Network Rail
CP4 Delivery Plan 2010
Enhancements programme: statement of scope, outputs and milestones

June 2010 update

Contents

Changes to the plan

The main changes incorporated in this document are:

- those changes that have been approved through the change control process; and
- changes to development milestones that don't affect the delivery date of the project;
- updates to the lists of schemes authorised to draw down from the funds.

These changes are shown in the table below. Where milestones have been met, they have been deleted from the plan, this is not shown in the table below.

ID number	Section	Page	Change	External consultation
2.00	National Stations Improvement Programme	17	Additional stations included in SFO table	n/a
11.00	Thameslink Programme	48	Change to Key milestone	Yes
13.01	Crossrail	56	Development milestones updated	n/a
13.02	Reading station area redevelopment	57	Error correction in outputs, change control not required.	n/a
13.03	Reading station southern platforms	59	Scope of works timescale changed in line with previous change control	n/a
15.03	West Anglia outer 12-coach trains	70	Development milestones updated	n/a
15.04	10-car south west suburban railway	72	Development milestones updated	n/a
15.07-15.13	Kent train lengthening	83	Scope of works updated	Yes
16.05	Route 5 – power supply enhancements	99	Development milestones updated	n/a
16.06	Route 6 – power supply enhancements	101	Development milestones updated	n/a
16.07	Route 7 – Power supply enhancement	103	Development milestones updated	n/a
18.02	Peterborough station area capacity enhancements	115	Development milestones updated	n/a
18.03	Alexandra Palace to Finsbury Park 3rd Up line	117	Outputs updated	Yes
18.06	Hitchin grade separation	123	Scope of works updated	Yes
21.00	Nottingham resignalling	136	Development milestones updated in line with previous change control	n/a
22.05	Route 17 – train lengthening	147	Scheme updated	Yes
22.06	East Midlands train lengthening	149	Scope of works, outputs, significant interfaces and development milestones updated	Yes
26.02	Cotswold line re-doubling	175	Scope of works, significant interfaces and development milestones updated	Yes
26.03	Westerleigh Junction to Barnt Green line speed increases	176	Development milestones updated	n/a
100.00	Network electrification programme	182	New projects added	n/a
33.01	Ayrshire and Inverclyde Infrastructure Enhancements for Class 380 Train Introduction	200	New project added	Yes

ID number	Section	Page	Change	External consultation
33.02	Waverley Steps redevelopment	204	New project added	Yes

During 2009/10 we have continued to develop enhancement projects to deliver increased capacity and other improvements during CP4 and changes resulting from this development have been included in the updated versions of this document. Some further changes are expected as we continue to develop detailed remits for delivery of our schemes, although this is dependent on the Department for Transport finalising its rolling stock strategy. The most significant change we expect to make in the next few months will be the reprofiling of the Thameslink project as the requirements of Key Output 2 are better defined.

Other material changes will be the inclusion of the new electrification works on the network and an expansion of detail on our commitments for the Edinburgh to Glasgow improvements programme. Other areas where the enhancements programme will undergo change control to better reflect the more precise scope and milestones as progressed are progressed include:

- the scope of works for the Stafford / Colwich remodelling project which is being reviewed in the light of potential plans for a new High Speed 2 line;
- integration of the Waterloo International Terminal, which is being reviewed to better meet both long term capacity challenges and short-term requirements of operators;
- the scope of power supply enhancements in the south east as we develop a better understanding of future power supply requirements; and
- changes to the East Midlands train lengthening project to better reflect our customer's emerging operational plan.

Beyond the changes that are currently in development, there are likely to be some further areas where we will need to make changes to our plan. For example, we have made limited progress on the development of the northern urban centres programme as the rolling stock plan, which we assumed would be published in July 2009, has not yet been agreed and we are therefore not yet able to develop a revised plan for these programmes.

DfT has recently announced that it is reviewing its Intercity Express Programme. Our plans include a programme of enabling works so that the network is ready to accept the operation of new trains. Until the outcome of DfT's review is clear, we will continue developing our programme of enabling works. Our IEP project may therefore need to undergo change control to reflect the latest client requirements in its scope, outputs and milestones.

Introduction

This document sets out our enhancements plan for CP4. For each enhancement programme funded through ORR's final determinations 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 where they are relevant to understanding our obligations.

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 (now Paisley Corridor Improvements). Our obligation is to deliver the stated scope for each of the projects. Any change to the statement scope for each of these schemes will be subject to change control. Change control is discussed further below.

