence 12-car operations	Q4 2013

We will commit to firm scope for this project at Q1 2010, following the GRIP 4 stage review.

These works will be completed in time for the December 2013 timetable change.

This is a later implementation date than the major elements of 12-car suburban operations on Kent, since 12-car operations west of Dartford will be completed by October 2012. This later date reflects the following:

- significant infrastructure challenges east of Dartford for 12-car operations, including major dependencies with other projects;
- enabling a phased implementation of 12-car services, to ensure that any issues such as achieving robust turnaround times for 12-car trains at London terminals can be dealt with in manageable increments; and
- the limited rolling stock availability for large numbers of 12-car services prior to the arrival of the new Thameslink key output 2 trains from 2013 onwards.

## Power supply upgrade

### Network Rail's obligation

The ORR's final determinations provide us with the flexibility to work with train operators to deliver the most cost-effective plan to meet the HLOS capacity metrics for England and Wales.

Our obligation is to deliver the enhancement projects necessary to support the operational plans agreed with train operators to meet the HLOS capacity metrics. The agreed operational plans are described in the route plans.

The proposed power supply upgrade projects necessary, in combination with the train lengthening programme, to support the operational plans are set out in the following pages.

We have the flexibility to change the operational plan and the proposed scope necessary to facilitate the operational plan. Any changes to the proposed operational plans or the proposed enhancement schemes will be subject to consultation with relevant train operators and change control as outlined at the front of this document.

### Enhancement projects

Set out below are the projects assumed necessary:

- Kent (route 1) power supply enhancements;
- New Cross Grid supply point enhancement;
- Sussex (route 2) power supply enhancements;
- Wessex (route 3) power supply enhancements;
- West Anglia (route 5) power supply enhancements;
- Thameside (route 6) power supply enhancements;
- Great Eastern (route 7) power supply enhancements; and
- DC regeneration.

The delivery dates for these projects will be determined by the delivery dates for the output change for infrastructure capability on the relevant route as described in the train lengthening programme.

**Project definition: Route 1 – power supply enhancements**

**Network Rail’s obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of works**

The prospective scope of works is as follows, although may change as modelling and development work progresses.

Volume	Location			
<b>E&amp;P Distribution</b>				
HV cable upgrade	Elmers End to West Wickham			
HV equipment and rectifier transformer upgrade	Elmers End	Knockholt	Bromley South	New Beckenham
	Chelsfield			
TPH to substation conversions	Swanscombe	Gravesend	Uralite Tunnel	

Modelling of the services changes detailed as outputs, and the impact of other schemes is a critical element of the project. This work will be completed in Q2 2009 and will be a crucial feed into understanding the likely cost and deliverability of works. All service changes assumed in the output section of the project as well as those detailed in as significant interfaces have been included in the modelling specification.

**Outputs**

Consistent with all Route 1 capacity schemes as detailed in section 15.00.

**Significant interfaces**

- Thameslink Programme;
- Sussex train lengthening;
- Kent domestic stock (including diversionary routes);
- Class 92 diversionary route project;
- Tunbridge Wells turnback;
- New Cross Grid enhancement;
- Crossrail;
- regenerative braking project;
- national SCADA project;
- platform extension projects;
- traction power supply renewals; and
- separation of LUL power supply system.

**Key assumptions**

- The current practice of freight services not using all contracted paths will continue and there will be no significant shift from diesel to electric hauled freight;
- it is assumed that the Thameslink Programme and other projects addressing the capacity metric will take place in CP4;
- DC services will remain limited to 5.1MW per train in high current areas and 3.4MW per train in other areas;
- no specific requirement to improve journey times or rolling stock performance;
- technology used will be based on current industry standards providing lowest life cycle cost with no provision for low loss materials, or other developments;
- lead times are as follows: grid connections 3-4 years, equipment procurement transformers 2 years, switchgear, SCADA miscellaneous; 1-2 years;
- costs associated with train entry into service requirements such as safety case and system compatibility are not included;
- the SCADA system has either sufficient capacity or can be modified to accept all new devices;

- no special requirements for depots (new and old) or stabling of trains, including both temporary and permanent; and
- current Rules of the Route will remain unchanged.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
Completion of modelling	Confirmation of scope and GRIP 2 estimate	Q2 2009
Complete programme specification	Baseline project scope	Q2 2009
Commence project implementation (GRIP 5)	Delivery of project requirements	Q3 2009
Project close-out (GRIP8)	Project completion	Q1 2015

**16.02 Project definition – Route 1 New Cross Grid connection enhancement to power supply****Project definition: Route 1 – New Cross Grid connection enhancement to power supply****Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of works**

These works form part of an eight year programme expected to span two Control Periods and scheduled to complete in December 2016. It includes the following works:

- modification and extension of National Grid's existing 275kV substation at New Cross, to provide a replacement to the existing 66kV railway power supply feed;
- provision of two new 33kV supply points to the railway system, for the onward transmittal of traction supplies;
- short term remedial repairs to a number of transformers in the area, to enable them to remain in reliable service until 2015 when the new supplies are commissioned; and
- eventual decommissioning of the existing 66kV system at New Cross.

**Outputs**

The New Cross Grid supply point provides electric traction and signalling supplies to a large area of the DC third rail electrified system in South London, North Kent and Surrey. This project is to renew and upgrade this grid connection and associated infrastructure.

The following specific outputs will be provided:

- improved asset condition, reliability and performance, by renewal of infrastructure which is reaching the end of its economic working life;
- elimination of equipment which will otherwise become obsolete and be inefficient to retain; and
- enhanced traction supply capacity, to support the train lengthening and frequency requirements of the train service in CP4 and beyond.

**Significant interfaces**

- Thameslink Programme;
- Sussex train lengthening;
- Kent domestic stock (including diversionary routes);
- Class 92 diversionary route project;
- Tunbridge Wells turnback;
- Crossrail;
- regenerative braking project;
- national SCADA project;
- platform extension projects;
- traction power supply renewals; and
- separation of LUL power supply system.

**Key assumptions**

- The current practice of freight services not using all contracted paths will continue and there will be no significant shift from diesel to electric hauled freight;
- it is assumed that the Thameslink Programme and other projects addressing the capacity metric will take place in CP4;
- DC services will remain limited to 5.1MW per train in high current areas and 3.4MW per train in other areas;
- no specific requirement to improve journey times or rolling stock performance;
- technology used will be based on current industry standards providing lowest life cycle cost with no provision for low loss materials, or other developments;
- lead times are as follows: grid connections 3-4 years, equipment procurement transformers 2 years, switchgear, SCADA miscellaneous; 1-2 years;
- costs associated with train entry into service requirements such as safety case and system compatibility are not included;
- the SCADA system has either sufficient capacity or can be modified to accept all new devices;

**16.02** Project definition – Route 1 New Cross Grid connection enhancement to power supply

- no special requirements for depots (new and old) or stabling of trains, including both temporary and permanent; and
- current Rules of the Route will remain unchanged.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
Commence project implementation (GRIP 5)	Start of project delivery phase	Q3 2009
Completion of National Grid works	Works by others, required before Network Rail works	Q4 2014
Commission into service new traction supplies from New Cross Grid	End of main project delivery phase	Q3 2015
Completion of 66kV decommissioning	Removal of redundant infrastructure	Q3 2016
Project close-out (GRIP 8)	Project completion	Q4 2016

**Project definition: Route 2 – power supply enhancements**

**Network Rail’s obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of works**

The prospective scope of works is as follows, although may change as modelling and development work progresses.

<b>Volumes</b>	<b>Location</b>		
<b>E&amp;P Distribution</b>			
HV equipment and rectifier transformer upgrade	Tulse Hill	Purley	
TPH to substation conversions	Burgess Hill		
TPH installation amendments	Hooley	Quarry	Shepherd Hill

Modelling of the services changes and the impact of other schemes is a critical element of the project. This work will be completed in Q2 2009 and will be a crucial feed into understanding the likely cost and deliverability of works. All service changes assumed in the output section of the project, including the additional changes on the Horsham services, as well as those detailed in the significant interfaces list below have been included in the modelling specification.

**Output**

All outputs are as per project outputs of ‘Route 2: suburban area 10/12 car operations to Victoria and London Bridge<sup>1</sup>, with the addition of an extra 2tph on the Selhurst to Victoria line.

**Significant interfaces**

- Thameslink Programme;
- Wessex and Kent train lengthening;
- Class 92 diversionary route project;
- New Cross Grid enhancement;
- East London Line;
- West London Line;
- regenerative braking project;
- national SCADA project;
- platform extension projects;
- traction power supply renewals; and
- separation of LUL power supply system.

**Key assumptions**

- The current practice of freight services not using all contracted paths will continue and there will be no significant shift from diesel to electric hauled freight;
- it is assumed that Thameslink Programme and other schemes listed in ‘significant interfaces’ will take place in CP4 enabling additional growth. The Thameslink Programme will deliver significant elements of traction power supply improvements on Sussex routes;
- residual works associated with Southern PSU will be completed in CP3;
- DC services will remain limited to 5.1MW per train in high current areas and 3.4MW per train in other areas;
- there is no specific requirement to improve journey times or rolling stock performance;
- technology used will be based on current industry standards providing lowest life cycle cost with no provision for low loss materials, or other developments;
- lead times are as follows: grid connections 3-4 years, equipment procurement transformers 2 years, switchgear, SCADA miscellaneous; 1-2 years;
- costs associated with train entry into service requirements such as safety case, booster overlap clashes and system compatibility are not included;

<sup>1</sup> With the exception of the possible requirement to run two Hackbridge line services as far out as Horsham at 10- instead of 8-car. This possible requirement is included in the modelling work.

- the SCADA system has either sufficient capacity or can be modified to accept all new devices;
- no special requirements for depots (new and old) or stabling of trains including both temporary and permanent; and
- current Rules of the Route will remain unchanged

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
Completion of modelling	Confirmation of scope and GRIP 2 estimate	Q2 2009
Complete programme specification	Baseline project scope	Q2 2009
Commence project implementation (GRIP 5)	Delivery of project requirements	Q3 2009
Project close-out (GRIP 8)	Project completion	Q1 2015

**Project definition: Route 3 – power supply enhancements**

**Network Rail’s obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of works**

The scope of works is based on the possible solution to the delivery of CP4 HLOS capacity metric set out in 10-car south west suburban railway project.

<b>Volume</b>	<b>Location</b>			
<b>E&amp;P Distribution</b>				
Grid supply enhancement	Staines			
New switching station	Twickenham			
HV equipment and rectifier transformer upgrade	Leatherhead	Queens Road A		
TPH to substation conversions	Feltham	Isleworth	Chiswick	Mortlake
	Glantay	Ealy	Emmbrook	Buckhurst
	Whitmoor	Sunningdale	Addlestone	Ashford

Modelling of the services changes and the impact of other schemes (significant interfaces) is a critical element of the project. This work will be completed in Q2 2009 and will be a crucial feed into understanding the likely cost and deliverability of works. All service changes assumed in the output section of the project, as well as those detailed in as significant interfaces have been included in the modelling specification.

**Outputs**

Consistent with all Route 3 capacity schemes as detailed in section 15.00.

**Significant interfaces**

- Sussex train lengthening;
- East London Line;
- West London Line;
- North London Line;
- LUL sub-surface lines;
- SWT diversionary routes;
- Farnham re-signalling;
- regenerative braking project;
- national SCADA project;
- platform extension projects
- traction power supply renewals;
- separation of LUL power supply system; and
- Airtrack.

**Key assumptions**

- the current practice of freight services not using all contracted paths will continue and there will be no significant shift from diesel to electric hauled freight;
- it is assumed that other schemes listed as significant interfaces will be funded separately and take place in CP4 enabling additional growth;
- residual works associated with Southern PSU will be completed in CP3;
- DC services will remain limited to 5.1MW per train in high current areas and 3.4MW per train in other areas;
- no specific requirement to improve journey times or rolling stock performance;
- technology used will be based on current industry standards providing lowest life cycle cost with no provision for low loss materials, or other developments;

- lead times are as follows: grid connections 3-4 years, equipment procurement transformers 2 years, switchgear, SCADA misc; 1-2 years;
- costs associated with train entry into service requirements such as safety case, booster overlap clashes and system compatibility are not included;
- the SCADA system has either sufficient capacity or can be modified to accept all new devices;
- no special requirements for depots (new and old) or stabling of trains including both temporary and permanent; and
- current Rules of the Route will remain unchanged.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
Completion of modelling	Confirmation of scope and GRIP 2 estimate	Q2 2009
Complete programme specification	Baseline project scope	Q2 2009
Commence project implementation (GRIP 5)	Delivery of project requirements	Q3 2009
Project close-out (GRIP 8)	Project completion	Q1 2015

**Project definition: Route 5 – Power supply enhancements**

**Network Rail’s obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of Works**

Volume	Location			
<b>E&amp;P distribution</b>				
Increase in firm supply capacity	Ugely	Milton	Rye House	Northumberland Park

Modelling of the service changes detailed in the programme outputs and the impact of other schemes (significant interfaces) is a critical element of the project. This work will not be completed until Q2 2009 and will be a crucial feed into understanding the likely scope, cost and deliverability of works. All service changes assumed in the output section of the project as well as those detailed in as significant interfaces have been included in the modelling specification. The modelling also includes CP5 aspirations of running additional trains following partial doubling of the West Anglia Main line to four tracks between Tottenham Hale and south of Cheshunt.

**Outputs**

Consistent with all Route 5 capacity schemes as detailed in section 15.00.

**Significant interfaces**

- Cambridge new island platform;
- Stansted Airport new platform (to be funded and delivered by BAA);
- Crossrail; and
- AC traction power supply enhancements on routes 7 (Great Eastern) and 6 (Thameside) in association with additional trains and train lengthening projects on those routes.

**Key assumptions**

The study being undertaken by the Electrification and Plant Engineer will also identify what work will be required for Crossrail services in CP5, which could have an impact on works identified purely for Great Eastern additional and lengthened services in CP4. The Sponsor of this project is working with the Crossrail team to identify where synergies might exist between the two projects in order that abortive or unnecessary works are not carried out as long as the delivery of the CP4 capacity metric is not jeopardised. This could involve bringing forward works required and funded by the Crossrail project.

Other key assumptions are:

- the current practice of freight services not using all contracted paths will continue, there will be no significant shift from diesel to electric hauled freight;
- it is assumed that other schemes listed as significant interfaces will take place in CP4 enabling additional growth;
- no specific requirement to improve journey times or rolling stock performance;
- technology used will be based on current industry standards providing lowest life cycle cost with no provision for low loss materials, or other developments;
- lead times are as follows: grid connections 3-4 years, equipment procurement transformers 2 years, switchgear, SCADA miscellaneous; 1-2 years;
- costs associated with train entry into service requirements such as safety case and system compatibility are not included;
- the SCADA system has either sufficient capacity or can be modified to accept all new devices;
- no special requirements for depots (new and old) or stabling of trains including both temporary and permanent; and
- current Rules of the Route will remain unchanged.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative Date</b>
Completion of modelling	Confirmation of scope and GRIP 3 estimate	Q2 2009
Complete programme specification	Baseline project scope	Q2 2009
Complete outline design	GRIP 4 designs suitable for tendering detailed design and implementation stage	Q4 2009
Commence project implementation (GRIP 5)	Delivery of project requirements	Q4 2011
Project close-out (GRIP 8)	Project completion	Q1 2012

### Project Definition: Route 6 – Power supply enhancements

#### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### Scope of works

Service changes to be modelled during feasibility on the Thameside Route are:

- switch from 8 to 12-coach operation on all main line services into Fenchurch Street in the peak hours CP4;
- switch from 8 to 12-coach operation on all Thameside services via Ockendon and Tilbury Loop into Fenchurch Street in the peak hours CP4; and
- potential introduction of an all day 4tph between Grays and Fenchurch Street in CP4.

Modelling of the services changes detailed above and the impact of other schemes (significant interfaces) is a critical element of the project. This work will not be completed until Q2 2009 and will be a crucial feed into understanding the likely scope, cost and deliverability of works. All service changes assumed in the output section of the project as well as those detailed in as significant interfaces have been included in the modelling specification.

#### Outputs

Consistent with all Route 6 capacity schemes as detailed in section 15.00.

#### Significant interfaces

The main interfaces are with the AC traction power supply enhancements on routes 5 (West Anglia) and 7 (Great Eastern) in association with additional trains and train lengthening projects on those routes.

#### Key assumptions

- There will be no significant shift from diesel to electric hauled freight;
- it is assumed that other schemes listed as significant interfaces will take place in CP4 enabling additional growth;
- no specific requirement to improve journey times or rolling stock performance;
- technology used will be based on current industry standards providing lowest life cycle cost with no provision for low loss materials, or other developments;
- lead times are as follows: grid connections 3-4 years, equipment procurement transformers 2 years, switchgear, SCADA misc; 1-2 years;
- costs associated with train entry into service requirements such as safety case and system compatibility are not included;
- the SCADA system has either sufficient capacity or can be modified to accept all new devices;
- no special requirements for depots (new and old) or stabling of trains including both temporary and permanent; and
- current Rules of the Route will remain unchanged.

#### Activities and milestones

Activity	Output	Indicative date
Completion of modelling	Confirmation of scope and GRIP 3 estimate	Q2 2009
Complete programme specification	Baseline project scope	Q2 2009
Complete outline design	GRIP 4 designs suitable for tendering detailed design and implementation stage	Q4 2009
Commence project implementation (GRIP 5)	Delivery of project requirements	Q4 2011
Project close-out (GRIP 8)	Project completion	Q1 2012

## Project Definition: Route 7 – Power supply enhancements

### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

### Scope of works

Service changes being modelled during feasibility on the Great Eastern route are:

- introduce three additional Great Eastern outer services per hour into Liverpool Street in the peak hours (currently assumed to be one from Colchester, one from Chelmsford and one from Southend). These services are assumed to be 12-coach in the high peak hour and 8-coach in the shoulder peak hours in CP4;
- switch from 8 to 12-coach operation on all services between Southminster and Liverpool Street in the peak hours CP4;
- introduce two additional Great Eastern inner services to Liverpool Street;
- introduce new rolling stock on Great Eastern inner services following construction of Crossrail in CP5; and
- introduce enhanced Crossrail services in 2026.

Modelling of the service changes detailed previously and the impact of other schemes (significant interfaces) is a critical element of the project. This work will not be completed until Q2 2009 and will be a crucial feed into understanding the likely scope, cost and deliverability of works. All service changes assumed in the output section of the project as well as those detailed in as significant interfaces have been included in the modelling specification. The modelling also includes CP5 aspirations of replacing the current electrically hauled Inter-city rolling stock on Liverpool Street-Norwich services with EMUs.

### Outputs

The output of the project is to provide enhancement of the AC traction power supply to support the increase in the Great Eastern Main Line outer services; the increase in the Great Eastern inner 'Metro' services and lengthening of the Great Eastern Southminster service.

### Significant interfaces

- North Farnbridge loop extension;
- Crossrail; and
- AC traction power supply enhancements on routes 5 (West Anglia) and 6 (Thameside) in association with additional trains and train lengthening projects on those routes.