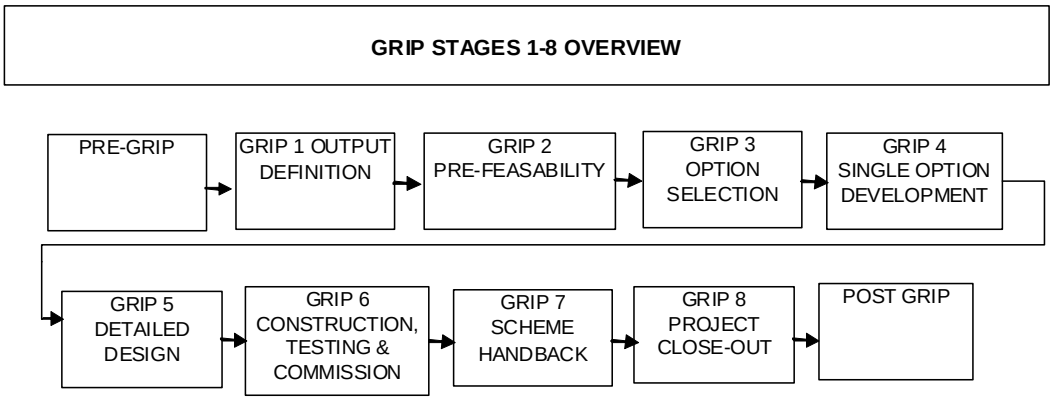
We have been provided with a number of funds in CP4 such as the Network Rail Discretionary Fund, National Stations Improvement Programme, Strategic Freight Network funds and the CP4 Performance Fund. Our obligation is to deliver schemes authorised to draw down from these funds. Where schemes have already 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. Each of these funds has specific governance arrangements to determine the allocation of funding and these are described in the relevant sections of this document.

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. The commitment we have made is to deliver the infrastructure necessary to facilitate the operational plans. The operational plans are defined in the route plan documents. In particular, we have committed to providing the infrastructure to support the service change descriptions in the Figure 'Capacity enhancements to meet HLOS peak capacity in CP4' and these figures are reproduced in the relevant sections of this document. These are the service changes that we included in our capacity analysis to demonstrate we have a plan to achieve the HLOS capacity metrics. We will provide further updates to the plan as we make further progress in developing and delivering the plan. These changes will be subject to change control.

We have received funding for a number of schemes defined by ORR. These schemes either meet specific outputs or, although not required to meet the HLOS outputs, are justified on wider criteria including value for money. Our obligation is to deliver these schemes and we commit to delivering the stated scope of these projects. Any change to the statement scope for each of these schemes will be subject to change control.

At the start of each project definition we have provided a statement of our obligation relevant to that particular scheme consistent with the commitments set out above.

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 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 Planning team and, in particular, the Principal Network 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 network 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.

We have engaged, and will continue to engage, with industry in a number of ways on the development and delivery of our plans:

- owning group and ATOC meeting: during the development of the CP4 Delivery Plan we have regularly met the owning groups and ATOC to discuss emerging issues. We will continue these meetings into CP4 and will focus on issues that arise in delivering the CP4 plan and also to start to discuss issues around the next periodic review process;
- Railway Industry Planning Group (RIPG): this group exists to obtain rail industry input into national railway strategic planning processes and has representatives of railway funders, operators and users;
- Route Investment Review Groups: these meetings provide a regular opportunity to review with each operator the proposed plans for the development of the network on a route basis including the programme of planned renewals and enhancement activity and future opportunities;
- performance planning: we have a well established engagement and governance framework for the development of performance outputs and plans at both a TOC level and industry level through National Taskforce. Our route performance managers are responsible for the management of the development process including long term performance plans and joint performance improvement

plans between Network Rail and each passenger TOC. We have also developed local output commitments with freight and open access operators;
- seven day railway: we have established a process for the development of a remit for each route with the opportunity for all operators on each route to engage in the development of that remit and to set out their own requirements. This programme is also overseen by an industry governance group; and
- project specific engagement: each programme and project is required to establish a stakeholder plan to ensure effective engagement particularly with affected train operators on the outputs and definition of the scheme and the impact on the train operators both during implementation and operation.

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. For example, where projects are in still in the optioneering stage we will use change control to update our plan when we have identified our preferred option for the project. We will record changes to the plan on our website with a clear audit trail showing how the change was agreed or decided. Changes to the schemes that we would consult on include:

- the statement regarding our obligation;
- the assumed operational plan and statement of outputs;
- the statement of scope; and
- activities and milestones.