### Key assumptions

The study being undertaken by the Electrification and Plant Engineer will also identify what work will be required for Crossrail services in CP5, which could have an impact on works identified purely for Great Eastern additional and lengthened services in CP4. The Sponsor of this project is working with the Crossrail team to identify where synergies might exist between the two projects in order that abortive or unnecessary works are not carried out as long as the delivery of the CP4 capacity metric is not jeopardised. This could involve bringing forward works required and funded by the Crossrail project with a contribution if required from funding for this project.

Other assumptions include:

- there will be no significant shift from diesel to electric hauled freight;
- it is assumed that other schemes listed as significant interfaces will take place in CP4 enabling additional growth;
- no specific requirement to improve journey times or rolling stock performance;
- technology used will be based on current industry standards providing lowest life cycle cost with no provision for low loss materials, or other developments;
- lead times are as follows: grid connections 3-4 years, equipment procurement transformers 2 years, switchgear, SCADA miscellaneous; 1-2 years;
- costs associated with train entry into service requirements such as safety case and system compatibility are not included;

- the SCADA system has either sufficient capacity or can be modified to accept all new devices;
- no special requirements for depots (new and old) or stabling of trains including both temporary and permanent; and
- current Rules of the Route will remain unchanged.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
Completion of modelling	Confirmation of scope and GRIP 3 estimate	Q2 2009
Complete programme specification	Baseline project scope	Q2 2009
Complete outline design	GRIP 4 designs suitable for tendering detailed design and implementation stage	Q4 2009
Project implementation (GRIP 5)	Delivery of project requirements	Q4 2011
Project close-out (GRIP 8)	Project completion	Q1 2012

### Project definition: DC regeneration

#### Network Rail's obligation

Our obligation is to implement a scheme that enables DC regenerative braking to be introduced on all DC electrified routes in Wessex, Sussex and Kent.

#### Scope of works

The scope of works encompasses the complete testing of DC systems and phased introduction of regenerative capable trains in Sussex and Kent. There will also be segregation of 660v traction supplies to LUL from Network Rail Infrastructure to enable the increase of Network Rail system voltage without risk to LUL rolling stock and systems. Specific routes include:

- East Putney – Wimbledon (LUL Lines);
- Waterloo – Bank (LUL lines); and
- Richmond – Gunnersbury (Network Rail lines).

This element includes construction of new and altered major traction supplies (substations etc.).

The project will also modify circuit breakers and raise traction supply outputs on all inner London routes to 750v DC nominal in Wessex, Sussex and Kent.

The scope is subject to confirmation pending further development.

#### Outputs

The project results in a reduction of electric current for traction (EC4T) consumption with consequent reductions in energy costs to TOCs and FOCs.

The project increases the nominal system voltage to 750v across the three routes, which marginally increases the available traction supply capacity.

#### Significant interfaces

- LUL – agreement of Commercial and Technical arrangements and train interfaces;
- South West Trains - agreement of Commercial and Technical arrangements and train interfaces in Wessex; and
- South East Trains/Southern Trains - agreement of Commercial and Technical arrangements and train interfaces.

#### Key assumptions

Key assumptions are that agreement can be reached on technical and commercial issues with LUL and SWT and that the timescales with interfacing projects can be managed and delivered.

#### Activities and milestones

Activity	Output	Indicative date
Submit project for development authority	Authority to proceed to develop project in detail	Q1 2009
Agree technical and commercial arrangements with LUL and SWT	Arrangement established to allow project to proceed	Q3 2009
Implementation authority	Authority to proceed to build project	Q1 2010
Implementation commence	Work commenced	Q3 2010
Completion	Outputs delivered	Q1 2014

### **Southern capacity package**

#### **Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### **Scope of works**

This package includes.

- Gatwick Airport remodelling and passenger capacity;
- East Croydon passenger capacity scheme; and
- Seven Sisters improved access.

#### **Outputs**

This package of work will:

- provide the necessary passenger handling capacity at Gatwick Airport, East Croydon and Seven Sisters stations; and
- enhanced operational robustness at Gatwick Airport.

**17.01 Project definition – Gatwick Airport remodelling and passenger capacity scheme**

**Project definition: Gatwick Airport remodelling and passenger capacity scheme**

**Network Rail’s obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of works**

The scope of works would incorporate alterations to track and signalling infrastructure, along with the associated electrification and civil engineering works to enable utilisation of the new platform 7. The scope could include the renewal of existing signalling interlocking equipment. The enhancements to the concourse could include the extension of the existing concourse and overbridge buildings to accommodate the new platform 7 along with integration to the airport forecourt. This would form the first phase of a fully integrated transportation facility which is intended for delivery in a future control period.

**Outputs**

The project would widen platforms 5 & 6 at Gatwick station and construct a new platform 7 along with an enhanced track layout to enable Gatwick terminating services to terminate away from the fast line platforms. This would provide for the additional capacity required to operate 2tph from the Reading – Guildford – Redhill route into Gatwick. This remains a franchise commitment for FGW and a key aspiration for regional stakeholders.

The project could also undertake the first phase of an integrated air/rail concourse facility. This first phase would enhance the existing station concourse and overbridge buildings to accommodate the additional platform 7 with integration into the airport forecourt.

**Significant interfaces**

- Planned signalling and track renewals; and
- BAA airport works.

**Key assumptions**

It is expected that core outputs will be deliverable within the limits of Network Rail land. Third party funding may be secured to enable an enhanced scope of works to be completed.

**Activities and milestones**

<b>Activity</b>	<b>Indicative date</b>
Funding identified and scope agreed	Q2 2009
Outline design complete (GRIP 4)	Q3 2010
Design and build commencement (GRIP 5-8)	Q2 2010
Delivery timescale	Q4 2012

We will commit to firm scope for this project at Q3 2010, following the GRIP 4 stage review.

### Project definition: East Croydon passenger capacity scheme

#### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### Scope of works

- Increased passenger circulation area on the concourse;
- substantially increased gateline capacity;
- improved passenger flows from the platforms to the concourse; and
- increased passenger circulation space on the platforms.

The current preferred scheme developed during the option selection phase will expand the size of the station concourse by developing the lands to the east and west of the station building. It will also reduce the concentration of retail tenancies and remodel the overall concourse to ensure improved passenger flows. Platform accommodation will be removed to ensure improved circulation space.

Planning permissions will be required to extend the station building into adjoining Network Rail land holdings to the east and west of the station.

Passive provision for an additional platform to the west of the station is currently included in the project.

#### Outputs

The desired output of the East Croydon station capacity project is to deliver a station that accommodates predicted passenger growth over the next 30 years.

#### Significant interfaces

There are interfaces with the Thameslink Programme – London Bridge station, Gatwick Airport station redevelopment and London Victoria redevelopment. Masterplans are in place to ensure major station redevelopments on the Brighton Main Line / London area are phased to avoid major disruption to the network.

Key stakeholders and potential additional funders have been identified. A regular liaison meeting is held with London Borough of Croydon, Transport for London, English Partnerships, Design for London etc.

An improved interface with buses, taxis and trams has been studied as part of this scheme. Discussions with relevant stakeholders are in progress.

#### Key assumptions

Additional funding may be made available from London Borough of Croydon Section 106 contributions to further enhance the output of the scheme. An element of TfL interchange funding may also be made available to improve the connections with bus and tram. Project progression is not dependent on either of these sources.

#### Activities and milestones

Activity	Output	Indicative date
Complete GRIP 4	Single option development	Q2 2009
Commence planning approvals		Q2 2009
Complete planning approvals		Q3 2009
Complete GRIP 5	Detailed scheme design	Q1 2010
Commence works on site		Q2 2010
Complete site works		Q4 2011

### Project definition: Seven Sisters improved access

#### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### Scope of works

Further development work will give more detailed scope and level of works required. At Seven Sisters station this could include widening staircase(s), extending canopies, additional seating, additional lighting and additional CIS equipment.

#### Outputs

The project will also facilitate anticipated increases in passengers at Seven Sisters station, including the interchange between the National Rail and London Underground networks.

#### Significant interfaces

- CP4 enhancement schemes to provide for 12-coach operations on the West Anglia Outer services;
- CP4 enhancement scheme to provide additional depot and stabling capacity, which is led by DfT; and
- CP4 enhancement scheme to provide enhanced AC traction power supplies throughout East Anglia.

#### Key assumptions

It is assumed that the planning approvals will be forthcoming for the works if required and it is assumed that further station works (platform canopies, additional station entrances, Customer Information Systems, seating, lighting etc) will be required.

#### Activities and milestones

These works will be completed in time for the December 2011 timetable change.

#### Milestones

Activity	Output	Indicative date
GRIP 1 – 3	Option selection	Q1 2013
GRIP 4 – 8	Project completion	Q1 2014

## East Coast Main Line improvements

### Network Rail's obligation

Our obligation is to deliver those projects specified by ORR and to provide the necessary infrastructure to facilitate the operational plans set out in the route plans.

### Scope of works

The schemes identified by ORR to be delivered are:

- capacity relief to the ECML (GN/GE Joint Line);
- Peterborough station area capacity enhancements;
- Alexandra Palace to Finsbury Park 3<sup>rd</sup> Up line;
- Finsbury Park to Alexandra Palace 3<sup>rd</sup> Down line improvements;
- ECML level crossings;
- Hitchin grade separation;
- York Holgate Junction 4<sup>th</sup> line; and
- Shaftholme Junction remodelling.

For many of the above schemes the delivery date is towards the end of the control period. We are currently reviewing the overall programme to determine a smoother delivery profile for the portfolio of ECML projects over the control period.

In addition the following schemes are necessary to support the operational plans:

- Moorgate branch improvements; and
- FCC train lengthening.

In addition, a number of Thameslink Programme key output 2 projects are required to deliver the outputs:

- OLE power supply upgrade in the London area;
- platform extensions to 12-cars at Finsbury Park, Arlesey, Biggleswade and Sandy;
- platform extensions to 8-cars at Meldreth, Shepreth and Foxton;
- additional 12-car stabling at Peterborough (in conjunction with the above project at Peterborough); and
- additional 12-car stabling at Cambridge.

### Output

These schemes deliver both the HLOS passenger kilometre specification for strategic route 8 and the London capacity specification for the East Coast.

The following will be provided (the baseline being the December 2008 timetable):

- up to two additional freight paths per hour between Peterborough and Doncaster;
- up to one additional long distance high speed passenger path per hour off peak;
- up to two additional long distance high speed passenger paths in each peak hour;
- operation of up to ten outer suburban services per peak hour, with up to six of these being 12-car formations, subject to calling pattern; and
- up to two additional inner suburban paths per hour to/from Moorgate;

The enhancements to the GN/GE Joint Line between Peterborough and Doncaster via Spalding and Lincoln (on strategic route 11) will enable it to handle two freight trains per hour at speeds up to 75mph (in addition to all existing traffic) with a loading gauge to W9/W10. One of these paths per hour will be suitable for a class 6 RA10 train, other paths would be for class 4 RA8 trains.

The GN/GE Joint Line will then form the primary route for daytime freight traffic, as well as offering a more attractive diversionary option to the ECML for both passenger and freight trains during perturbation or engineering work.

### **Project definition: Capacity relief to the ECML (GN/GE Joint Line)**

#### **Network Rail's obligation**

Our obligation is to deliver this project in CP4.

#### **Scope of works**

The scope of this project is subject to further development and consultation. The current requirements of the project are:

- gauge clearance for W9, W10 (with an option for W12) at linespeed;
- improved layout in the area between Peterborough and Werrington Junction that avoids Down freight trains accessing the Spalding line and Up freight trains from the Spalding Line to East Anglia having to cross both the Up and Down ECML fast lines in one movement;
- accommodate train lengths that at least match those of existing services between Peterborough and Doncaster;
- provision for 775m freight train operation; and
- mitigation measures (including closures of level crossings), taking into account the increase in speed and numbers of trains operating, ensure that current levels of level crossing safety risk are maintained or improved.

A Transport and Works Act Order will be required if a grade separated option is selected at Werrington Junction. Various consents will be required for the multiple level crossing sites on the route which may require alterations as a result of the project.

#### **Outputs**

The scheme provides a significantly upgraded line between Peterborough and Doncaster via Spalding and Lincoln that can become the primary route for daytime freight traffic. This allows a parallel growth in Long Distance High Speed (LDHS) passenger services between London and Yorkshire, the North East and Scotland, and freight traffic, particularly intermodal traffic from Felixstowe, Bathside Bay and London Gateway.

The route via Spalding and Lincoln will be capable of taking class 4 (including intermodal trains) of up to Route Availability 8 at a ruling linespeed of 75mph and other freights including those up to Route Availability 10 at a ruling linespeed of 60mph. The ruling line speed will apply except where curvature precludes it and also through Lincoln.

Two freight paths each way per hour, over and above existing traffic levels on all sections of the route from Werrington Junction (exclusive) to Loversall Carr Junction (exclusive), will be provided with one capable of being a class 6 (timed as class 66 + 2000 tonnes trailing) and one being class 4 (timed as class 66 + 1600 tonnes trailing).

Where speeds in excess of 75mph are achievable for passenger services at marginal cost or where funding for the extra costs are available from other sources then these will be delivered as part of the project.

#### **Significant interfaces**

There are interfaces with the HPUK Ltd scheme to provide W10 gauge clearance between Felixstowe and four Yorkshire terminals, and the Peterborough station area capacity enhancements, particularly in relation to Werrington Junction which could drive changes to the track layout at Peterborough approaching platforms 2 and 3 from the north and exiting platforms 4 and 5 northbound.

#### **Key assumptions**

The HPUK Ltd scheme will provide W9 and W10 gauge clearance from Pyewipe Junction to Loversall Carr Junction and can be delivered in compatible timescales.

Some necessary level crossing works will require external planning agreements such as level crossing section orders, which could impact on the completion timescales for increased linespeeds on certain sections of the route.

If grade separation is required at Werrington Junction to provide two freight trains per hour in each direction via Spalding, plus six LDHS services each way per hour and the Norwich – Liverpool service, and then if TWA is required, this will impact on the timescales for the completion of the overall project.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
Completion of GRIP 3	Critical step towards defining single option for implementation	Q2 2010
Bridge strengthening and track renewals work	Delivery of RA10 / 60mph and RA8 / 75mph to enable more freight trains to utilise this route	Q4 2013
Remodelling of Werrington Junction area	Provision of a junction capable of handling traffic without detrimental impact on ECML performance	Q4 2013 assuming no TWA required. If TWA required then this element of the project will not be delivered until CP5.
Level crossing works to enable higher linespeeds	Higher line speeds to provide ultimate capacity requirement	Q1 2014

We are currently reviewing the overall programme to determine a smoother delivery profile for the portfolio of ECML projects over the control period.

**Project definition: Peterborough station area capacity enhancements**

**Network Rail’s obligation**

Our obligation is to deliver this project in CP4.

**Scope of works**

The specific requirements of the project are a new island platform (platforms 6 and 7) capable of handling 6x23m vehicle trains, built on the site of the current lines on the western side of platform 5. Bi-directional signalling on both platforms 6 and 7 with access to/from the Midland lines and the March lines may be required. The layout will allow parallel operation of a train from March towards Stamford through platform 7 and from Stamford towards March through platform 6.

The project scope will also need to maintain a connection between the March lines and the Spital ladder.

The following scope is subject to further development work and consultation:

- revised connections into the Nene sidings to provide 12x20m vehicle stabling sidings to accommodate 317/319/365 type rolling stock and the future Thameslink Programme units;
- a new signalled route from platforms 4 and 5 to the Up fast line at Fletton including a new main to main crossover or relocation of Down main to Down slow turnout at Fletton junction;
- 10x26m vehicle IEP train operation in both directions in all of platforms 2, 3, 4 and 5;
- allow 2x23m vehicle operation on Spalding line service either using a separate bay platform to the eastern side of platform 2 or by permissive working on extended platforms 2 and 3 (platform sharing with 12x20m vehicle trains of classes 317/319/365 and future Thameslink Programme rolling stock);
- improved linespeed to minimum of 50mph on Up slow to Up main turnout at Fletton junction;
- new platform face on Up fast line with bi-directional signalling capable of handling 10x26m vehicle IEP trains in both directions;
- remove track from platform 4 and build platform out to Down fast line capable of handling 10x26m vehicle IEP trains;
- a flashing yellow sequence for Up trains running into platforms 2 and 3; and
- a 775m freight loop on Down March line at Peterborough East.

<b>Volume</b>	<b>Peterborough</b>
<b>Track</b>	
Rail (km)	0.5 (new plain line) 2 (relay plain line)
S&C units	15
<b>SEUs</b>	50
<b>OLE (km)</b>	3
<b>Platform lengthening (m)</b>	700

The scope of the project extends from ECML 75.02 Fletton junction to 79.34 Werrington Junction. Any works undertaken will aim to avoid any impact on requirements to extend some or all of the existing through platforms at Peterborough to accommodate IEP services.

**Outputs**

The scheme provides for a separate island platform on the western side of the station thereby allowing many services to/from East Anglia to run completely independently of ECML services, which in turn will improve capacity and performance. This contributes to the additional capacity required between Ipswich and Nuneaton following gauge enhancement of the route.

The project is examining options to allow successive Long Distance High Speed (LDHS) services to call at the station on four minute planning headways, a key assumption in the DfT’s latest version of the CP5 IEP timetable.

The revised layout aims to reduce passenger congestion on some platforms by spreading passengers across wider and additional platforms.

**18.02** Project definition – Peterborough station area capacity enhancements

The scheme is examining options to provide additional 12x20m vehicle train stabling capacity for outer suburban and Thameslink services (specifically funded by an agreed contribution from the Thameslink Programme).

The scheme reduces a constraint in developing ECML timetables thereby allowing an increase in LDHS and freight services as part of a programme of ECML schemes as identified in the ECML Route Utilisation Strategy. This programme would allow an increase in services with an improvement in performance even though more trains would be operating. As the rolling stock on existing franchised LDHS services cannot be lengthened, additional services are required to support the increased passenger kilometre HLOS metric for route 8 for longer distance journeys to/from London.

In CP5, longer IEP services using the additional capacity created through this CP4 programme on the ECML would allow for continued growth in the LDHS market. Allowing successive IEP trains to call at Peterborough on a four minute planning headway is an assumption of the latest IEP timetable produced by DfT's consultants.

**Significant interfaces**

The Network Rail Commercial Property team is discussing a number of property development proposals with developers including development of the Queensgate Shopping Centre, development of the existing railway land in the Peterborough area and third party land on the west side of the station.

The Thameslink Programme has also developed a remit that requires the station layout at Peterborough to meet the requirements of the Thameslink timetable specifications. Although the Great Northern element of the Thameslink programme is not due to be delivered until 2015, the scope of the Thameslink requirements has been included into the wider capacity development remit to ensure that the design of the layout encompasses these proposals.

There is also an interface with the capacity relief to the ECML (GN/GE Joint Line) project, particularly in relation to Werrington junction which could drive changes to the track layout approaching platforms 2 and 3 from the north and exiting platforms 4 and 5 northbound. Also, this scheme interfaces with IEP, the Felixstowe to Nuneaton TIF gauge enhancement project and future capacity schemes.