We would consult with affected operators and provide the following evidence and justification to ORR as a consequence of this including:

- analysis, where necessary, to demonstrate that the proposed change still achieves the HLOS capacity metrics;
- a letter of support (or objection) from the affected train operators to the proposed change; and
- a statement setting out the change to the published CP4 Delivery Plan in the form of an update to the relevant pages of the supporting enhancement document.

We intend to publish on our website an updated enhancements programme: statement of scope, outputs and milestones document containing approved changes to our plan on a quarterly basis. There will be a formal publication on an annual basis of updates to the plan and supporting documents including the route plans.

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 determinations, unless it believes there are legitimate grounds for refusing the change based on objections from consultees.

Funding packages

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.

We have updated our projections for each programme and this is set out in the table below. While some projects will cost more than has been included in the final determinations, we will be able to deliver others for less. At this stage, we are forecasting that most programmes will be broadly in line with ORR's determinations. In addition we have assumed that £60 million of expenditure on Thameslink key output 2 will be deferred from CP4 into CP5.

In our Delivery Plan, published in March 2009, we identified four differences to ORR's final determinations. For the King's Cross, Reading and North London Line projects, agreed renewals funding associated with the words was added to the enhancements funding. For the west coast main line committed schemes package a re-assessment of the delivery programme for Stafford/Colwich remodelling and its associated timescales have led to a deferral of approximately £250 million into CP5.

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.

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

CP4 enhancements – expenditure limits

Delivery Plan (£m 10/11 prices)	09/10	10/11	11/12	12/13	13/14	CP4 Total
England & Wales						
Network Rail Discretionary Fund	81	47	51	40	38	258
National Stations Improvement Programme	21	48	36	34	32	170
Intercity Express Programme	4	8	26	202	50	290
Strategic Freight Network	2	18	42	95	72	230
Performance Fund	9	36	42	45	44	176
Seven day railway	2	23	70	74	56	226
Safety and Environment rollover	28	41	42	8	3	122
CP5 development fund	0	4	11	15	25	55
Access for All	55	71	63	36	19	244
King's Cross	100	127	113	21	13	374
Thameslink Programme	426	685	651	333	299	2,395
Birmingham New Street Gateway project	0	45	34	11	50	141
East Coast Main Line overhead line electrification	3	23	13	-	-	39
St Pancras - Sheffield linespeed improvements	1	6	21	20	20	67
Nottingham resignalling	0	1	1	9	-	11
North London Line capacity enhancement	29	28	18			75
Station security	3	5	5	3	3	19
Crossrail and Reading*	33	74	110	152	170	539
Train lengthening - southern	11	27	171	73	43	326
Power supply upgrade	6	42	48	33	14	141
Southern capacity	0	2	13	19	2	36
East Coast Main Line improvements	5	19	131	197	230	582
Western improvements programme	15	34	26	17	7	99
West Coast Main Line committed schemes	9	27	94	214	170	514
Midlands improvements programme	1	11	14	40	23	89
Northern urban centres - Yorkshire	0	1	10	28	51	90
Northern urban centres - Manchester	1	2	12	45	37	96
Liverpool – Leeds linespeed improvements	-	0	6	15	9	31
Total England and Wales	**846**	**1,458**	**1,874**	**1,781**	**1,480**	**7,438**

* 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.

Delivery Plan (£m 10/11 prices)	09/10	10/11	11/12	12/13	13/14	CP4 Total
Scotland						
Airdrie – Bathgate	148	76	1	-	-	225
Paisley corridor improvements	29	49	81	3	-	162
Borders Rail	0	0	1	0	-	1
Glasgow to Kilmarnock	15	-	-	-	-	15
Tier 3 Project Development Fund	0	1	5	4	4	15
Scottish Small Projects Fund	4	5	4	5	5	23
Total Scotland	**196**	**131**	**93**	**12**	**9**	**441**

Grand total	**1,041**	**1,589**	**1,967**	**1,793**	**1,488**	**7,879**

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)	Schemes authorised to draw down from the fund are identified and will be kept updated during the control period.	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 Southampton to Basingstoke W10 diversionary route Channel Tunnel – south of London route fund In-fill gauge projects fund Train lengthening projects fund	3.01 3.02 3.03 3.04 3.05
Performance fund	Development of proposals being undertaken with train operators. Authorised schemes identified and to be updated through the control period.	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 WCRM traction power supply upgrade Stafford / Colwich remodelling project	10.01 10.02 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 Reading area redevelopment Reading southern platforms	13.01 13.02 13.03
Birmingham New Street	Single integrated project	14.00