**Key assumptions**

The commercial property scheme will provide a wider and longer footbridge (to serve the new island platform) and improved station entrance facilities on platform 2. The full extent of the commercial property proposals on both the east and west side of the station are uncertain. The capacity scheme can progress independently but if funding is not available to enhance the station facilities as planned through commercial property, then the scope of the capacity proposals may have to be revised.

Also assumed is that:

- no TWA is required; and
- Network and Station Change will be required;

**Activities and milestones**

Activity	Output	Indicative Date
SAP modelling	Performance benefits	Q2 2009
Review of business case	Benefits confirmed	Q3 2009
GRIP 3	Single option report	Q4 2009
Network Change approved	Regulatory consent obtained	Q4 2011
Station Change approved	Regulatory consent obtained	Q4 2011
GRIP 4	Outline design complete	Q1 2012
GRIP 5	Detailed design complete	Q4 2012
GRIP 6	Construction works complete	Q1 2014
GRIP 7/8	Project close out	Q2 2014

We are currently reviewing the overall programme to determine a smoother delivery profile for the portfolio of ECML projects over the control period.

**Project definition: Alexandra Palace to Finsbury Park 3<sup>rd</sup> Up line**

**Network Rail's obligation**

Our obligation is to deliver this project in CP4.

**Scope of works**

Finsbury Park station and Bounds Green depot will be impacted by the works on the Up side. Passive provision is being made to ensure that proposals do not impact on any future requirements to extend platforms further at Finsbury Park to accommodate IEP services, and to allow provision of platform faces for the 3<sup>rd</sup> line at Hornsey and Harringay.

<b>Volumes</b>	<b>Up and Down combined</b>
<b>Track</b>	
Rail (km)	0.5
Sleepers (km)	0.5
Ballast (km)	0.5
S&C units	22
<b>SEUs</b>	46
<b>OLE (km)</b>	1.6
<b>Platform lengthening (m)</b>	370

**Outputs**

The scheme provides for a 3<sup>rd</sup> Up passenger line from Alexandra Palace (leading off from the Up Hertford line to the north of Alexandra Palace station) through to the top of Holloway Bank with associated platform faces at Alexandra palace and Finsbury Park. This allows some Hertford/Gordon Hill to Moorgate inner suburban services to operate independently of outer suburban services and Long Distance High Speed (LDHS) services from Alexandra Palace. In turn, in conjunction with the Moorgate branch improvements project, this allows additional high peak hour inner suburban services to meet the Moorgate high peak hour capacity metric, as longer trains are not an option due to the constraints of the tunnel sections into Moorgate.

The scheme reduces a constraint in developing ECML timetables thereby allowing an increase in LDHS services as part of a programme of ECML schemes as identified in the ECML Route Utilisation Strategy. This programme would allow an increase in services with an improvement in performance even though more trains would be operating. As the rolling stock on existing franchised LDHS services cannot be lengthened, additional services are required to support the increased passenger kilometre HLOS metric for route 8 for longer distance journeys to/from London. In addition, the scheme will also reduce pathing time in some Up outer suburban and LDHS services approaching Finsbury Park, thereby providing some improved journey times.

In CP5 longer IEP services using the additional capacity created through this CP4 programme on the ECML would allow for continued growth in the LDHS market. The improved layout will allow more flexibility in Thameslink Programme specifications. Subject to funding in CP5, platform faces for the 3<sup>rd</sup> line at Alexandra Palace, Hornsey and Harringay would allow a greater segregation of inner suburban services, as recommended in the ECML RUS.

The specific requirements of the project are:

- conversion of the Up goods line between Alexandra Palace and Holloway to passenger status;
- direct link from the Up Hertford line to the former Up goods line with associated platforms at Alexandra Palace capable of accommodating 6x20m vehicles of class 313 type rolling stock;
- line speed improvements on the former Up goods line to be more comparable with the existing Up slow line speeds;
- reinstate 3<sup>rd</sup> Up platform at Finsbury Park for 12x20m vehicle trains to accommodate train types such as class 317/319/365 and future Thameslink trains; and
- consequent improvements to platform access from underpass to accommodate additional passenger numbers.

**Significant interfaces**

This project interfaces with Finsbury Park to Alexandra Palace 3<sup>rd</sup> Down line improvements project and the 12-car extension of existing platforms at Finsbury Park by the Thameslink Programme. There will also be interfaces at Finsbury Park Station with proposed NSIP works, LUL Access for All scheme and Network Rail Access for All scheme.

Other interfaces include:

- S&C renewals at Finsbury Park currently planned in 2012/13;
- S&C renewals at Kings Cross currently planned in 2013/14;
- ERTMS in 2015; and
- signal renewals at King's Cross currently planned in 2015.

**Key assumptions**

- Additional class 313 units are made available to First Capital Connect through the DfT's Rolling Stock Plan;
- Network Change will be required;
- Station Change will be required; and
- ROGS approval may be required.

**Activities and milestones**

Activity	Output	Indicative date
GRIP 3	Single option report	Q1 2009
GRIP 4 authority	Authority to progress GRIP 4	Q2 2009
Network Change	Regulatory approval	Q4 2010
Station Change	Regulatory approval	Q4 2010
GRIP 4	Outline design	Q4 2010
GRIP 5-8 authority	Authority to progress GRIP 5-8	Q4 2010
GRIP 5	Detailed design	Q4 2011
GRIP 6	Construction	Q4 2013
GRIP 7	Handback	Q1 2014
GRIP 8	Project close out	Q2 2014

We are currently reviewing the overall programme to determine a smoother delivery profile for the portfolio of ECML projects over the control period.

**Project definition: Finsbury Park - Alexandra Palace 3<sup>rd</sup> Down line improvements**

**Network Rail's obligation**

Our obligation is to deliver this project in CP4.

**Scope of works**

The scope of this scheme is subject to review and further consultation. The current requirement of the project is to improve linespeeds on Down slow 2 line between Finsbury Park and Alexandra Palace so that limited stop, inner suburban services can use it in preference to Down slow 1.

Volume	Up and Down combined
<b>Track</b>	
Rail (km)	0.5 (new PL)
Sleepers (km)	0.5
Ballast (km)	0.5
S&C units	22
<b>Signalling</b>	
SEUs	46
<b>OLE (km)</b>	1.6
<b>Platform lengthening (m)</b>	370

The Down goods line is to be considered for upgrading to passenger status (from turnout 2072 to 2096).

Passive provision is being made to ensure that proposals do not impact on any future requirements to extend platforms further at Finsbury Park to accommodate IEP services.

**Outputs**

The scheme allows improved use of the Down slow 2 line between Finsbury Park and Alexandra Palace and thereby allows some Moorgate to Gordon Hill/Hertford inner suburban services to operate independently of other inner and outer suburban and Long Distance High Speed (LDHS) services south of Alexandra Palace.

The scheme reduces a constraint in developing ECML timetables thereby allowing an increase in LDHS services, particularly in the evening peak, as part of a programme of ECML schemes as identified in the ECML Route Utilisation Strategy. This programme would allow an increase in services with an improvement in performance even though more trains would be operating. As the rolling stock on existing franchised LDHS services cannot be lengthened, additional services are required to support the increased passenger kilometre HLOS metric for route 8 for longer distance journeys to/from London. It also allows a commensurate increase in evening peak inner suburban services to complement the increase in the am peak to meet the Moorgate HLOS capacity metric.

In CP5 longer IEP services using the additional capacity created through this CP4 programme on the ECML would allow for continued growth in the LDHS market. The improved layout will allow more flexibility in Thameslink Programme specifications. Subject to funding in CP5, platform faces for Down Slow 2 at Haringay and Hornsey would allow a greater segregation of inner suburban services as recommended in the ECML RUS.

**Significant interfaces**

The project interfaces with the Alexandra Palace to Finsbury Park 3<sup>rd</sup> Up line project. There will be an interface with the Thameslink Programme.

There are also interfaces at Finsbury Park with proposed NSIP works, LUL Access for All scheme and Network Rail Access for All scheme.

Other interfaces include:

- S&C renewals at Finsbury Park currently planned in 2012/13;
- S&C renewals at King's Cross currently planned in 2013/14;

Programme – East Coast Main Line improvements

**18.04** Project definition – Finsbury Park - Alexandra Palace 3<sup>rd</sup> Down line improvements

- ERTMS in 2015; and
- signal renewals at King's Cross currently planned in 2015.

**Key assumptions**

- Network Change will be required; and
- ROGS approval may be required.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
GRIP 3	Single option report	Q1 2009
GRIP 4 authority	Authority to progress GRIP 4	Q2 2009
Network Change approved	Regulatory approval	Q4 2010
Station Change approved	Regulatory approval	Q4 2010
GRIP 4	Outline design	Q4 2010
GRIP 5-8 authority	Authority to progress GRIP 5-8	Q4 2010
GRIP 5	Detailed design	Q4 2011
GRIP 6	Construction	Q4 2013
GRIP 7	Handback	Q1 2014
GRIP 8	Project close out	Q2 2014

We are currently reviewing the overall programme to determine a smoother delivery profile for the portfolio of ECML projects over the control period.

### Project definition – ECML level crossings

#### Network Rail's obligation

Our obligation is to deliver this project in CP4.

#### Scope of works

Proposals include:

- buying out rights of access (public and private);
- reductions in status;
- providing diversionary routes;
- bridgeworks or subways; and
- modernisation of level crossings to provide enhanced protection.

Optioneering of all relevant level crossings is to be completed by the end of March 2009 which will result in risk ranking scores. Proposed options are then to be developed for each crossing, to enable understanding of costs, planning issues, timescales, business case and risks. Delivery will be subject to confirmation of the preferred option in each case and obtaining any necessary external consents.

#### Outputs

The scheme allows an increase in passenger and freight services on the East Coast Main Line by eliminating or reducing the safety risks associated with level crossings. The crossings concerned are those that have been assessed as having sufficient safety risk mitigation measures with existing levels of rail traffic but for which the level of risk becomes unacceptable when additional services operate.

The specific requirements of the project are level crossing closure, through extinguishing rights or replacement by bridge or underpass, or provision of enhanced safety risk mitigation measures to allow additional rail services to operate over level crossings between King's Cross and Northallerton and between Newark Northgate and Lincoln. The level crossings concerned will be those where the increase in services causes the safety risk to rise from currently acceptable levels to where the current mitigation measures are no longer as low as reasonably practicable.

The additional level of services to be accommodated per hour in each direction is shown in the table below (where 0.5 means 1 extra train every 2 hours) based on the December 2008 timetable:

Route section	Off peak passenger	Off peak freight	Peak passenger	Peak freight
Alexandra Palace to Hertford North	+1	+0.5	+3	N/C
Hertford North to Langley junction	+1	+0.5	N/C	N/C
Alexandra Palace to Welwyn GC	+2.5	N/C	+3	N/C
Welwyn Garden City to Langley junction	+1.5	N/C	+2	N/C
Langley junction to Hitchin	+2.5	+0.5	+2	N/C
Hitchin to Peterborough	+1.5	+0.5	+2	N/C
Peterborough to Werrington junction	+1.5	+2	+2	N/C
Werrington junction to Newark Flat crossing	+1.5	-0.5	+2	-0.5
Newark Flat crossing to Loversall Carr	+1	-0.5	+1.5	-0.5
Doncaster Marshgate to Shaftholme junction	+1	+0.5	+1.5	+0.5
Shaftholme junction to Hambleton south junction	+1	-0.5	+1.5	-0.5
Colton junction to York	+1	+0.5	+1	+0.5
York to Northallerton	N/C	+0.5	+1	+0.5
Newark Flat crossing to Lincoln	+0.5	N/C	+0.5	N/C

The definition of peak is passenger trains arriving in London 0700-1000 and departing from 1600 to 1900. For freight it is trains running over the relevant level crossing in the three hours when peak passenger services reach that crossing.

**Significant interfaces**

The key interface is the signalling renewals work bank.

**Key assumptions**

- Buying out of user rights will be achievable;
- the local authorities will agree to Section 116 closure / diversion or TWA powers will be obtained;
- planning consent will be obtained for bridge, subway and diversionary works, where this is required; and
- HMRI agreement will be obtained where necessary.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
ALCRM optioneering completed	Proposed actions identified	Q1 2009
GRIP 3	Feasibility of options to be considered and a single option selected for each crossing	Q4 2009
GRIP 4	Single options to be fully developed	Q3 2010
Planning issues	To be resolved	Q3 2011
GRIP 5 – 8	Implementation	Q1 2014

We are currently reviewing the overall programme to determine a smoother delivery profile for the portfolio of ECML projects over the control period.

### Project definition: Hitchin grade separation

#### Network Rail's obligation

Our obligation is to deliver this project in CP4.

#### Scope of works

The project scope is subject to review, but the specific requirements of the project are:

- a flyover to the north of Hitchin Cambridge Junction from the Down slow to the Down Cambridge line; and
- a 75mph Down fast to Down slow crossover immediately north of Hitchin Cambridge Junction.

Volume	Hitchin
Rail (km)	2
S&C units	4
SEUs	6
OLE (km)	2

The position of the S&C unit for the start of the new grade separation will be ECML Down slow 32m 53ch and Down Cambridge 33m 31ch. The length of the new grade separation is 2260m.

The following scope is subject to further development work and consultation:

- upgrade of current ground frame operated Up Cambridge to Down Cambridge crossover to 40 mph for normal operational use; and
- provide a signalled route from the Up Cambridge to the Down Cambridge and then directly onto the Up fast.

#### Outputs

The scheme would eliminate conflicting movements between Down Cambridge line services and Up trains from the Peterborough direction. This removes a major constraint in developing timetables on the ECML thereby allowing an increase in Long Distance High Speed (LDHS) and freight services as part of a programme of ECML schemes as identified in the ECML Route Utilisation Strategy. This programme would allow an increase in services with an improvement in performance even though more trains would be operating. As the rolling stock on existing franchised LDHS services cannot be lengthened, additional services are required to support the increased passenger kilometre HLOS metric for route 8 for longer distance journeys to/from London.

Eliminating most of the above conflicts will reduce junction layout risk.

In CP5 longer IEP services using the additional capacity created through this CP4 programme on the ECML would allow for continued growth in the LDHS market.

#### Significant interfaces

There will be extensive consultation with local authorities, land owners, TOCs/FOCs as a TWA application is required. There is also an interface with the IEP and Thameslink Programme projects. Proposals are being reviewed against possible IEP timetable requirements to ensure compatibility between schemes.

The project will have to take into account the renewal of signalling and S&C in 2009/10.

#### Key assumptions

- The project completion assumes that the TWA does not go to public enquiry;
- Network Change will be required; and
- ROGS approval may be required.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
TWA application made	Application submitted	Q3 2009
GRIP 4	Outline design complete	Q1 2010
Network Change approved	Regulatory approval	Q1 2010
TWA order made	TWA order received	Q1 2011
GRIP 5	Detailed design complete	Q4 2011
GRIP 6	Construction works complete	Q1 2014
GRIP 7/8	Project close out complete	Q2 2014

We are currently reviewing the overall programme to determine a smoother delivery profile for the portfolio of ECML projects over the control period.

**Project definition: York Holgate Junction 4<sup>th</sup> line**

**Network Rail's obligation**

Our obligation is to deliver this project in CP4.

**Scope of works**

The following scope is subject to further development and consultation:

- an additional connection from the Down Leeds line to platform 11 (and possibly 10); and
- an increase in signalling overlaps on platforms 9 and 10.

Volume	Location			
	Platform 11	Plat form 10	Platform 9 & 10 overlaps	Total platform 10 & 11 and overlaps 9 & 10
<b>Track</b>				
Rail (km)	1.0	0.20		1.2
Sleepers (km)	0.46	0.10		0.56
Ballast (km)	0.46	0.10		0.56
S&C units	3	4		7
<b>Signalling</b>				
SEUs	8	4	4	16
<b>OLE</b>				
OLE (km)	0.800			0.800

**Outputs**

The scheme can eliminate conflicting movements between Down Leeds line passenger services that are operating to the North East and Scotland (typically three per hour) and all other passenger services. This reduces a major constraint in developing timetables on the East Coast Main Line (ECML) thereby allowing an increase in Long Distance High Speed (LDHS) services as part of a programme of ECML schemes as identified in the ECML Route Utilisation Strategy. This programme would allow an increase in services with an improvement in performance even though more trains would be operating. As the rolling stock on existing franchised LDHS services cannot be lengthened, additional services are required to support the increased passenger kilometre HLOS metric for route 8 for longer distance journeys to/from London.

**Significant interfaces**

There is an interface with the York Central commercial property development.

**Key assumptions**

- No TWA or land / property requirements; and
- TOCs and FOCs will sign up to a possession strategy.

**Activities and milestones**

The below are indicative dates in advance of full possession planning to be agreed by relevant industry stakeholders.

Activity	Output	Indicative date
GRIP 4 (Finish)		Q4 2009
GRIP 5 (Finish)		Q4 2010
GRIP 6 (Start)		Q1 2011
GRIP 6 (Finish)		Q3 2011
GRIP 7 (Finish)	Specified outputs delivered	Q3 2011
GRIP 8 (Finish)		Q4 2011

**Project definition: Shaftholme Junction remodelling**

**Network Rail’s obligation**

Our obligation is to deliver this project in CP4.

**Scope of works**

<b>Volumes</b>	<b>Shaftholme</b>
<b>Track</b>	
Rail (km)	10
Sleepers (km)	5
Ballast (km)	5
S&C units	6 or 8
<b>Signalling</b>	
SEUs	18

A new non-electrified single (or, subject to affordability) double track cord from the Skellow line at 10m 49ch heading in a north westerly direction crossing the ECML via an overbridge at 160m 70ch and joining the Askern line at 68m 10ch would be created. Connection of the chord to the Askern and Skellow lines will each comprise three or four S&C units depending on whether the cord is single or double track.

The project requires both land purchase and a TWA order. The project does not make any additional active or passive provisions - noting the project leaves in the existing Skellow to ECML cords and Shaftholme to Askem.

**Outputs**

The scheme allows an increase in passenger and freight services on the East Coast Main Line (ECML) by removing a significant number of existing freight services between Joan Croft junction and Hambleton South junction and re-routing these via a more direct route, thereby creating capacity on this constrained section of the ECML while at the same time reducing mileages and journey times for most of the re-routed freight trains.

The project allows some existing freight services on the Doncaster to Hare Park route to be diverted thereby creating capacity for additional freight services that would need to be routed this way. Both this and the Joan Croft to Hambleton routes were identified as gaps in the Freight RUS.

The scheme also reduces the number of potential junction conflicts between high speed passenger trains and freight services thereby reducing junction layout safety risk and has opportunities to close or enhance level crossings in the area.

The specific requirements of the project are:

- provision of a single, or preferable double track, line crossing over the East Coast Main Line using grade separation, from the Applehurst junction area on the Skellow line to the Askern Line (Shaftholme Junction to Knottingley route);
- the new line must be capable of operation of class 66 hauled trains with 2900 tonnes trailing loads; and
- retention of the Joan Croft to Applehurst junction and Shaftholme junctions to Askern (and vice versa in both cases) is required.

**Significant interfaces**

This is a standalone project in terms of direct project interfaces although it is part of the overarching programme of ECML works required, when benefits are aggregated, to meet both the passenger km and performance requirements specified in the HLOS.