England & Wales		
Programme – defined outputs	**Constituent projects**	**ID no.**
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 – Train lengthening Kent	15.07-15.13
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	16.07
	DC regeneration	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 3rd 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 - 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 – South Ruislip loop	22.04
	Route 17 - Train lengthening	22.05
	Route 19 - East Midlands train lengthening	22.06

England & Wales Programme – defined outputs (continued)	Constituent projects	ID no.
Northern urban centres (a) Yorkshire	Route 10 - Capacity improvements (Leeds area) Route 11 - South Yorkshire - train lengthening Route 11 - South Yorkshire - stabling for Northern	23.01 23.02 23.03
Northern urban centres (b) Manchester	Route 20 - Platform lengthening Route 20 - Stabling for Northern Route 20 - Salford Crescent station redevelopment Route 20 - Capacity enhancement package	24.01 24.02 24.03 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 Route 13 - Cotswold Line re-doubling Route 13 – Westerleigh Junction - Barnt Green linespeed increase Route 13 - Maidenhead and Twyford (relief lines)	26.01 26.02 26.03 26.04

England & Wales Programme - other	Constituent projects	ID no.
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

England & Wales Electrification	Constituent projects	ID no.
Great Western Main Line electrification	Facilitates the further introduction of electric train service operation on the Great Western Main Line (GWML) between London and Oxford, Newbury, Bristol and Swansea	100.01
North West electrification	Facilitates the introduction of electric train operation on passenger and freight services on a variety of routes.	100.02

Scotland Programme - funds	Constituent projects	ID no.
Tier 3 Project Development Fund	Schemes to be developed are to be agreed with Transport Scotland	30.00
Scotland Small Projects Fund	Schemes authorised to draw down from the fund have been identified and will be updated through the control period	31.00

Scotland Programme - specified	Constituent projects	ID no.
Scotland projects	Route 24 / 26 - Airdrie - Bathgate Route 26 - Paisley corridor improvements Route 24 - Borders Rail Route 26 - Glasgow to Kilmarnock	32.01 32.02 32.03 32.04

Scotland Programme - other	Constituent projects	ID no.
Other Transport Scotland Tier 3 schemes	EGIP 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 Network 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). We propose to use RIPG to take an oversight on the use of NRDF funds, although the use of funds and delivery of projects will still be driven through local engagement. 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 1. A more detailed (usually quantitative) appraisal should be completed at the end of GRIP 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 is shown below and will be updated through the control period.

Schemes authorised to draw down from the fund

Banbury-Aynho turnback	Moor Street
Beccles loop	Newport station regeneration
Billingshurst platform extension	Northampton station platform extensions
Birmingham New Street 2nd access Platform 12	North Pole turnback facility
Brigg Line freight enhancement	Olive Mount chord
Bristol Parkway 4th platform	Oxford down goods loop
Bristol to Bath signalling enhancement	Oxford south facing bay platform
Bromley Junction approach control	Purley removal of double block
Cambridge island platform	Robin Hood performance improvements
Cliffe – Selby LSI	Salisbury signalling enhancements
Corby reinstate passenger service	Seaforth 9'6" gauge clearance
Crofton Road junction approach control	Shakespeare tunnel alterations
Durham coast Part 2: Stranton to Hall Dene	Shrewsbury platform 3 signalling
Fambridge loop extension	South Erewash resignalling
Farnham area signalling renewals	Southampton – WCML W10 gauge clearance
Harrogate area signalling renewal	Sutton Park W10 clearance
Kettering South junction to Harrowden junction	Tunbridge Wells 12 car turnback
Leicester North/Trent South line speed improvements	Walsall and Bescott resignalling
Manchester Piccadilly platform 13/14	Waterloo East second entrance

Water Orton corridor resignalling	Wokingham turnback
Wembley Central platform extension	Wolverhampton resignalling
West Ham resignalling	Yeovil Junction – Exeter frequency enhancements
Witham station second entrance	

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 3rd party funding.

Each LDG will integrate with, and gain synergies from, other programmes of works e.g. Access for All, 3rd 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).

SFO	Stations
Arriva Trains Wales	Aberystwyth, Bangor, Barry Docks, Bidston, Cardiff Central, Cardiff Queen Street, Carmarthen, Chepstow, Chester, Chirk, Church Stretton, Craven Arms, Dinas Powys, Dinas Rhondda, Dingle Road, Eastbrook, Frodsham, Gobowen, Haverfordwest, Helsby, Hengoed, Hereford, Heswall, Leominster, Llanbradach, Llandudno Town, Llanelli, Llwynypia, Ludlow, Lydney, Machynlleth, Maesteg, Milford Haven, Mountain Ash, Nantwich, Neston, Penrhiwceiber, Pontypool & New Inn, Pembrey and Burry Port, Pencoed, Pontyclun, Pontypridd, Port Talbot Parkway, Porthmadog, Pyle, Quakers Yard, Rhyl, Rhymney, Ruabon, Runcorn East, Severn Tunnel, Shrewsbury, Shropshire, Swansea, Ton Pentre, Tenby, Tonypandy, Treorchy, Trefforest, Ty Glas, Wem, Welshpool, Whitchurch, Whitland, Ystrad Rhondda.
C2C	Basildon, Chalkwell, Chafford Hundred, Limehouse, Ockendon, Shoeburyness, Southend East, Upminster.
Chiltern Railways	Aylesbury Town, Gerrards Cross, Leamington Spa, Princes Risborough, Warwick, Wendover.
East Midlands Trains	Alfreton, Burton on Trent, Derby, Kettering, Leicester, Long Eaton, Loughborough, Skegness.
First Great Western	Castle Cary, Cheltenham Spa, Chippenham, Didcot Parkway, Ealing Broadway, Exeter Central, Exeter St Davids, Gloucester, Hayes and Harlington, Langley, Newbury, Newton Abbott, Penzance, Slough, Southall, Swindon, Truro, Westbury, Weston-super Mare.
First Capital Connect	Bedford, Finsbury Park, Flitwick, Harpenden, Harringey, 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 Street.
London Overground	Crystal Palace, Norwood Junction
Merseyrail	Hall Road, Hooton, Kirkdale, Liverpool Central, Meols, Moorfields/Lime Street, Ormskirk, Rice Lane, Rock Ferry, Walton, Waterloo.
East Coast Trains	Berwick upon Tweed, Darlington, Grantham, Newark North Gate, Newcastle, Peterborough, Retford, Wakefield Westgate.
National Express - East Anglia	Billericay, Bishops Stortford, Brentwood, Cambridge, Chelmsford, Colchester, Gidea Park, Harold Wood, Ilford, Marks Tey, Rayleigh, Romford, Seven Sisters, Southend Victoria, Waltham Cross, Wickford, Witham, Wood Street.
Northern	Accrington, Alnmouth, Altrincham, Blackburn, Bolton, Bradford Interchange, Buxton, Halifax, Harrogate, Hartlepool, Huyton, Ilkley, Keighley, Manchester Oxford Road, Manchester Victoria, Mexborough, Morpeth, Rochdale, Skipton, Sunderland, Wakefield Kirkgate.
South West Trains	Andover, Basingstoke, Clapham Junction, Earlsfield, Eastleigh, Fareham, Farnham, Fleet, Fratton, Haslemere, Havant, Hersham, Honiton, Hounslow, New Malden, Putney, Salisbury, Southampton Central, Staines, Surbiton, Twickenham, Vauxhall, Virgina Water, Wandsworth Town, Weymouth, Wimbledon, Winchester, Woking, 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, Ravensbourne, Rochester, Sevenoaks, Sittingbourne, Strood, Swanley, Tonbridge, Tunbridge Wells, Waterloo East, Wadhurst, Woolwich Arsenal.
Southern	Ashtead, Balham, Crystal Palace, East Grinstead, Gipsy Hill, Hassocks, Horsham, Peckham Rye, Norbury, Queens Road Peckham, Selhurst, Smitham, Streatham Hill, Uckfield, West Croydon, West Norwood.
TransPennine Express	Barrow in Furness, Dewsbury, Grimsby Town, Huddersfield, Kendal, Middlesbrough, Northallerton, Scarborough, Selby, Stalybridge, Thirsk, Thornaby, Warrington Central, Windemere, Yarm.
West Coast 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 Network 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 24 train paths per day from Ipswich to Peterborough, an increment of 16 trains per day beyond that specified by the Transport Innovation Fund works; 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 upgrade required to deliver the outputs will include the following physical works:

- provision of a bi-directional chord line between the East Suffolk Line and Great Eastern Main Line known as 'Ipswich Chord' to enable cross country intermodal traffic to bypass Ipswich Yard; and
- provision of two 775m loops on the east side of Ely station for regulation of intermodal freight trains heading towards Peterborough over Ely North Junction and towards Ipswich over the single line section to Soham.