**Key assumptions**

A key assumption is that the TWA will be required and granted without the need for a public inquiry. Also that ground conditions do not add additional risks over those already identified.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
Commence GRIP 4 TWA , design study		Q1 2009
Commence TWA order preparation		Q2 2009
Submit TWA order		Q2 2011
Complete GRIP 4		Q4 2011
TWA order comes into force		Q4 2011
Complete GRIP 5		Q1 2012
Complete GRIP6		Q1 2014
Complete GRIP 7	Removal of freight trains going to and from the Skellow line off the ECML	Q1 2014
Complete GRIP 8		Q2 2014

Note: The above GRIP 7 date is based on a build programme that does not in any way impact the alignment of the ECML - mitigation measures have been identified to address the known ground condition either side of the ECML, however until full geotechnical surveying and bore hole samples can be undertaken and analysed this remains a risk to the programme timescales.

We are currently reviewing the overall programme to determine a smoother delivery profile for the portfolio of ECML projects over the control period.

### Project definition: Moorgate branch improvements

#### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train First Capital Connect. The agreed operational plans are described in the route plans.

#### Scope of works

The scope of the project is subject to further development and consultation. The current requirements of the project are:

- additional signals between Drayton Park and Moorgate; and
- associated train stop arrangements which may drive the need for replacing the system for existing signals on this section.

During the development stage of the project, associated equipment will be investigated for compatibility with the new signalling equipment. This may reveal that train stop and power supply equipment is required to be renewed. The extent of the renewal will be determined.

#### Outputs

The scheme reduces the planning headway between Finsbury Park and Moorgate to four minutes. In conjunction with the Alexandra Palace to Finsbury Park 3<sup>rd</sup> Up Line project, this allows additional high peak hour inner suburban services to meet the Moorgate high peak hour capacity metric, as longer trains are not an option due to the constraints of the tunnel sections into Moorgate.

#### Significant interfaces

The project is dependent upon the delivery of capacity improvements between Alexandra Palace and Finsbury Park to achieve the necessary increase in traffic to/from the Moorgate branch in order to achieve the benefit of the Moorgate branch headway improvements achieved by completion of this project.

The project also interfaces with the Thameslink Programme.

#### Key assumptions

The project currently makes no funding provision for any alterations to rolling stock and assumes that additional class 313s will be made available to FCC under the DfT's Rolling Stock Plan.

#### Activities and milestones

Activity	Output	Indicative date
GRIP 1-3	Option selection report	Q4 2009
GRIP 4	GRIP 4 design	Q4 2010
GRIP 5-8	Implementation	2011 - 2012

The ability to operate additional services is dependant on sufficient ac overhead power supplies in the London area. Enhancement of those is included in the scope of the Thameslink Programme.

### Project definition: FCC train lengthening

#### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with First Capital Connect. The agreed operational plans are described in the route plans.

#### Scope of works

The specific requirements of the project are:

- platform extensions for operation of 12x20m vehicle trains to accommodate train types such as class 317/319/365 and future Thameslink trains at Letchworth Up and Down platforms and Royston Down platform; and
- provision of additional DOO equipment on these platforms and possible relocation of existing equipment.

Volume	Location	
	Royston	Letchworth
Total platform lengthening (m)	91	152

Project development will involve the OLE, signalling, track and civils disciplines. Station change will be required and possible consultation with local authorities.

#### Outputs

The scheme provides for platform extensions at two outer suburban stations sufficient for 12x20m vehicles to accommodate train types such as class 317/319/365 and future Thameslink trains. The East Coast Main Line Route Utilisation Strategy recommended a progressive lengthening of outer suburban services from 8 to 12-cars during CP4 and CP5. A number of outer suburban stations that already cannot handle such train lengths are within the scope of Thameslink Programme key output 2. This project covers other outer suburban stations that require to be extended in CP4 in order to meet the King's Cross peak capacity metrics, particularly for the high peak hour. Other outer suburban stations not included within either of these projects are not expected to require operation of 12-car trains until early CP5 or for which SDO will be used.

#### Significant interfaces

The project interfaces with the 12-car extension of platforms at Arlesey, Biggleswade, and Sandy by the Thameslink Programme. First Capital Connect, as SFO at all affected stations, is a key stakeholder.

#### Key assumptions

This project assumes that the existing platforms at Finsbury Park, Arlesey, Biggleswade and Sandy are extended within the same timescales as this project and are funded by the Thameslink Programme. We assume provision of additional outer suburban units for First Capital Connect through DfT's Rolling Stock Plan.

The ability to operate further 12-car trains is dependant on sufficient ac overhead power supplies in the London area. Enhancement of these is included in the scope of the Thameslink Programme.

#### Activities and milestones

The project is currently in GRIP stage 1-3, which is due to be completed in March 2009. Implementation of the works is currently planned to be completed by the end of 2011 although First Capital Connect has expressed a wish for completion in 2010, and we are examining this.

Activity	Output	Indicative date
GRIP 1-3	Option selection report	Q1 2009
GRIP 4	GRIP 4 design	Q3 2009
GRIP 5	Detailed design	Q4 2009
GRIP 6-8	Implementation and close out	Q4 2011

**East Coast Main Line overhead line electrification**

**Network Rail’s obligation**

Our obligation is to deliver this project in CP4.

**Scope of works**

This project is split into five distinct tasks:

- Defect survey – full survey of the ECML to record all defects, all outstanding campaign changes and any existing non-conformances;
- campaign changes – the implementation of 11 campaign changes. This is the removal of components or designs with known reliability problems with a modern fit-for-purpose equivalent;
- defect removal – in line with the campaign change delivery, all defects identified as a risk to performance will be removed with highest priorities being delivered first. A separate work stream will be used for tunnels where a non-intrusive survey is not practicable;
- vegetation – in conjunction with the lineside team, a detailed survey of all areas of critical vegetation with specific regard to OLE will be undertaken. This will be completed with due regard for the Group Standards for new infrastructure with consideration of future schemes (such as Auto-Transformer) being considered. This will include, where required, clearance back to maintainable boundaries; and
- neutral sections – the upgrade of 78 neutral sections to a more reliable type.

The defect work and campaign changes will be packaged into three geographical delivery areas to be contracted out for works. The neutral sections are planned to be packed into two geographical areas for the design surveys. Tunnel surveys and vegetation surveys will be one package each.

Volume	Location		
	Package 1 King’s Cross – Hitchin including Hertford and Cambridge branches	Package 2 Hitchin – Doncaster including Doncaster to Leeds	Package 3 Doncaster to territory boundary
OLE (wire runs)	472	569	760

The project will incorporate approximately 1900 wire runs within the ECML from London King’s Cross to Marshall Meadows incorporating the Hertford, Cambridge and Doncaster to Leeds branch lines. Key to the delivery of this project is the timely survey and assessment of the data to produce a deliverable work scope. This activity will drive the milestones for all of the other sub-projects within this scheme.

Close integration of the survey work and the current maintenance work bank will be required. A close interface with the maintenance organisation is required for this project.

All vegetation requirements will be carried out with due regard for the future auto-transformer works proposed by Thameslink.

**Outputs**

The key output is a reduction of delay minutes to support delivery of the route performance as part of CP4 Long Term Performance Plan (LTPP). This will be achieved by increasing the reliability and performance of the ECML Overhead Line Electrification (OLE) through delivery of targeted renewals and component changes, identifying key assets within the OLE where a reduction of risk can be achieved.

**Significant interfaces**

As well as the interface with maintenance, constant review of other enhancement works (Thameslink, Grade Separation, IEP) to ensure that works are not duplicated and all requirements are met with maximum efficiency will be necessary.

**Key assumptions**

Access is aligned to the current deliverability strategy. This will entail maximising the use of current maintenance access under rules of the route. This assumption may change when the surveys are received and the scope of works reviewed. Any additional access outside of ROTR will require liaison with Operations & Customer Services and the TOC and FOCs.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
Defect removal and campaign changes (tunnels)	Removal of all identified defects and campaign changes within the wire runs	Q3 2009
Vegetation	Clearance of all known risk areas	Q3 2010
ECML OLE surveys	Completion of approx.1927 surveys	Q4 2009
Neutral sections	Delivery of 78 neutral sections	Q4 2010
Defect removal and campaign changes	Removal of all identified defects and campaign changes within the wire runs	Q4 2011

### St Pancras - Sheffield linespeed improvements

#### Network Rail's obligation

Our obligation is to deliver this project in CP4.

#### Scope of works

Volumes	Multiple locations between London and Sheffield
<b>Track</b>	
Rail (km)	5
Sleepers (km)	3
Ballast (Tonnes)	30000
S&C units	8
<b>Signalling</b>	
New signals*	28
<b>Civils</b>	
Footbridges replacing level crossings	15
Possible bridge strengthenings	56

\*There are no interlocking changes, this is for signal sight purposes and does not, therefore, equate to an SEU.

The scope of this project is subject to further development work.

The project will make use of and amend, where required, the high output track renewals planned on the MML. This is varied in location and subject to change, but for 2009/10 will concentrate on the section of line between Sharnbrook (south of Luton) and Sundon (north of Luton).

Several foot path crossings will be closed, diverted onto bridges or other safety enhancements introduced.

Structures will be assessed for gauge and strength. Track quality will be maintained and a new track alignment is proposed through Market Harborough.

The critical milestones relate to the access permissible to the railway and the ability to tie into the high output track renewals in 2009.

There is a very limited property implication at some of the level crossing sites. All planning and statutory authority is within permitted development. Statutory process will be required for the closure and diversion of footpaths.

#### Outputs

The primary outputs are to deliver improved journey times through line speed enhancements between London and Sheffield, by the end of CP4. The aim is to do this in such a manner as to maximise synergy with permanent way renewals which are planned on the Midland Main Line in CP4. These would provide reduced journey time opportunities for services operating on the Midland Main Line between St Pancras International and Derby, Nottingham and Sheffield.

#### Significant interfaces

There is significant interface, (dependence), with the track renewal programme and other interfaces with Thameslink Programme and East Midlands signalling renewal.

#### Key assumptions

- Improved track quality is not required - existing levels will be maintained; and
- level crossing closures can be achieved.

**Activities and milestones**

Work is programmed around planned track renewals with two High Output Ballast Cleaning sites planned for 2009. Remaining works will be programmed once the future track renewals programme has been agreed.

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
GRIP4 (first package)	Phase 1	Q1 2009
GRIP 5/6/7/8 (first package)	Phase 1	Q3 2009
GRIP 5/6/7/8 (future packages)	Yearly delivery packages	Q3 2009 onwards

## Nottingham resignalling

### Network Rail's obligation

Our obligation is to deliver this project in CP4.

### Scope of works

Volume	Location			
	Beeston to Nottingham	Mansfield Junction	Nottingham west / east	Additional platform
<b>Track</b>				
Rail (km)		3.4	1	0.5
Sleepers (km)		3.4	1	0.5
Ballast (km)		4.4	1	0.5
S&C units	2	1	6 / 3	2
<b>Signalling</b>				
SEUs	3	1	6	2
<b>Civils</b>				
Platform Lengthening (m)				97 (passive provision)

The scope of this project is subject to further development work. The project is intended to improve performance through the segregation of trains at the west end of Nottingham with bi-directionally paired tracks for trains to Derby / Leicester and Mansfield / Sheffield. The affected section of line is from Beeston through Lenton and Mansfield junctions to Nottingham station. The project adds 12 SEUs to the signalling renewal project, 5.9km of plain line track and 14 S&C units.

The critical milestones are tied into the signalling renewal and the need to commission the signalling in the Nottingham station area of the Christmas period of 2011. This requires GRIP 4 authority in January of 2009.

Network Change will be required for this project, there maybe some elements that also require station change.

There will be passive provision to extend the proposed additional 97 metre platform.

Delivery will be through the East Midlands Signalling renewal project.

### Output

The primary outputs are to enhance the layout at Nottingham station by the end of CP4 to deliver improved performance for services operating through Nottingham. The aim is to do this in such a manner as to maximise synergy with the re-signalling works which are being carried out by the East Midlands signalling renewal scheme at the same time.

### Significant interfaces

There is significant interface with track renewals to package improvements at Nottingham, the Nottingham Hub station regeneration project and the Nottingham Express Transit outside party project.

### Key assumptions

It is assumed that signalling and track renewals work and enhancement scope can be delivered at the same time to achieve the total output of the project in the most efficient manner.

### Activities and milestones

Activity	Output	Indicative date
GRIP 4	Development of a single option	Q1 2009
GRIP 5	Detailed design	Q3 2010
GRIP 8	Implementation and commissioning	Q1 2013

### **Midlands improvements programme**

#### **Network Rail's obligation**

Our obligation is to deliver the schemes as defined by ORR and to provide the necessary infrastructure to facilitate the operational plans set out in the route plans.

#### **Scope of works**

The schemes defined by ORR to be delivered are:

- Bromsgrove electrification;
- Redditch branch enhancement; and
- line speed improvements – Wrexham to London Marylebone.

In addition the following schemes are necessary to support the operational plans:

- Route 16 – train lengthening;
- Route 17 – Chiltern train lengthening; and
- Route 19 – East Midlands train lengthening.

## **Project definition: Bromsgrove electrification**

### **Network Rail's obligation**

Our obligation is to deliver the scheme is CP4.

### **Scope of works**

Currently we are in discussions with the train operator and other stakeholders. Therefore there is no confirmed scope of works within this project.

A High Level Options Assessment report (GRIP 2) has been produced detailing the various options that have been identified for this project. This includes the following:

- extension of electrification from Barnt Green (51m 67ch) to Bromsgrove (56m 00ch) with an option to electrify the fast lines between Kings Norton (47m 40ch) and Longbridge (49m 20ch);
- four potential re-signalling options with three or four aspect signals and retention of control from Gloucester or transfer of control to West Midlands SCC at Saltley;
- permanent way works at the site of a re-located Bromsgrove station to provide platform loops in the Up and Down directions;
- five over bridges between Barnt Green and Bromsgrove have been identified for either bridge reconstruction or track lowering are being examined due to insufficient clearance for electrification;
- passive provision for lengthening the station platforms from an initial six car length to nine car length;

This work should fall within Network Rail's permitted development rights. However, the corridor between Blackwell and Bromsgrove (Lickey Incline) is quite narrow in places with steep cutting and embankment. Additional land requirements in respect of electrification clearances will be examined as part of the GRIP 3 study.

Whilst the station re-location project is a third party enhancement, it is likely to be delivered by Network Rail. There are opportunities for efficiencies by adopting an integrated approach. The station re-location is required as soon as possible to alleviate the currently constrained capacity and overcrowding from Bromsgrove, but could form part of a staging strategy, which would benefit the Cross City extension works.

### **Outputs**

This project increases capacity by extending a service of three trains per hour to Bromsgrove that currently terminate and turn round at Longbridge.

### **Significant interfaces**

- Redditch branch enhancement – these two projects comprise the extension of the Cross City line between Longbridge and Bromsgrove. The current service of six trains per hour, where four turn round at Longbridge and two carry on to Redditch, will be extended so that three trains per hour run to Bromsgrove, where they will turn round and three trains per hour will run to Redditch;
- Bromsgrove station re-location – a third party enhancement that is now a pre-requisite of the extension of the Cross City line to Bromsgrove, to provide a turn back facility. The platforms at the existing station are three car in the Up direction and four car in the Down direction. Due to constraints these cannot be extended so the additional trackwork cannot be provided at the current site;
- S&C renewal at Bromsgrove Down goods loop - originally scheduled for 2008, but has been deferred pending the outcome of the station re-location project;
- the introduction of new rolling stock (Class 172s) and additional EMU stock;
- Barnt Green to Westerleigh line speed improvements; and
- West Midlands resignalling programme, scheduled between 2009 and 2018.

### **Key assumptions**

The extension of the Cross City line will only require a minimal increase in rolling stock. Currently the service is operated by class 323s operated by London Midland in three and six car formations.

The station relocation needs to happen before electrification to enable the extension of the Cross City Line services. The station relocation is separately funded and constitutes a replacement of the existing two platform station, with longer platforms and with the additional platforms required for the turn back facility. The additional track work and signalling required to operate the turn back will be provided under this project.

**Activities and milestones**

The current programme assumption is that the earliest this work could be delivered is 2012, although an indicative construction programme will be a GRIP 3 deliverable. It is proposed to commence GRIP 3 (option selection) early in 2009, with a view to confirming a single option approximately six months later.

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
Complete GRIP 3 study	Select preferred option	Q3 2009
Commence GRIP 4 design		Q4 2009
Complete GRIP 4 design	Outline design	Q3 2010
Bromsgrove station re-location	Interim station solution	Q3 2010*
GRIP 5-8 authority submission	Detailed design and Implementation	Q3 2010
Commence implementation	Construction	Q1 2012
Commissioning		Q4 2013

\*This date is subject to agreement of funding and agreements for the third party enhancement.

**Project definition: Redditch branch enhancement**

**Network Rail's obligation**

Our obligation is to deliver the scheme is CP4.

**Scope of works**

Currently we are in discussions with the train operator and other stakeholders, therefore there is no confirmed scope of works within this project.

A number of options have been evaluated for improving capacity between Longbridge and Barnt Green, also for improving capacity on the Redditch branch by provision of a passing loop between Alvechurch and Redditch, passing loops of various lengths on the approach to Redditch station and an additional platform at Redditch. Further options have been evaluated for the removal of the footpath level crossing at Alvechurch to improve line speed and safety.

Most of this work should fall within Network Rail's Permitted Development rights. However, the additional platform and or passing loop at Redditch will require additional land purchase. This may dictate which option is most feasible. At one side the land is owned by a developer with an additional land owner midway along the site. On the other side, part of the existing car park would be required in addition to previously owned railway land which has been sold and developed as residential. Aspirational land requirements in respect of electrification clearances will be examined as part of the GRIP 3 study.

**Outputs**

The primary output of this project is increased capacity in the form of an additional train path per hour, from the current two trains to three trains an hour between Barnt Green and Redditch.

In order to meet the requirement for an additional train path a number of options are being examined. The most likely option is to provide an additional platform at Redditch station to allow the incoming Redditch service to access the station before the outward service leaves the station onto the single line to Barnt Green.

**Significant interfaces**

- Bromsgrove electrification project – these two projects comprise the extension of the Cross City line between Longbridge and Bromsgrove. The current service of six trains per hour, where four turn round at Longbridge and two carry on to Redditch, will be extended so that three trains per hour run to Bromsgrove, where they will turn round and three trains per hour will run to Redditch;
- the introduction of new rolling stock (Class 172s) and additional EMU stock;
- Barnt Green to Westerleigh line speed improvements;
- Longbridge station and area redevelopments; and
- West Midlands resignalling programme, scheduled between 2009 and 2018

**Key assumptions**

The extension of the Cross City Line will only require a minimal increase in rolling stock. Currently the service is operated by Class 323s operated by London Midland in three and six car formations.

**Activities and milestones**

The current programme assumption is that the earliest this work could be delivered is 2012, although an indicative construction programme will be a GRIP 3 deliverable.

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
Complete GRIP 3 study	Option selection	Q3 2009
Commence GRIP 4 design		Q4 2009
Complete GRIP 4 design	Outline design	Q3 2010
GRIP 5-8 authority submission	Detailed design and implementation	Q3 2010
Commence implementation	Construction	Q1 2011
Commissioning		Q4 2012

### **Project definition: Line speed improvements: Wrexham to London Marylebone**

#### **Network Rail's obligation**

Our obligation is to deliver the scheme is CP4.

#### **Scope of works**

Currently we are in discussions with the train operator and other stakeholders, the project scope is yet to be finalised.

The proposed project scope is for track, structures and earthworks alterations to take place between Northolt junction and Birmingham Moor Street/Coventry via Banbury. Signalling alterations will be separately managed by DB Regio UK Ltd as part of their Evergreen 3 project

Passive provision will be made for W9 and W10 gauging

#### **Outputs**

The primary output of the project is to improve journey times between London Marylebone and central Birmingham, this may facilitate additional train paths into both Birmingham and London for commuter services.

If increased scope is included, then a potential output is a journey time of 100 minutes from London Marylebone to Birmingham Moor Street and 2 hours 30 minutes between London Marylebone and Telford Central achieved by line speed increases, rolling stock changes and timetable alterations. This increased scope would be third party funded - DB Regio UK could be responsible for funding and delivering this as part of Evergreen 3.

#### **Significant interfaces**

There are interfaces with stakeholders including DB Regio UK Ltd, and other TOCs and FOCs. There are interdependencies with other projects including the Evergreen 3 project managed by DB Regio UK Ltd and renewals and re-signalling schemes.

#### **Key assumptions**

Discussions are currently taking place with DB Regio UK concerning the delivery of this project. It is proposed that DB Regio UK will deliver this scheme as part of their larger Evergreen 3 proposals.

The key assumption is that the current rolling stock will continue to operate on the route for the foreseeable future but with up-rated performance and that a new timetable may be necessary.

#### **Activities and milestones**

Critical path milestones are under discussion with DB Regio UK Ltd.

### Project definition: Route 16 - Chiltern train lengthening

#### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### Scope of works

The project is currently in development and the scope is being defined. We are developing a project output that may require enhancing signalling headways rather than completing platform extensions.

#### Outputs

We are currently working with Chiltern Railways to define a scheme that delivers value for money and achieves the specified level of capacity output.

#### Significant interfaces

Significant interfaces are with Chiltern Trains to agree capacity requirements and project scope to deliver that capacity. The intervention needs to align with future development proposals for the route.

#### Key assumptions

The start of GRIP stage 3 in April 2009 is the earliest start date.

#### Activities and milestones

Activity	Output	Indicative date
Authority GRIP 3 - 4	Authority request	Q1 2009
Detailed design	Single option / detailed design	Q1 2010
Authority GRIP 5 – 8	Authority request	Q4 2011
Construction starts		Q1 2012
Completion (GRIP 8)		Q4 2013

**Project definition: Route 17 - train lengthening**

**Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of works**

Currently we are in discussions with the train operator and other stakeholders. Therefore the confirmed scope of platform works within this project is yet to be defined.

Over the nine radial routes where we are currently reviewing possible platform extensions, there are some platforms that have a range of issues, for example; relocating platform end fences and re-surfacing, whilst others have signalling and OLE elements to move or structures to alter.

**Outputs**

The output requirements are longer passenger trains for the route. The extension of platforms at selected stations is one way of achieving access for longer passenger trains, other methods include SDO. Following discussions with London Midland and CrossCountry the following assumptions for car lengths are considered:

Line	Car length
Cannock	6 x 23m
Cross City	6 x 23m
Coventry	8 x 23m
Wolverhampton	6 x 23m
Walsall	6 x 23m
Stratford	6 x 23m
Leamington	6 x 23m
Stourbridge	6 x 23m
Derby	6 and 4 x 23m

**Significant interfaces**

- New rolling stock introduction(Class 172s) and additional EMU stock;
- Bromsgrove electrification;
- Redditch branch enhancement;
- NSIP; and
- West Midlands re-signalling programme scheduled between 2009 and 2018.

**Key assumptions**

The commencement of GRIP stage 3 in April 2009 is the earliest start date.

**Activities and milestones**

Activity	Output	Indicative date
Authority GRIP 3 - 4	Authority request	Q2 2009
Detailed design	Single option/detailed design	Q1 2010
Authority GRIP 5 - 8	Authority request	Q1 2010
Implemented	Platform scheme implemented	Q4 2013

**Project definition: East Midlands train lengthening**

**Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

**Scope of works**

The locations under review for this project are:

- Stamford;
- Melton Mowbray;
- Syston;
- South Wigston;
- Spondon;
- Willington;
- Wellingborough;
- Loughborough;
- Long Eaton;
- Kettering;
- Market Harborough; and
- Beeston.

The maximum potential platform lengthening at these locations is shown in the table below.

Volume	Location			
	Spondon	Long Eaton	Syston	South Wigston
Platform lengthening (m)	25 Down 25 Up	10 Down 7 Up	41 Down	2 Up

Volume	Location			
	Willington	Loughborough	Kettering	Wellingborough
Platform lengthening (m)	16 Down 16 Up	125 Platform 1 128 Platform 2 177 Platform 3	50 Platform 1 49 Platform 2 42 Platform 3 48 Platform 4	20 Platform 1 22 Platform 2 133 Platform 3

Volume	Location			
	Stamford	Melton Mowbray	Market Harborough	Beeston
Platform lengthening (m)	5 Down 5 UP	13 Down 11 Up	27 Down 106 Up	68 Down 69 Up

The project is currently pre GRIP. Grip 1-3 commences the week commencing 5<sup>th</sup> December and is due to be complete by March 2009.

Implementation works are to be complete by the end of CP4 (March 2014). Project development may involve signalling and track disciplines.

**Outputs**

This scheme could provide additional carrying capacity on East Midlands routes by operating longer passenger trains. This could require platform lengthening to accommodate either 10x23m (class 222) or 5x23m (class 222) or 4x23m (class 170) vehicle trains at those stations listed in the tables above.

**Significant interfaces**

This project interfaces with the National Stations Improvement Programme at Kettering, potential 3<sup>rd</sup> party funded DDA (footbridge with lifts) improvements at Wellingborough, DDA (footbridge with lifts), a Car Park, station forecourt Improvements at Loughborough, line speed improvements at Market Harborough, and National Stations Improvement Programme works at Long Eaton.

**Key assumptions**

- Only civils works are required; and
- it is assumed that East Midlands Trains will run up to 10-cars possibly with some SDO, and CrossCountry will run up to 4-cars without SDO.

**Activities and milestones profile**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
GRIP 1-3	Option selection report	Q1 2009
GRIP 4 commencement	Single option development	Q2 2009
Grip 5-8	Detailed design and construction	Q2 2012 –Q1 2014

### **Northern urban centres - Yorkshire**

#### **Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### **Scope of works**

The scope of work we believe is necessary to help meet our obligation includes:

- additional stabling in the Huddersfield and Skipton areas to accommodate circa 50 additional vehicles per night respectively for Northern Rail as part of the DfT Rolling Stock Strategy;
- an additional bay platform at Leeds opposite platform 1 capable of taking at least 6 x23m vehicle trains;
- additional platform capacity on the south side of the station;
- a programme of platform extensions to allow longer trains to operate on a number of rail corridors into Leeds and Sheffield;
- turnback facility at Horsforth and two additional signal sections between Horsforth and Harrogate;
- re-instatement of the Up platform at Castleford;
- turnback facility east of Leeds in the Micklefield area;
- additional stabling in the Huddersfield, Skipton and Harrogate areas to accommodate circa 50, 25 and 25 additional vehicles per night for Northern Rail; and
- additional stabling in the Sheffield area to accommodate circa 25 additional vehicles per night for Northern Rail as part of the DfT Rolling Stock Strategy.

### **Project definition: Capacity improvements (Leeds area)**

#### **Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### **Scope of works**

A programme of platform extensions is planned in order to allow longer trains to operate on a number of rail corridors into Leeds. Stations in South Yorkshire are covered by the South Yorkshire train lengthening project.

We plan to provide an additional bay platform at Leeds adjacent to platform 1 capable of handling at least 6x23m vehicle trains. We are also examining options to provide additional platform capacity on the southern side of the station; options include extending platform 17 and joining platforms 13 and 14 to provide an additional through platform.

Other works are to include new turnback facilities, clear of (and ideally between) the running lines, at Horsforth (6x23m vehicles) and Micklefield (6x23m). The latter may require the existing Micklefield station to be relocated. To allow for growth beyond CP4 the turnbacks will be longer than necessary for CP4 train formations.

Scope will include the reinstatement of the Up platform at Castleford and the connection to the former Ledston branch to allow an increase in Castleford – Leeds shuttle services. Also two additional signal sections between Harrogate and Horsforth (in each direction).

The proposed scope of works includes new and enhanced stabling and servicing facilities at Skipton and in the Wakefield/Huddersfield area to accommodate circa 50 (additional) vehicles respectively per night. Those at Skipton will be electric units. These will be supplemented by a similar facility in South Yorkshire (see South Yorkshire stabling for Northern project).

Platform lengthening scope:

- to date, development up to GRIP 3 has concentrated on the following stations - Castleford, Woodlesford, Normanton, Micklefield, South Milford, Knottingley and Pontefract Monkhill. Additional stations where platform lengths may need to be extended have been identified as per the latest strategy in the table below. However, GRIP1-3 has yet to be completed on those stations;
- the development work covers understanding the requirements to extend existing station platforms as detailed above. This will involve mainly civil engineering, however signalling and permanent way work may be necessary at some locations; and
- to accommodate the longest length train to call at these stations to meet CP4 HLOS growth, so additional passive provision has not been considered.

West Yorkshire stabling scope includes:

- additional stabling and servicing facilities for Northern Rail's fleet so that Neville Hill and Newton Heath depots can concentrate on maintenance thereby avoiding the need for additional maintenance depots, thereby accommodating the provision of additional Northern Rail rolling stock expected via the DfT Rolling Stock Strategy and to meet CP4 HLOS growth;
- GRIP1-3 works concentrating on sites at Harrogate, Skipton, Healey Mills, Belle Vue, Normanton and Huddersfield Hillhouse but ongoing discussions with Northern Rail have led to Hillhouse and Skipton being the preferred options; and
- works involving signalling and permanent way works on the main network, and permanent way, signalling and civil engineering works in the internal depot facility.

**Outputs**

The strategy for each corridor is set out below:

Corridor	Peak shuttles	Maximum CP4 shuttle train length	Maximum CP4 train length for other services
Knarborough – Harrogate - Leeds	Horsforth – Leeds	4x23m	4x20m
Ilkley – Leeds		N/A	6x23m <sup>#</sup>
Skipton – Leeds		N/A	6x23m <sup>#</sup>
Calder Valley via Halifax and Bradford	Halifax – Leeds/Micklefield	4x23m	4x23m
Huddersfield/Hebden Bridge – Dewsbury – Leeds		N/A	4x23m
Doncaster/Sheffield – Wakefield Westgate – Leeds		N/A	4x23m
Sheffield – Wakefield Kirkgate – Leeds		N/A	4x23m
Knottingley – Castleford – Leeds	Castleford – Leeds/Micklefield	4x23m	3x23m
York – Garforth – Leeds	Micklefield – Leeds/Castleford/ Halifax	4x23m	6x23m
Selby – Garforth - Leeds	Micklefield – Leeds/Castleford/ Halifax	4x23m	5x23m

# - 8x23m if insufficient 3-car sets are available under the DfT Rolling Stock Plan

**Significant interfaces**

- Interfaces with a potential RFA scheme to provide a parkway station at Micklefield;
- signalling renewals on the Harrogate line; and
- West Yorkshire stabling has an interface with the tram train project (at Huddersfield only).

**Key assumptions**

The interventions assume that Northern Rail will receive approximately 180 additional vehicles for services across its entire franchise area. If the actual figure is lower then it may not be possible to deliver the Leeds peak capacity metric within the enhanced infrastructure provided under this project.

The enhancements on the Harrogate line assume that they will be integrated with the signalling renewals at Horsforth and Rigton.

It is assumed that the Leeds southern entrance scheme will be funded within CP4 through the RFA thereby dealing with the station crowding issues at Leeds that the capacity metric would otherwise cause.

Provision of land for the stabling and servicing facilities will only have a moderate cost and any consents required will be gained within reasonable timescales.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
Stabling GRIP4	Outline design	Q1 2009*
Stabling GRIP5-8	Detailed design and construction	2009 - 2010/2012
Platform lengthening GRIP1-3	Option selection	For some stations, Q2 2008. For remainder of stations, Q2 2009
Platform lengthening GRIP4-8	Outline design, detailed design and construction	2009 - 2012
Remainder of schemes GRIP1-3	Option selection	2009-2010
Remainder of schemes GRIP4-8	Outline design, detailed design and construction	2010 - 2014

\* If the site at Hillhouse cannot be obtained then the GRIP 1-3 study will need to be reopened.

The critical milestones are to develop and deliver the depot facilities by early / mid CP4 (i.e. approximately 2010 - 2012).

### Project definition: South Yorkshire - train lengthening

#### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### Scope of works

The specific requirements of the project are a programme of platform extensions (or derogations where appropriate) to allow longer trains to operate on two rail corridors into Sheffield, as shown in the table below. Those stations in West Yorkshire are covered by the capacity improvement (Leeds area) project. Project scope includes Thurnscoe, Goldthorpe, Bolton on Dearne, Swinton, Rotherham Central and Chapeltown stations.

Corridor	Maximum CP4 train length
Sheffield – Swinton - Moorthorpe - Leeds	4x23m
Sheffield – Barnsley - Wakefield Kirkgate - Leeds	4x23m

#### Outputs

The project provides platform extensions to support train lengthening on some Northern Rail services into Sheffield and a number that run between Sheffield and Leeds providing peak trains at Leeds. Additional train capacity into Sheffield on other operators' services is available without alteration to existing Network Rail infrastructure in the area.

#### Significant interfaces

Interfaces with platform extensions on the West Yorkshire sections of the routes above are covered by the capacity improvements (Leeds area) project.

#### Key assumptions

For project development, it is unlikely that additional land purchase will be required, but Station Change and internal property clearance will be needed.

#### Activities and milestones

Activity	Output	Indicative date
GRIP4-8	Outline design, detailed design and construction	2009-2012

We are currently looking at synergies with signalling renewal possessions in the Moorthorpe area and tram train on the Barnsley – Penistone route, both planned for 2010/11. This will tie in with the DfT rolling stock strategy and the provision of additional rolling stock to Northern Rail. GRIP stages will be confirmed pending the outcome of this analysis. The critical milestones are to develop and deliver the additional platform lengths by the middle of CP4 (i.e. approximately 2012).

### Project definition: South Yorkshire - stabling for Northern

#### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### Scope of works

Project scope has concentrated on the Tinsley depot area / Ickles yard sites and the existing station and depot facilities at Sheffield station.

The work will involve signalling and permanent way works on the main network, and permanent way, signalling and civil engineering works in the internal depot facility.

#### Outputs

The scheme provides additional stabling and servicing facilities for Northern Rail's fleet at a new site in South Yorkshire so that Neville Hill and Newton Heath depots can concentrate on maintenance thereby avoiding the need for additional maintenance depots. It will support the additional vehicles required to lengthen services into Sheffield and also those that operate between Sheffield and Leeds that provide peak capacity for Leeds.

The specific requirements of the project are a new stabling and servicing facilities at a site in the Sheffield area to accommodate circa 25 (additional) vehicles and to be capable of reducing the need for stabling in Sheffield station.

#### Significant interfaces

There are potential interfaces with platform extensions on the South Yorkshire sections of the routes.

The scheme also interfaces with the tram train trial project.

#### Key assumptions

Provision of land for the stabling and servicing facilities will only have a moderate cost and that any consents required are gained within reasonable timescales.

#### Activities and milestones

Activity	Output	Indicative date
GRIP1-3	Option selection	Q1 2009
GRIP4	Outline design	2009
GRIP5 - 8	Detailed design and construction	2009-2010/12

### **Northern urban centres - Manchester**

#### **Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### **Scope of works**

The proposed scope of works covers:

- route 20 platform lengthening (24.01);
- route 20 stabling for Northern Rail (24.02);
- Salford Crescent station redevelopment (24.03); and
- Route 20 capacity enhancements (24.04) - package consisting of smaller projects that are identified as being 'value for money' in terms of delivering additional capacity. These projects are: still under development but options include: Stalybridge track and signalling modifications; Buxton corridor enhancements and modest line speed improvements between Ardwick and Guide Bridge

### Project definition: Route 20 - platform lengthening

#### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### Scope of works

Currently we are in discussions with the train operator and other stakeholders, therefore there is no confirmed scope of works within this project. The potential scope covers nine major routes requiring platform extensions and there are ninety platforms requiring lengthening works with a range of issues at each location. Some require minimal works such as relocating platform end fences whilst others have signalling and OLE elements to move or structures to alter.

#### Outputs

Meeting the average load factor targets set in the HLOS for Manchester and Liverpool will require the lengthening of a number of services along the corridors that penetrate into both cities. The objective of this project is to take forward a programme to lengthen platforms at those stations within route 20 where longer services will need to be accommodated. This scheme proposal relates to stations within route 20 and primarily concentrates on the main corridors between Manchester and Liverpool. Some other stations on the periphery of the North West area are also included (route 23).

The overall operational platform strategy for each route into central Manchester is:

- Atherton corridor- 4-car lengths;
- Bolton corridor - 4 and 6-car lengths;
- Calder Valley - 4-car lengths;
- Chat Moss - 4-car lengths;
- CLC corridor - 2 and 4-car lengths;
- Marple corridor - 4 car-lengths;
- St Helens corridor - 4 car-lengths;
- Stockport - 4 car-lengths; and
- Cumbrian coast - 4 car-lengths.

The above route strategy has been agreed in conjunction with Northern Rail but it should be noted that until DfT's Rolling Stock plan is finalised, this could be subject to change.

#### Significant interfaces

There are interfaces within Network Rail with other Manchester capacity proposals such as:

- route 20 stabling for Northern;
- route 20 capacity enhancements; and
- Salford Crescent station redevelopment.

The emerging Manchester hub proposals for CP5 and beyond interface with all Manchester capacity proposals.

#### Key assumptions

Following discussions with Northern Rail the following assumptions have been made:

- 4 x 23m lengths are required on all radial routes from Manchester;
- 6 x 23m lengths are required Preston – Bolton – Salford Crescent;
- 3 x EMU Manchester – Glossop and Stockport – Crewe; and
- full rolling stock deployment expected by December 2013;

#### Activities and milestones

Activity	Output	Indicative date
GRIP 3 and 4	Single option design	Q4 2009
GRIP 5 - 8	Detailed design and construct completion	Q4 2013

### **Project definition: Route 20 – stabling for Northern**

#### **Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### **Scope of works**

Additional stabling and servicing facilities for Northern Rail's fleet so that Neville Hill and Newton Heath depots can concentrate on maintenance. This would avoid the need for additional maintenance depots, thereby accommodating the provision of additional Northern Rail rolling stock expected via the DfT Rolling Stock Strategy and to meet CP4 HLOS growth.

Currently we are in discussions with the train operator and other stakeholders. Therefore there is no confirmed scope of works within this project. The project scope below is based on a recently undertaken GRIP 2 study.

Both Guide Bridge locations have sufficient land availability for the following:

- stabling for a minimum 44 vehicles; and
- vehicle washers, watering, fuelling, CET discharge, stabling power, wheel lathe and train crew facilities.

The next stage of development will progress varying options and layouts to GRIP 3 in conjunction with the TOC (Northern) to determine the optimum facility requirements. Likely issues encountered will be engineering solutions, operational, land ownership, environmental / ecological and planning. Network and Depot Change will also be required.

#### **Outputs**

The project will determine with Northern and DfT an optimum provision of stabling and depot facilities centred around the expansion of the DMU facilities at Guide Bridge. Options for consideration include locations to the east of the Stalybridge line and to the south of the Manchester to Sheffield Line.

#### **Significant interfaces**

There are interfaces within Network Rail with other Manchester capacity proposals such as:

- route 20 platform lengthening;
- route 20 capacity enhancements; and
- Salford Crescent station redevelopment.

The emerging Manchester Hub proposals for CP5 and beyond interface with all Manchester capacity proposals.

#### **Key assumptions**

Following discussions with Northern Rail the following assumptions have been made:

- Guide Bridge will be for DMU operation only;
- in line with DfT's Northern rolling stock deployment strategy it is expected these increased facilities will be required by December 2012;
- Northern to finalise their rolling stock deployment plan by type, length, service, timescale to enable full performance and operational timetable modelling plan to be undertaken to prove depot facilities scope;
- Northern rolling stock deployment expected by December 2013; and
- Guide Bridge to be in use by December 2012

#### **Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
GRIP 3	Feasibility	Q3 2009
GRIP 4	Single option design	Q3 2010
GRIP 5 - 8	Detailed design and construction	Q4 2012

### Project definition: Salford Crescent station redevelopment

#### Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### Scope of works

Currently we are in discussions with the train operator and other stakeholders, therefore there is no confirmed scope of works within this project.

The project is limited to the redevelopment of the station and remodelling of the track layout between Windsor Bridge north and south junctions, including the two junction layouts. Two options for location for the site of the station are currently being considered – the existing site and at Windsor Bridge north junction. It will involve track, signalling, telecommunications and structures works. Passive provision is to be made for two reversing sidings

#### Outputs

The output is to provide an increased number of train paths through the two junctions north and south of the station as specified by the North West RUS and the emerging Manchester Hub proposals.

The redevelopment should improve connectivity to and from the surrounding area and aid regeneration of central Salford as well as connectivity through the station by way of improving train/train interchange and provide additional station capacity.

The project will improve the bus/rail interchange by working closely with GMPTE who will design and construct all bus/rail interchange works on the highway in partnership with Salford City Council. It will also provide a high quality gateway to the surrounding University campus and to improve pedestrian links between the Peel and Frederick Road parts of the campus either side of the railway.

#### Significant interfaces

There are interfaces within Network Rail with other Manchester capacity proposals and the emerging Manchester hub proposals. Externally there are interfaces with GMPTE (in respect of the construction of a new bus/rail interchange), Central Salford URC (in respect of regeneration proposals), University of Salford (in respect of redevelopment of their adjacent campus) and Salford City Council (in respect of planning and highway issues). External funding is expected to contribute towards the development of a larger scheme than is required by Network Rail to meet the requirements of these external stakeholders.

#### Key assumptions

- Train formation up to 8 x 23m vehicles plus the appropriate length to cater for operational purposes;
- external funding is required for work in excess of that required to deliver CP4 outputs; and
- land may be required from adjacent landowners – Salford City Council and University of Salford.

This is a complex redevelopment which will require Network and Station Change, planning permission, ROGS approvals and possible land acquisition and TWA powers.

#### Activities and milestones

Activity	Output	Indicative date
GRIP 3	Option selection report complete	Q1 2009
GRIP 5	Detailed design complete	Q4 2012
GRIP 6	Construction start	Q3 2013
GRIP 6	Construction complete	Q4 2014
GRIP 8	Project complete	Q1 2015

### **Project definition: Route 20 capacity enhancements**

#### **Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### **Scope of works**

Currently we are in discussions with the train operator and other stakeholders. Therefore there is no confirmed scope of works within this project. The potential scope includes allowing Hadfield corridor units to work on an hourly cycle. Potential scope includes:

- Hadfield corridor – raise the linespeed from Guide Bridge to Dinting to 90mph where possible;
- raise the linespeed between Dinting and Glossop and between Dinting and Hadfield to 50mph;
- replace all fixed distant signals to working distant signals; and
- electrify with 25kv overhead: Guide Bridge to Stalybridge to allow intermediate stops between Guide Bridge, and Piccadilly to be removed from the Hadfield service;
- the project could also create turnback facilities at inner locations to avoid services to have to operate over longer distances or carry out wasteful shunt moves. Locations could include Rochdale, Stalybridge on the Victoria side of the layout and Buxton;
- improvements to the passenger environment at Victoria including improved waiting facilities, signage, CIS and lighting;

It may be necessary to raise the speed of other lines such as the Buxton line (38 miles) for passenger trains (the freight capacity scheme is looking at raising it for freight trains); the Atherton line (28 miles) and/or the Calder Valley line (30 miles).

#### **Outputs**

The operational plans are being refined with the operators. Northern has highlighted that the most efficient use of a strengthened fleet is for trains, where possible, to work through the centre of Manchester and thereby avoid a turnaround for each trip to or from the centre, and for the longest units to not have to work to the extremities of the system. These infrastructure interventions will significantly improve utilisation of the additional rolling stock.

#### **Significant interfaces**

There are interfaces within Network Rail with other Manchester capacity proposals such as:

- North West platform extensions;
- North West depots and stabling;
- Stalybridge track and signalling renewals;
- Buxton remodelling;
- Victoria station commercial development;
- linespeed improvements between Ardwick and Guide Bridge;
- Salford Crescent remodelling; and

The emerging Manchester Hub proposals for CP5 and beyond interface with all Manchester capacity proposals, the assumptions for which are consistent with this project.

#### **Key assumptions**

Following discussions with Northern Rail the following assumptions have been made:

- Northern to finalise its rolling stock deployment plan by type, length, service, timescale to enable full performance and operational timetable modelling plan to be undertaken to prove validity of capacity schemes;
- Northern rolling stock deployment expected by December 2013; and
- capacity schemes to be commissioned by December 2013.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
GRIP 3 – all schemes	Feasibility and capacity modelling	Q3 2009
GRIP 4 – 8	Single option design through to construction	tbc

### Northern urban centres – Liverpool - Leeds linespeed improvements

#### Network Rail's obligation

Our obligation is to deliver this project in CP4.

#### Scope of works

Currently we are in discussions with the train operator and other stakeholders, therefore there is no confirmed scope of work.

The project scope is for track, signalling, structures and earthworks alterations to take place at locations to be identified at GRIP 3 between Leeds and Manchester Piccadilly via Diggle and Liverpool Lime Street to Manchester Oxford Road via Chat Moss.

Passive provision will be made for W9 and W10 gauging.

#### Output

The primary output is to contribute to the route 10 and route 20 HLOS passenger kilometre metrics by stimulating further passenger demand by improving journey times between Leeds and Manchester via Diggle, and Manchester and Liverpool via Chat Moss.

Reductions in journey times between these cities are a move towards the Government's target journey time of 30 minutes between Liverpool Lime Street and Manchester via Chat Moss and 43 minutes between Manchester and Leeds.

#### Significant interfaces

There are interfaces with stakeholders including DfT, TOCs, FOCs, Merseytravel, GMPTE and West Yorkshire PTE. There are interdependencies with other projects including the seven day railway and renewals and resignalling schemes.

#### Key assumptions

The key assumption is that the current rolling stock will continue to operate on the route for the foreseeable future.

Network Change will be required. If structural work is needed, especially to strengthen bridges, access from outside the railway may be required.

#### Activities and milestones

Activity	Output	Indicative date
GRIP 3	Option selection report complete	Q2 2009
GRIP 4/5	Detailed design commences	Q3 2009
GRIP 6	Staged implementation of line speed improvements commences	Q2 2010
GRIP 6	Construction complete	Q4 2013
GRIP 8	Project complete	Q1 2014

### **Western improvements programme**

#### **Network Rail's obligation**

Our obligation is to deliver the schemes as defined by ORR and to provide the necessary infrastructure to facilitate the operational plans set out in the route plans.

#### **Scope of works**

The schemes defined by ORR to be delivered are:

- Barry – Cardiff Queen Street corridor;
- Cotswold Line redoubling; and
- Westerleigh Junction to Barnt Green linespeed improvement.

In addition the following scheme is necessary to support the operational plans:

- Maidenhead and Twyford relief line platform extensions project.

### **Project definition: Barry – Cardiff Queen Street corridor**

#### **Network Rail's obligation**

Our obligation is to deliver this project.

#### **Scope of works**

The scope of work will include:

- the provision of an additional through platform at Cardiff Queen Street station to accommodate the increased level of south Wales valley lines services;
- the provision of an additional bay platform at Cardiff Queen Street station for independent operation of Cardiff Bay services, freeing up capacity to accommodate the increased level of south Wales valley lines services;
- the provision of an additional through platform at Cardiff Central station to accommodate the increased level of south Wales valley lines services;
- the re-instatement of the former platform 5 at Cardiff Central station to accommodate the increased level of Maesteg services;
- bi-directional signalling for those platforms;
- doubling of the single line Treforrest curve to accommodate the increased level of south Wales valley lines services;
- linespeed increase for the City Line (Radyr to Ninian Park) to deliver services faster to and from the city centre corridor to maximise capacity;
- Cardiff East crossover from platform 4 to the Up Barry line to accommodate the increased level of south Wales valley lines services; and
- Cogan junction remodelling to accommodate the revised specification for south Wales valley lines services towards the Vale of Glamorgan.

#### **Outputs**

This project facilitates the increase of south Wales valley line services from 12 trains per hour to 16 trains per hour through the central Cardiff corridor by the end of CP4, March 2014.

#### **Significant interfaces**

Cardiff Area Signalling Renewal (CASR) this is a Network Rail renewal of the Cardiff area signalling system.

#### **Key assumptions**

- Cardiff Area Signalling Renewal (CASR) will be delivered to time;

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
Phase 1	Signalling commissioning. Valley Lines/Queen Street	Q4 2012
Permanent way works	New S&C and track to Queen Street platforms 0 and 4.	Q4 2012
Phase 2A/2B Barry / VOG	Predominantly a signalling commissioning	2A Q2 2013 2B Q3 2013
Phase 3	Permanent way - new S&C 70mph ladders at Longdyke Marshfield – Newtown signalling commissioning	Q2 2013
Phase 4A Cardiff Central platforms 4/6/7	Permanent way blockade with signalling commissioning	Q2 2014
Phase 4B Cardiff east/west and central	Major signalling commissioning and permanent way	Q2 2014
Phase 5 Leckwith-Llanharan	Predominantly a signalling commissioning	Q2 2015
Additional permanent way stages	Permanent way recoveries	Q1 2015
GRIP 6	Completion	Q3 2015
GRIP 7	Completion	Q3 2016
GRIP 8	Completion	Q4 2016

Note these timescales are for the overall Cardiff Area Signalling Renewal. This project will deliver the enhanced scope described in the scope of works section.

### Project definition: Cotswold line re-doubling

#### Network Rail's obligation

Our obligation is to deliver this project in CP4.

#### Scope of works

The scope of works includes:

- redoubling the single line track section between Charlbury and Ascott-under-Wychwood by May 2010;
- redoubling the single line track section between Moreton-in-Marsh and Evesham and also to the west of Evesham station by August 2010; and
- linespeed improvements.

#### Outputs

This project facilitates a robust hourly train service and reduces the impact of delays throughout the Thames Valley corridor to and from Paddington and reduces delays to north-south services via Oxford.

#### Significant interfaces

- Reading station area redevelopment;
- Oxford area redevelopment, upgrade of the Up and Down goods loops to accommodate passenger trains;
- Didcot - Oxford capacity enhancement, upgrade and linking of existing passenger and goods loops to provide a four-track railway between Radley and Wolvercote Junction, with a new south facing bay platform at Oxford station;
- Oxford – Bletchley strategic route development, upgrade of the line to a core trunk route linking the South Coast and the Midlands and the north of England via the Thames Valley with the West Coast Main Line for main line and local passenger services and freight services;
- East West rail, upgrade of the line between Oxford and Milton Keynes primarily for local services connecting Oxford, Aylesbury and Milton Keynes;
- Evergreen III (Chiltern Railways), upgrade of the line between Oxford and Bicester, including a new chord line between Bicester and Bicester Town stations and a new station at Water Eaton (north of Oxford). This facilitates new services between Oxford and London Marylebone via High Wycombe; and
- Weston Otmoor Eco-town, upgrade of the line between Oxford and Bicester connecting the proposed environmentally sustainable housing development between Oxford and Bicester with a new station. This facilitates new services between Oxford and London Marylebone via High Wycombe and local tramtrain services to Oxford.

#### Key assumptions

The project must be delivered prior to works for the Reading station area redevelopment project.

#### Activities and milestones profile:

Activity	Output	Indicative Date
GRIP 4	Completion	Q2 2009
GRIP 5	Commencement	Q2 2009
GRIP 6	Commencement	Q3 2009
GRIP 6	Practical completion/commissioning	Q1 2011
GRIP 8	Completion	Q3 2011

**26.03** Project definition – Westerleigh junction to Barnt Green line speed increases

**Project definition: Westerleigh Junction to Barnt Green line speed increase**

**Network Rail’s obligation**

Our obligation is to deliver this project in CP4.

**Scope of works**

The final scope of works has yet to be determined and will be a mixture of local maintenance and High Output programme delivery in order to increase the line speed between Westerleigh junction and Barnt Green. This will be delivered in conjunction with a significant track renewal programme planned for the route in 2009/10, 2010/11 and 2011/12.

**Outputs**

The output would be a line speed increase to 100mph for the majority of the route.

**Significant interfaces**

- Plain line and High Output track renewals programme - maximising renewals work through the HO programme;
- S&C track renewal programme - maximising renewals work through the S&C renewal programme;
- seven day railway project - maximising renewal and enhancement works through the development and implementation of the seven day railway programme;
- Bristol Parkway 4<sup>th</sup> platform - provision of an additional platform face abutting existing platform 2; and
- cross-Bristol service increase (Bristol Metro) - West of England Partnership proposal for an enhanced cross-Bristol service encompassing Gloucester, south Wales, Severn Beach, Bath, Portishead, Weston-super-Mare and Taunton. TIF and Regional Funding Allocation (RFA2) funding bid proposed;
- MML line speed increases - will provide reduced journey time for services operating on the Midland Main Line between St Pancras International and Derby, Nottingham and Sheffield and as such may interface with this project;
- York Holgate Junction 4<sup>th</sup> line; and
- Shaftholme Junction remodelling.

**Key assumptions**

Delivery of this project is dependent on the availability of High Output equipment programme.

**Activities and milestones**

<b>Activity</b>	<b>Output</b>	<b>Indicative date</b>
GRIP 4 funding	Single option development	Q2 2009
GRIP 7-8	Projection completion	Q2 2012

### **Project definition: Maidenhead and Twyford (relief lines)**

#### **Network Rail's obligation**

Our obligation is to provide the necessary infrastructure to facilitate the operational plans agreed with train operators. The agreed operational plans are described in the route plans.

#### **Scope of works**

The scope of works includes the extension of the up and down relief line platforms at Maidenhead and Twyford stations to accommodate seven car suburban trains.

#### **Outputs**

The output would be the accommodation of longer suburban trains.

#### **Significant interfaces**

- The Crossrail project proposes key station platform extensions to accommodate 200m long trains. This includes Maidenhead under the current proposal. Should Crossrail be extended to Reading then Twyford platforms would require extending. An opportunity arises to bring forward Crossrail spend to extend Maidenhead much earlier than currently planned to deliver both the HLOS and Crossrail requirements. Should this be achievable, then Twyford would need to be treated as an independent scheme;
- electrification of the GWML - installation of the overhead electrification equipment;
- Reading station area redevelopment provides additional capacity and performance benefits for all GWML and CrossCountry services. There is passive provision for Crossrail;
- reconfiguration and extension of sufficient platforms at Paddington to accommodate longer Intercity Express Programme (IEP) trains from 2016; and
- should the revised FGW rolling stock plan to deliver the HLOS capacity metric for London Paddington station be accepted by DfT, this project would not be required for HLOS purposes.

#### **Key assumptions**

A key assumption is the provision of extra vehicles by DfT for FGW's Thames Valley services to deliver the HLOS capacity metric for Paddington.

#### **Activities and milestones**

<b>Activity</b>	<b>Date</b>
GRIP 1	Q2 2009
Decision on project progression	Q3 2009

## North London Line capacity enhancement

### Network Rail's obligation

Our obligation is to deliver this project in CP4.

### Scope of works

The programme as a whole is managed jointly between Transport for London and Network Rail. There are two work packages, one managed by Network Rail and the other by TfL.

The TfL works cover the extension of the ELL from Dalston Junction to run alongside the NLL to Highbury and Islington where the ELL services will terminate. The Network Rail works encompass the upgrade of the NLL and will be delivered by two main contracts; one for signalling, the other for the civil engineering, overhead line and station work.

The principal works planned on the NLL are as follows:

- replacing the signalling on the route to improve headways, closing Willesden High Level Junction, Gospel Oak, Camden Road Junction and Dalston Junction signal boxes and transferring control to Upminster IECC;
- platform extensions to accommodate the longer trains;
- civil engineering work to bridges and other structures to accommodate the longer platforms;
- extensive reconfiguration of the lines between Camden Road and Dalston to accommodate the East London Line connection to Highbury & Islington;
- extension of the 25kV AC OHL electrification to include all lines between Camden Road and Highbury and Islington;
- elimination of third-rail DC electrification outside of the area used by East London Line services;
- alterations to the existing infrastructure to enable the new trains to run on the NLL. Construction of a turnback at Willesden Junction High Level to free up capacity (funded from NRDF); and
- station improvements.

### Outputs

This project is to provide enhancements to the North London Line (NLL) infrastructure which will enable an increase in London Overground's train service on this route; facilitate the extension of East London Line (ELL) services to Highbury & Islington and protect capacity for freight services.

The infrastructure modifications will enable segregation of NLL and ELL services over the most constrained section of the route, and will provide passing loops suitable for freight trains.

The work will facilitate a package of transport improvements in the area, which form a part of the Olympics Transport Plan.

### Significant interfaces

The combination of the renewal and enhancement elements of the scheme into a single package has been designed to minimise interfaces with other works on the route. However there are interfaces with ELL, FTN/GSM-R and Angel Lane Bridge works.

### Key assumptions

The future level of freight service has been assumed to be consistent with that predicted by the Cross London RUS, with five freight paths per hour provided on the NLL.

### Activities and milestones

Activity	Date
Completion of detailed design (GRIP 5)	Q1 2009
Completion of construction, testing and commissioning (GRIP 6)	Q2 2011
Scheme handback (GRIP stage 7)	Q2 2011
Project close out (GRIP stage 8)	Q3 2011

The enhanced train service will commence in 2011.

### FTN/GSM-R inclusion of freight-only branch lines

#### Network Rail's obligation

Our obligation is to deliver this project in CP4.

#### Outputs

The output will be the introduction of GSM-R coverage on freight-only branch lines (up to the boundary of Network Rail Controlled Infrastructure on part-privately owned lines) by rolling out the standard FTN/GSM-R engineering solution to current conventional passenger line coverage requirements.

#### Scope of works

Volume	
Fibre Cabling (km)	665
GSM-R Sites (qty)	125

The scope of this project is to increase the FTN/GSM-R programme scope to include all single-ended freight-only branch lines that are operational and within Network Rail controlled infrastructure boundaries. This will then provide equivalent GSM-R coverage on these freight lines to those lines already within the FTN/GSM-R programme scope i.e. freight lines that can conceivably be used as diversionary routes for passenger trains.

Provision will take place after the delivery of current in-scope railway lines. Approval under the Permitted Development Rights process will be required for the GSM-R sites.

Delivery of this project is the responsibility of Network Rail through the FTN/GSM-R Project. Actual delivery will be undertaken by the Network Rail project team and its associated contractors.

No passive provision is envisaged.

#### Significant interfaces

The key interface is with the main FTN / GSM-R delivery programme.

#### Key assumptions

- It is assumed that all new FTN and GSM-R infrastructure will be built on Network Rail owned land;
- the project shall maintain current delivery rates of installation;
- design rules for provision of GSM-R coverage on freight-only branch lines are the same as for the existing scope, with any possible relaxations managed as efficiencies; and
- GSM-R coverage is extended only to the limits of NRCI, where branch lines are part privately owned.

#### Activities and milestones

The activities and milestones will be as for the larger FTN/GSM-R project.

## Station security

### Network Rail's obligation

Our obligation is to deliver this project in CP4.

### Scope of works

Scope will be station specific. The planning consent requirements for each of the stations vary dependent on the location. There will be listed building consents required at many of the stations, subject to location agreements with the planning officers.

The agreement on who delivers the measures will be developed through the feasibility stage.

### Outputs

The project will improve security at a number of managed and franchised stations. It will not implement the measures at all stations due to other projects being undertaken but will ensure the coordination of the project interfaces where major works are planned to ensure they deliver the measures in a consistent way.

Any measures will be implemented to ensure the station operations can continue to function as key interchanges.

### Significant interfaces

Key interfaces are with major projects at a number of the stations.

The key stakeholders are:

- TOCs as SFO;
- TOC station retail tenants;
- BTP;
- Other station users; and
- TOC and Network Rail projects and maintenance.

### Activities and milestones

Project details are agreed through liaison with the DfT Project Board.

# **Scotland CP4 enhancement programme**

### Scotland: Tier 3 project development fund

#### Purpose

The fund is primarily aimed at initial development for future schemes that will enhance the network in Scotland and will contribute to the Scottish Government's target of promoting sustainable economic growth. Schemes will be developed to a point where a decision about next steps can be made.

#### Governance

The fund is administered by the Principal Route Planner (Scotland). Authorisation of draw down and spend is in accordance with Network Rail internal regulations but schemes are required to have been agreed with Transport Scotland, supported at the Scotland Route Strategy Planning Group and will generally have been discussed at Scotland Route Investment Review Group.

#### Eligibility rules

The fund will enable initial development of proposals suggested by industry partners and supported by Transport Scotland. Priority will be giving to projects identified by the Strategic Transport Projects Review but other proposals may be included in agreement with Transport Scotland. At this stage schemes may or may not have identified detailed development/delivery funding but there should be a realistic chance of funding being available in CP4 or CP5.

For a scheme to be eligible for this fund it must meet the following criteria:

- the cost of the initial development (broadly in line with Network Rail GRIP 1) should not exceed £200k (i.e. the amount that will be drawn down from the fund), without the prior agreement of Transport Scotland.

Approval from ORR is not required before an individual scheme is progressed. However, the independent regulatory reporters will assess a sample of schemes to ensure compliance with the criteria. It is therefore important that all relevant details relating to the scheme are retained as part of the project file.

#### Appraisal

The appraisal is based on a value for money assessment (using a methodology based on the Scottish Government's Scottish Transport Appraisal Guidance (STAG)) and considers the financial impact on each affected industry partner and the socio-economic benefits to society as well as the environmental benefits. An outline (qualitative) appraisal of the likely value to be delivered by the scheme should be carried out as part of the GRIP stage 1 development. This will be required as part of identifying funding sources for further development work.

#### Schemes which can be funded by the Tier 3 Project Development Fund

It is expected that most schemes will have been identified in previous work such as the Strategic Transport Projects Review (STPR), Scotland Route Utilisation Strategy or similar documents but may also arise from discussions at Scotland Route Investment Review Group.

A number of schemes are currently being considered for funding from this source. The table below lists some examples of these schemes. It is not exhaustive and the funding is subject to confirmation that the scheme complies with the rules above:

Scheme	Target start date
Rail Improvements between Aberdeen and Inverness	2009/10
Rail Improvements between Aberdeen and the Central Belt	2009/10
West of Scotland Strategic Rail Enhancements	2009/10
Electrification of the Strategic rail network	2010/11
East of Scotland rail improvements	2010/11
Anglo Scottish Loading Gauge Improvements	2010/11

### Scotland small projects fund (SPF)

#### Purpose

The fund is primarily aimed at schemes that will result in an increase in the capacity or capability of the network in Scotland.

#### Governance

The fund is administered by the Principal Route Planner (Scotland). Authorisation of draw down and spend is in accordance with Network Rail internal regulations but schemes are required to have been supported at the Scotland Route Strategy Planning Group and will generally have been discussed at Scotland Route Investment Review Group involving Transport Scotland and train operators.

#### Eligibility rules

For a scheme to be eligible for this fund it must meet the following criteria:

- satisfy the appraisal methodology as set out below; and
- the net cost of the scheme (i.e. the amount that will be drawn down from the SPF) must not exceed £5 million, without the prior agreement of Transport Scotland.

Schemes with a total cost in excess of £5m are eligible where funding is provided by Network Rail or others to ensure the draw down on the SPF is within this limit.

The fund is not intended to support investments where the benefits to individual stakeholders are sufficient to warrant them funding the scheme directly. Therefore where the benefits of a scheme:

- will accrue wholly to a single third party, it would generally be funded as a third party scheme; or
- are sufficient for Network Rail to justify funding the scheme, we would be expected to fund it ourselves.

Approval from the Office of Rail Regulation (ORR) is not required before an individual scheme is progressed. However, the independent regulatory reporters will assess a sample of schemes to ensure compliance with the criteria. It is therefore important that all relevant details relating to the scheme are retained as part of the project file. As ORR's acceptance criteria includes efficient delivery it is most important that the efficiency rigour that is applied to all stages of a renewal scheme are also applied to SPF schemes.

Dialogue with ORR may be required where the implementation of a scheme would have an adverse impact on the profits or cash flow of an industry partner.

#### Appraisal

The appraisal is based on a value for money assessment (using a methodology agreed with ORR and Transport Scotland) and considers the financial impact on each affected industry partner and the socio-economic benefits to society.

An outline (qualitative) appraisal of the likely value to be delivered by the scheme should be carried out as early as possible in the development of the scheme, no later than the completion of GRIP Stage 1. A more detailed (usually quantitative) appraisal should be completed at the end of GRIP Stage 3.

Schemes will be judged against a "hurdle rate" expressed in terms of a target Benefit to Cost Ratio and other criteria set from time to time to assist in the allocation of the available funding.

#### Schemes which can be funded by the SPF

It is expected that most schemes will involve incremental enhancements linked to renewals as this is likely to provide the greatest value for money. However, stand-alone enhancement schemes are also possible, including those part-funded by third-parties.

The fund can be used for improvement initiatives that deliver:

- improvements in train service performance that will benefit more than one party. This does not include initiatives that deliver sufficient schedule 8 benefits within a five year period to cover the scheme costs, as we would be expected to fund these schemes;

- reduction in train journey times, possibly as a result of line speed improvements. Schemes that reduce walking journey times at stations are also eligible. The latter can result from new entrances and exits to the station, which will be used by rail passengers;
- station facilities improvements such as providing waiting rooms, shelter, customer information systems. The benefits are attributed to the passengers who board or interchange at the station;
- platform lengthening (when part of a larger capacity change scheme); and
- enlargement of freight capability in a specific area for which there is specific demand.

The above list is not intended to be exhaustive.

A number of schemes are currently being considered for funding from this source. The table below lists some examples of these schemes and their key anticipated outputs. It is not exhaustive and the funding is subject to confirmation that the scheme complies with the rules above.

<b>Scheme</b>	<b>Output</b>	<b>Target delivery date</b>
Stirling Middle S & C enhancements	Performance/Journey Time	2010/11
Paisley Corridor Bi-directional signalling	Performance	2012/13
Grangemouth Branch Improvements	Freight Capability	2009/10
Dumfries Station Turnback Facility	Performance	2010/11
Midcalder Jn S & C Enhancements	Performance	2010/11
Glasgow Central Additional Platform	Station Improvement	2011/12
Laurencekirk New Loop Facility	Freight Capability	2011/12

### Project definition: Airdrie - Bathgate

#### Key outputs

An electrified railway between Airdrie and Bathgate capable of operating a minimum of four passenger trains per hour at a line speed of 80 mph although 90mph should be the target speed where reasonably practical, in each direction using modern electric multiple unit (EMU) rolling stock.

#### Scope of works – the Client's Requirements (i.e. Scottish Government)

- Acquisition of any necessary properties, land, and rights in land as required to accommodate the works to deliver the key outputs and scope of works;
- construction of a double track electrified railway on the 22km of closed route from Drumgelloch (near Airdrie) to Bathgate;
- construction of a second track and electrification of the 2km between Airdrie and Drumgelloch and also electrification of the 10km double track between Bathgate and Newbridge Junction with 25kV overhead line equipment;
- from Newbridge Junction to Haymarket East Junction the existing double track will be electrified with 25kV overhead line equipment;
- new stations to be constructed at Caldercruix and Armadale in the locations specified in the Act;
- relocate the existing stations at Drumgelloch and Bathgate to provide improved facilities in the locations specified in the Act;
- provide additional platforms in the existing stations at Airdrie, Livingston North and Uphall and construct improved car parking at Uphall;
- platform lengths will be 150m for 6x23m vehicles with passive provision for future 9 car 23m trains. Passive provision shall mean where reasonably practicable that no equipment or new structures shall be re-located within the areas identified for future platform extensions;
- station design will include the following : Platform furniture, Customer Information System, CCTV, VAPA/LLPA, Passenger help / Assistance Points, SPTs, clocks and Emergency Services Communications and conform with branding requirements;
- station M&E should include (depending on facilities required at each station); for additional LV power supplies, utilities, fire and safety equipment, earthing and bonding, heating (at Bathgate station building) and lighting, building services, ventilation and lifts;
- construct new DDA compliant accesses, at all stations as defined within the Act;
- car parking and associated access roads, where required, to be provided as follows at each station location:
  - Drumgelloch Station – 358 spaces
  - Caldercruix Station – 169 spaces
  - Armadale Station – 199 spaces
  - Airdrie Station – no change
  - Uphall Station – 170 additional spaces
  - Bathgate Station – 400 spaces
  - Livingston North Station – amendments to existing car park layout
- passive provision will be made (so far as is reasonably practicable) for additional stations at Plains and Blackridge;
- National Cycle Route 75 to be re-routed to an adjacent route where affected by the scheduled and ancillary works;
- a new Light Maintenance Depot to be provided in the Bathgate area. The depot should:
  - accommodate EMUs up to 189 metres in length (8\*23m, 9\*21m);
  - have two of the cleaning platforms (i.e. four lines) suitable for 9 car 21m trains with suitable stopping distance between units and buffers;
  - have 2 separate rail connections to the main line, one towards Glasgow and one towards Edinburgh;
  - be fully electrified with the depot having the ability to remain electrified whilst the adjacent main line is isolated and vice versa;
  - have carriage washing and CET facilities;
  - have suitable accommodation for approximately 130 train crew and associated staff; and
  - be provided with a security gate and fencing and also security CCTV;
- a replacement freight depot shall be provided at Boghall to replace the STVA depot. The replacement will provide facilities of equal capability to the existing operation at Bathgate;

- new feeder station to be provided between Armadale and Bathgate in accordance with the Network Rail Scotland Traction Power Supply Strategy;
- the track alignment on the route between Airdrie and Newbridge Junction will be designed to accommodate the following classes of train types:
  - Class 334;
  - Class 156;
  - Class 158;
  - Class 170;
  - MK 1 and 2;
  - Class 314;
  - Class 318;
  - Class 320;
  - Class 322; and
  - Mk 3 and 4 (DVT);
- the route between Airdrie and Bathgate will be designed as a passenger railway. Where new overbridge structures are required, these will be installed to provide W10 loading gauge;
- the route will be designed to accommodate the maximum weight of EMU train but where underbridges have to be renewed because of poor condition, the replacements will be designed for RA10 axle loads;
- the above requirements of line speed, axle load and gross annual tonnage (assuming no freight traffic other than engineering trains) imply a track categorisation of Band 3 (NR/SP/TRK/102 and GC/RT5023);
- design and construction to comply with the Noise & Vibration Policy, and the Code of Construction Practice. Provision shall be made at Newbridge Junction for additional breakers for the future electrification of the Edinburgh to Glasgow Queen Street route; and
- additional space for 2 breakers shall be allocated at Haymarket TSC to support the future electrification of the Up and Down North lines.

### **Geographical boundaries**

The five principal work areas are:

- from the existing Airdrie Station located at 10m 04 ch to the buffer stops west of the existing Drumgelloch Station located at 11m 50ch both on the Glasgow to Airdrie line;
- from the buffer stops west of the existing Drumgelloch Station located at 11m 50ch on the Glasgow to Airdrie line to the site of the new Bathgate Station located at approximately 25m 50ch on the Newbridge Junction to Bathgate line. This work area will primarily follow the solum of the former Airdrie to Bathgate rail line closed in 1982;
- from the existing Bathgate station located at 25m 04 ch on the Newbridge Junction. to Bathgate Line, to Newbridge Junction located at 38m 59ch on the Edinburgh Waverley to Glasgow Queen Street (via Falkirk High) Line;
- from Newbridge Junction located at 38m 59ch to Haymarket East Junction located at 45m 72ch on the Edinburgh Waverley to Glasgow Queen Street (via Falkirk High) Line; and
- the relocation of the National Cycle Path 75 currently running along the solum of the former Airdrie to Bathgate railway.

### **Significant interfaces**

This project interfaces with the following known projects:

- Scotland Territory Track Renewals Programme;
- Edinburgh Tram Lines 1 and 2;
- Edinburgh Waverley Infrastructure Enhancement;
- Electrification of E&G and E&G improvement programme;
- GSMR / FTN;
- Rolling Stock procurement programme; and
- Scotrail Branding.

Management of these interfaces is a reasonable requirement of Network Rail in so far as it is reasonably practicable for Network Rail to do so.

**Key assumptions**

- Supply of new rolling stock to operate the service is out with the scope of the project. The trains will initially be formed into 3-car units which could form 6 car trains in peak periods. Passive provision is to be made for up to 9 car, 23m trains in the future;
- The rolling stock will be equipped by the client as part of the rolling stock programme with driver aids to permit Driver Only Operation between Helensburgh, Balloch, Milngavie and Waverley stations. No infrastructure such as mirrors or CCTV equipment for DOO purposes will be provided at stations along the route; and
- Change request numbers 1 to 30, excluding numbers 3, 9/1, 16 and 20, are approved and included within the Scope of Works described in this delivery plan.

**Activities and milestones**

Activity	Date in baseline programme	Revised programme
Upgrade Newbridge junction and bring into use the double track layout over the length of the Bathgate branch	Nov 08	Oct 08
Commence vesting of land required for project	Mar 08	Mar 08
Commence OLE works	Oct 08	Oct 08
Commence mining remediation works	Nov 08	Dec 08
Commence LM depot works	Mar 09	Feb 09
Commence non-operational civils works (baseline date included deveg & mining remediation)	Oct 08	Feb 09
Complete advanced stations works	Oct 08	April 09
Commence E&G civils works	Aug 08	Sep 08
Commence operational civils works (baseline date included deveg)	Jan 09	April 09
Commence OLE works – Bathgate to Airdrie	Jan10	Jan 10
Commence tracklaying works – Bathgate to Airdrie	Feb 10	Feb 10
Commence blockade Drumgelloch to Airdrie	30 May 10	30 May 10
Commence blockade Airdrie station	17 Jul 10	17 Jul 10
Route available for driver training	20 Sep 10	20 Sep 10
Public opening of new service	12 Dec 10	12 Dec 10

**Sole point of reference for change control**

The obligations/outputs stated in this document will be the sole point of reference to assess whether or not a change in capability or outputs has taken place or is being requested by either Transport Scotland or Network Rail.

Project reporting and the change control process shall be in accordance with the agreed Airdrie – Bathgate Governance arrangements dated 16<sup>th</sup> February 2009.

### **Project definition: Glasgow Airport Rail Link / Paisley corridor signalling renewal (GARL/PCR)**

#### **Outputs**

- To provide railway infrastructure to support a direct rail service with a 15 minute frequency and a 16 minute journey time, with an aspiration to achieve a 15 minute journey time, between Glasgow Central and Glasgow Airport Stations with a stop at Paisley Gilmour Street; and
- the renewal of the existing signalling assets controlling the network between Shields and Paisley Gilmour Street, the Paisley Corridor Renewals (PCR), due to such equipment currently approaching life expiry.

#### **Roles of the Parties**

- Transport Scotland is the Authorised Undertaker (AU) for GARL under the GARL Act 2007 and the project client for GARL. Transport Scotland will procure design and construction of parts of GARL as detailed below but shall retain overall AU responsibilities for the entire project.
- Network Rail is the project client for PCR and will procure the design and construction of certain parts of GARL and all of PCR as detailed below and, subject to appropriate future agreements, shall become the infrastructure operator. For works related to GARL, design and construction work will comply with the Environmental Statement and the Code of Construction Practice.

#### **Project structure**

The combined GARL/PCR project has been split into 'Main Line Works' and the 'Branch Line Works' for onward development and delivery purposes.

The main line works comprise all GARL activities on the existing rail network at Glasgow Central, between Shields Junction and Wallneuk Junction, at Elderslie and the formation of the new junction near Paisley St James to connect the airport branch to the existing network. The main line works include all of PCR.

The branch line works comprise all activities to construct the new branch line from (but excluding) the new junction at Paisley St James to the airport, including the airport station. The Branch Line works are further sub-divided into two parts:

- Branch Line Phase 1 works (BLP1) to broadly comprise earthworks, structures, the Glasgow Airport station, track and primary OLE steelwork and all retail communications/facilities, and
- Branch Line Phase 2 works (BLP2) to comprise signalling and operational telecoms, remaining OLE works including power supplies and final branch line commissioning.

Transport Scotland have elected to undertake the BLP1 works themselves whilst requesting the main line works plus the BLP2 works are delivered by Network Rail funded via the RAB. Network Rail's costs in providing technical support to Transport Scotland's BLP1 delivery will also be RAB funded. Transport Scotland will also arrange and manage the delivery of all enabling works relative to BLP1 (e.g. relocation of municipal sports pitches at Paisley) and the pedestrian link arrangements between the proposed station and the existing terminal building at Glasgow Airport.

#### **Scope of works**

##### ***Scope of works being delivered by Transport Scotland***

- Delivery of all activities identified as Transport Scotland responsibilities for the Branch Line. This includes all works anticipated to be incorporated into the BLP1 contractor's workscope as shown in the table below;
- all advance works and enabling works relative to BLP1 outwith the airport, including relocation of municipal sports pitches at Paisley, and displacement of commercial premises on the route of the branch line;
- all advance works and enabling works relative to BLP1 within the airport, including the fuel farm and various airport tenancy relocations; and
- delivery of the pedestrian link between the proposed station and the existing terminal building at Glasgow Airport.

<b>Function / Discipline / Activity</b>	<b>Scope</b>
1. Civil engineering and station structures	All, (including ccess and station signage).
2. Permanent way	Plain line and S&C (crossover at airport station) to final line and level, including buffer stops.
3. Overhead line equipment	Primary steel of OLE structures (i.e. masts and portals). Hardstandings to accommodate any power supply kiosks for motorised switches / circuit breakers (if deemed required by the traction power design).
4. Signalling	Primary cable routes. Standings for location case and power supply equipment. Fixings for signal posts.
5. Operational telecoms	Primary cable routes and identified locations for associated line-side equipment.
6. Retail telecoms	All, (note: Network Rail to do FTN node – see BLP2 table).
7. Building - systems	All, (e.g. CIS, Public Address, CCTV, Alarm & Evacuation).
8. Building - general	All, (e.g. platform finishes, furnishings, waiting facilities, signage, ventilation, lighting and drainage).
9. Train Operating Company (TOC)	All facilities required by the train operator excluding system hardware and software. (Note: the system hardware and software is to be provided by the TOC).
10. British Transport Police	All (as per the BTP/SPT agreement of September 2006).
11. Commissioning	All systems required to open and operate the station excluding operational systems.

#### ***Scope of works being delivered by Network Rail***

The Network Rail scope of works is split into 3 categories, Main Line Works; Branch Line Phase 1 Support and Branch Line Phase 2 Delivery.

The Main Line Works are:

- renewal of existing signal interlockings at Shields (old), Cardonald and Paisley;
- renewal of associated lineside equipment;
- transferring control of the new signalling on the Paisley corridor to the West of Scotland Signalling Centre (WSSC) at Cowlares;
- re-control of all the other interlockings (10 in total) currently controlled from Paisley Signalling Centre to the WSSC;
- installation of a new third (relief) running line on the Paisley corridor from Gower Street Junction (just west of Shields Junction) to Arkleston Junction with associated remodelling of Gower Street and Cardonald (Deanside) Junctions;
- remodelling of the approaches to Paisley Gilmour Street from Arkleston Junction (inclusive) through Wallneuk Junction resulting in 4 running lines between Arkleston and Wallneuk junctions. The Arkleston Up loop will be permanently removed with alternative facilities provided at Elderslie (see below). The Arkleston Down loop will be retained, but its operational length reduced to circa 798m;
- provision of additional platform capacity at Glasgow Central. The existing Platform 12 (formerly 11a) will be demolished and rebuilt on a new extended (6x23m standage) alignment within the main train shed. These works will require the permanent removal of the current short stay car park, between existing Platforms 11 and 14 (formerly 12). In addition a new Platform 13 will be constructed (also 6x23m standage) adjacent to the relocated Platform 12;
- construction of a new junction and associated crossover at Paisley St James for the new branch line;
- extension of the existing Up passenger loop at Elderslie to an overall total length of circa 867m, incorporating reconfiguration of the rail entrance to Elderslie freight yard, to replace the Up loop facility at Arkleston that will be removed by the above;
- safety verification of Main Line works with respect to ROGS; and
- taking into use of the completed Main Line works.

The Branch Line Phase 1 support works are:

- support of the Transport Scotland procurement exercise in relation to Safety Verification services for BLP1 works;
- design approvals for and supervision of BLP1 works delivery consistent with asset protection, engineering compliance and handover acceptance, all for current and future railway infrastructure assets;
- safety verification of Transport Scotland delivered BLP1 works with respect to ROGS; and
- standard industry processes (e.g. Network Change).

The Branch Line Phase 2 delivery works are:

- delivery of all activities identified as Network Rail direct delivery responsibilities for the Branch Line, as follows:

Function / Discipline / Activity	Scope
1. Overhead line equipment	Secondary steel, wire and registration. All associated SCADA and alterations at electrical control room (ECR). All foundations and primary steel for all OLE structures to the east of Murray Street underbridge.
2. Signalling	Cabling, secondary cable routes, line-side equipment, associated power supplies and S&C fit-out / set up.
3. Operational telecoms	Cabling, secondary cable routes and line-side equipment, FTN node provision including LLPA connection.
4. General	All operational signage. This excludes any station signage.
5. Train Operating Company	None. (Provision and commissioning of all hardware and software systems (e.g. ticket sales) to be undertaken by the train operating company).
6. Commissioning	Commission all systems required to operate the train service.

- safety verification of BLP2 works with respect to ROGS; and
- taking into use of the completed Branch Line works.

### Significant interfaces

The project will interface with the following known projects:

- Rolling Stock Procurement Project;
- Glasgow Central Interlocking Renewal;
- Ayrshire Renewals Works;
- Inverclyde Renewals Works;
- M74 Extension;
- Eglinton Street Feeder Station Project;
- GSM-R; and
- ScotRail branding

Management of these interfaces and interdependencies is a reasonable requirement of Network Rail in so far as it is reasonably practicable for Network Rail to do so.

### Route capability

- The new infrastructure is to be capable of accommodating the passenger rolling stock currently cleared on Paisley corridor plus Class 380 units;
- for freight, the infrastructure is to maintain the existing W9 gauging capability as a minimum. Where new structures need to be constructed, clearance shall be a minimum of W12 for height and W9 for width. Where structures are to be altered or reconstructed, clearance shall be a minimum of W10 for height and W9 for width;

- the airport branch line will be an addition to an existing DOO network but no platform based DOO equipment will be provided at Glasgow Airport station on the basis that all necessary equipment required to support passenger door operation will be train-borne;
- the design must also provide the facility to make the following movements to facilitate ECS and out-of-course running:
  - platform 2 at Paisley Gilmour Street to enable trains to start back towards Glasgow in the wrong direction;
  - platform 1 at Paisley St James to enable trains to arrive on the UP Gourock line from Paisley Gilmour Street;
  - to allow movements in the Up direction on the Up line from Paisley St James to cross and return Down to Paisley St James on the Down line;
  - movements from Gourock to the Airport and vice-versa (for the positioning of ECS);
- the new relief line on the Paisley corridor will have line speed profiles broadly comparable with the existing Up and Down lines.

### Key assumptions

- Transport Scotland will enter into agreements with Glasgow Airport Limited to cover all of their involvement with the construction and operational phases of the project, including the provision of a pedestrian link from the existing airport terminal building to the new station. Where such agreements directly relate to the construction and/or future operation, maintenance and/or renewal of the branch line railway infrastructure, these agreements will facilitate the safe and efficient operation of the completed railway infrastructure and the content of these agreements will be approved in advance by Network Rail. Network Rail's approval will not be required for any such agreements which solely relate to enabling works for the branch line construction, including such agreements as are necessary for the re-provision of existing airport facilities;
- Transport Scotland will directly procure the new rolling stock that will be required for the new GARL services. This will be undertaken as part of the rolling stock renewal programme for the Ayrshire and Inverclyde lines. Any infrastructure changes required by the new rolling stock will not form part of the GARL/PCR project other than as detailed in the Route Capability section above;
- the project is to be developed on the basis of the December 2008 timetable;
- the new airport services will generally operate between the hours of 0530 and midnight seven days per week;
- the timetable will also be developed on the basis that:
  - Ayrshire services will be operated by 4-car and 7-car trains using class 380 units;
  - GARL services will be operated by 3-car class 380 units;
  - Inverclyde services will be operated by 3 & 6-car trains using class 380 units whilst taking cognisance that peak-hours services may be supplemented by class 314 units;
  - GARL services to operate on a 15- minute frequency;
- journey time between Glasgow Central and Glasgow Airport (in both directions) to be 16 minutes, with an aspiration to achieve a 15 minute journey time;
- all of Network Rail's activities as detailed in this Delivery Plan will be RAB financed during CP4;
- the interface arrangements governing Network Rail's provision of services in support of BLP1 works delivered by TS, plus the interdependencies between BLP1 and BLP2 works, will be governed by separate agreements;
- subject to separate agreements Network Rail will become operator of the completed GARL infrastructure; and
- First ScotRail (FSR) will operate the GARL train services and the new airport station, and will update their SMS accordingly. A Franchise Change Notice will be signed between FSR and TS to cover all of FSR's involvement in the design development, construction and operational phases of the project. A Supplementary Track Access Agreement and Station Lease Agreement will be entered into between Network Rail and FSR to facilitate the commencement of operations.

### Activities and milestones

In the undernoted table, those milestones shown as critical are considered material to the overall project success criteria or Network Rail's ability to deliver within the efficient cost estimate detailed in the regulatory funding determination for CP4.

Milestone	Description	Responsibility	Milestone Status	Date
1	Complete Enabling Works	Network Rail	Monitoring	Dec 09
2	Complete Glasgow Central Works	Network Rail	Monitoring	June 10
3	Award Main Line D&B contract – Signalling & Telecoms (S&T)	Network Rail	Monitoring	Feb 10
4	Award Main Line D&B contract – all other disciplines except for S&T	Network Rail	Monitoring	April 10
5	Complete BLP1 embankment works	Transport Scotland	Critical	Oct 10
6	Complete BLP1 works	Transport Scotland	Critical	June 11
7	Commence BLP2 works	Network Rail	Monitoring	July 11
8	Main Line first commissioning	Network Rail	Monitoring	July 11
9	Main Line second commissioning and Main Corridor works substantial completion	Network Rail	Critical	Jan 12
10	Complete BLP2 works	Network Rail	Critical	Jan 12
11	GARL Service Commencement	Transport Scotland	Critical	Mar 12
12	Complete Signalling re-control	Network Rail	Monitoring	Dec 12

### **Change control process**

The obligations/outputs stated in this document will be the sole point of reference to assess whether or not a change in capability or outputs has taken place or is being requested by either Transport Scotland or Network Rail. It is these obligations which formed the basis of the efficient cost estimate in the regulatory funding determination for CP4.

TS approval will be required for items which materially seek to change the client's requirements for GARL. Changes to outputs of the railway will be managed via the standard industry Network and Station Change processes. Any changes to the obligations set out in this Delivery Plan shall be subject to the change control process contained in the associated governance arrangements for this project.

### **Project definition: Borders new railway**

#### **Outputs**

The Borders Railway comprises a new railway line connecting Midlothian and Scottish Borders Local Authority areas to central Edinburgh and the national rail network.

The Network Rail output is to provide asset protection to the existing network during the project.

#### **Scope of works**

Network Rail will enter into an Asset Protection Agreement with Transport Scotland to provide the following services:

- services of the Network Rail project sponsor and staff to support and provide guidance to the Company during the initial stages of the Works;
- arrangement of third party asset management to superintend works on or near the line including possessions in line with the agreed Works Programme;
- administration and management of internal Network Rail procedures to consider the applications for the Network Rail Consents;
- the appointment of a project manager and appropriate supporting resources;
- review of method statements with particular reference to protection of the Operational Track;
- provision of site safety staff and a site safety consultant;
- provision of staff to carry out site management activities as and when reasonably required; appointment of a Designated Project Engineer and Project Engineers for relevant engineering disciplines to undertake duties under Standard RT/E/P/02009 as and when reasonably required;
- safety inspection for the duration of the period of construction of the works as notified to Network Rail by the Customer to ensure the safety and operation of the Network;
- provision of asset protection services for the duration of the notified implementation period of the works;
- administration of the Taking Into Use procedures; and
- alterations to the sectional appendix to reflect the changes made to the network.

The precise scope of work required from Network Rail is still subject to discussion with Transport Scotland and the funding provided through the review will be applied to the final scope.

#### ***Additional services/work not included within the scope of the Final Determinations or the HLOS***

Network Rail and Transport Scotland are agreed that Network Rail should design and implement services for the alterations of its infrastructure necessary to facilitate a connection between the Network Rail network and the new Borders Railway. These works will be carried out under separate agreements as they are not part of the HLOS and the ORR's final determinations. This Delivery Plan covers what was included within Network Rail's Strategic Business Plan and within the final determinations of the Periodic Review

#### **Significant interfaces**

No interfaces have been identified with any significant projects at this stage.

#### **Key assumptions**

The project will be delivered and managed by Transport Scotland. Network Rail is to have an asset protection role on existing Network Rail assets.

#### **Activities and milestones**

Not yet defined

#### **Sole point of reference for change control**

The obligations/outputs stated in this document will be the sole point of reference to assess whether or not a change in capability or outputs has taken place or is being requested by either Transport Scotland or Network Rail.

### **Project definition: Glasgow to Kilmarnock enhancement**

#### **Key outputs**

- A twin tracked section of railway between Lugton (13 miles 1120 yards) and south of Stewarton (19 miles 338 yards) capable of supporting operation of half hourly passenger services between Kilmarnock and Glasgow.

#### **Scope of works**

- Re-doubling of the track between Lugton (at approx 13m 1120 yds) and south of Stewarton viaduct (at approx 19m 338 yards) by extending the existing Lugton loop southwards;
- installation of new S&C at the south end of the proposed loop to permit travel at 70mph in the UP direction and 60mph in the DOWN direction;
- provision of a new down platform at Dunlop station for 6 No 23 metre car trains;
- construction of a DDA compliant access to the new platform at Dunlop;
- extension of the existing platform at Dunlop station for 6 No 23 metre car trains;
- provision of a new down platform at Stewarton station for 6 No 23 metre car trains;
- renewal of much of the existing platform at Stewarton station. This will be funded directly from Network Rail renewals budget as the works had already been planned as a renewal;
- re-opening of disused underpass and provision of DDA compliant ramps at Stewarton Station for access to the proposed new platform;
- extension of the existing platform at Kilmaurs stations to 6 car 23m;
- alteration to existing signalling system to facilitate the operation of a half hourly service between Kilmarnock and Glasgow. This will include some re-wiring to Lugton Signal Box which will be entirely funded directly from Network Rail renewals budget as the works had already been planned as a renewal;
- demolition of redundant over-bridges 80 and 82;
- re-decking of under-bridge 85 adjacent to Stewarton Station;
- re-decking of under-bridge 88 south of Stewarton with an appropriate contribution from Network Rail's renewals budget to reflect the planned single track renewal in CP4;
- no worsening of current route clearance as a minimum requirement and clearance to W9 freight gauge between the geographical boundaries of this project i.e. Lugton (13 miles 1120 yds) and south of Stewarton (19 miles 338 yds);
- strengthening works to Stewarton Viaduct to allow this service to operate; and
- remedial works to a number of other structures to allow this service to operate.

#### **Geographical boundaries**

Other than the work at Kilmaurs station, the geographical extent of the works will be between Lugton (13 miles 1120 yards) and south of Stewarton (19 miles 338 yards) on the Glasgow-Barrhead-Kilmarnock (GBK) route. Works at Kilmaurs station at 21 miles 1056 yards is also planned.

#### **Key assumptions**

- Additional car park provision at Stewarton may be provided, subject to confirmation of funding by third parties;
- the possible car park provision for Strathclyde Partnership for Transport at Stewarton is not a project output;
- a single track re-decking of under bridge 88 had been planned by Network Rail early in CP4. A proportionate contribution to the cost of the bridge replacement has therefore been committed from Network Rail's renewals budget;
- the project was based on preliminary timetable information showing effectively a doubling of the existing service (i.e. half hourly in each direction). Final timetable proposals have not been available; and
- the detailed timetable is currently being developed by Transport Scotland and is therefore not known at this time.

**Activities and milestones**

<b>Activity</b>	<b>Date</b>
Commence main works	December 2008
Route available for driver briefing	9 November 2009
Start of enhanced service	12 December 2009

**Sole point of reference for change control**

The obligations/outputs stated in this document will be the sole point of reference to assess whether or not a change in capability or outputs has taken place or is being requested by either Transport Scotland or Network Rail.

### Other Transport Scotland Tier 3 schemes

#### Projects included

Several other schemes, itemised in tier 3 of the Scotland High Level Output Specification are being developed by Network Rail on behalf of Scottish Ministers, subject to separate funding and delivery agreements. The funding for these was not included within ORR's Final Determination. Currently, this covers the development of the following projects:

- Edinburgh to Glasgow Improvement Programme including electrification (EGIP);
- Highland Main Line improvements; and
- Class 380 introduction – stabling and route infrastructure works.

#### Roles of the parties

Network Rail is contracted to undertake development works based on a Transport Scotland specification on an emerging price contract for each of these projects. Discussions are ongoing regarding the option of moving to RAB funding for each of these projects both for further development work and for subsequent implementation but arrangements have not yet been finalised.

#### Scope of Works

##### **EGIP**

Network Rail is currently undertaking GRIP 3 development of the following:

- electrification of the main Edinburgh to Glasgow via Falkirk High line including diversionary routes via Cumbernauld and Falkirk Grahamston and branches to Dunblane and Alloa;
- a programme of enhancements designed to deliver a network capable of delivering 6 trains an hour between Edinburgh and Glasgow via Falkirk High with a fastest journey time of 37 minutes;
- further enhancements to enable the operation of 2 fast services per hour between Edinburgh and Glasgow Central via Shotts or Carstairs; and
- a new station at Gogar providing a link to Edinburgh Airport via the tram network.

##### **Highland Main Line improvements**

Network Rail are currently undertaking GRIP 3 development of a programme of works designed to deliver capacity for an increased frequency of service between Perth and Inverness with a reduced journey time.

##### **Class 380 introduction – stabling and route infrastructure works**

Network Rail is currently contracted to undertake GRIP 3 and 4 development of platform extensions at over 40 stations on the Ayrshire, Inverclyde and North Berwick routes to permit the new Class 380 rolling stock to operate in formations of 7 car to Ayrshire and 6 car to Inverclyde. In addition Network Rail is contracted to complete GRIP 3 development of enhancements to Ayr Townhead, to support the increased rolling stock, and Yoker depot to support stabling of cascaded stock. Discussions are ongoing regarding developing work at Ayr Townhead to GRIP 4.

#### Activities and Milestones Profile

The following milestones are agreed. Subject to further discussion we would expect to establish milestones for further development and implementation.

<b>Activity</b>	<b>Date</b>
New Rolling Stock Depot enhancements GRIP 3	April 2009.
New Rolling Stock Platform Extensions GRIP 4	May 2009
Highland Main Line GRIP 3	April 2009
EGIP Electrification GRIP 3	July 2009
EGIP Enhancements Programme GRIP 3	November 2009