Any level crossing interventions required will be identified during the GRIP 4 single option development works.

Outputs
The principal output expected in CP4 is capacity to enable a total of 24 intermodal freight trains per day to operate in each direction between Ipswich and Peterborough, an increment of 16 trains per day beyond that specified by the Transport Innovation Fund works. 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;
- Peterborough Nuneaton gauge (W10);
- seven day railway;
- platform extension works;
- Water Orton resignalling;
- Nuneaton North Chord; and
- Kennett signal box intermediate block signals.

Key assumptions
An Infrastructure Planning Commission (IPC) application is likely to be required for the proposed Bacon Factory Curve, and may be required for the loops at Ely.

Activities and milestones

Activity	Date
GRIP 4 completion	June 2011
Submission of applications for IPC where appropriate	June 2011
Start on site (subject to IPC)	Sept. 2012
Implementation complete (subject to IPC)	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 works will include the following:

ELR	From	To
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

ELR	Structure	Proposed Solution	Mileage
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

ELR	Structure	Proposed Solution	Mileage
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

Activity	Date
Completion of GRIP 3	June 2010
Completion of GRIP 4	Dec. 2010
Commence detail design	March 2011
Start on site	Sept. 2011
Completion of works	June 2013
Project close out	March 2014

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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 Network 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 Strategic Business Plan update (SBPu).

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 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 to be implemented in CP4
The list of schemes authorised to draw down from the fund is shown below and will be updated as we progress through the control period.

- Channel Tunnel second freight route; and
- Channel Tunnel route Redhill to Reading study.

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 Network 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 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.

Schemes that are being progressed with authorisation from this fund are:

- Water Orton to Doncaster via Castle Donnington, the Erewash Valley and Beighton;
- London to Peterborough via the Hertford Loop on the ECML; and
- GB1 gauge from Exchange Sidings near Barking to terminals in the vicinity.

The ECML north to Berwick upon Tweed scheme is being considered for funding from this source.

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 Network 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 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.

Train lengthening schemes being developed to GRIP 2 for review by the SFNSG are:

- Felixstowe to Nuneaton via London;
- Southampton to West Coast Main Line; and
- Peak Forest and Hope Valley to London and the South East.

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 deliver the performance targets required by the 2008 Periodic Review. The fund relates to the achievement of the performance targets required by the 2008 Periodic Review.

Governance
The fund holder is the Head of Operational Planning & Performance. 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 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 together with review of softer benefits such as sustainability.

National prioritisation is based on aligning funding availability and business case criteria towards key improvement areas, with route teams being responsible for management of the investment at local level, 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 2010/11
Delivery in 2009/10 has seen a migration away from traditional performance improvement schemes towards a more holistic approach sought in developing the fund management process. A further portfolio of initiatives is expected in 2010/11 with a range of ease of application and benefits, with process objectives migrating towards more risk management and a more integrated approach to performance management. Both opex and capex based schemes will continue to be applicable. The following list highlights potential initiatives (not prioritised) planned for delivery in 2010/11.

Short term focus
- Localised cable theft and fatality reduction work;
- autumn and weather mitigation;
- focussed component replacement for reliability improvement;
- better equipment for response teams; strategic spares;
- staff training and competence;
- asset replacement before life expiry to reduce performance risk;
- control decision tools and information management; and
- fleet related improvements.

Longer term focus
In the longer term the focus will continue to be on capital investment – e.g. fleet maintenance improvements, weather management.

Schemes to be implemented in CP4
A list of schemes authorised to draw down from the fund is shown below and will continue to be provided as we progress through the control period, including visibility through industry fora such as NTF.

Route	Scheme
Anglia	Flood mitigation at Roydon
Anglia	650 Volt power cable locator
Anglia	Fitment of solar powered fans to location cabinets
Anglia	Installation of 800 surge protectors throughout Anglia
Anglia	Fitment of audible ADD alarms to NXEA passenger fleet
Anglia	ARS upgrade Liverpool Street
Kent	Gillingham access point
Kent	Evacuation chairs at London Bridge station
Kent	Signalling power interrupter cable (Ashford MDU)
Kent	Lineside signage (bridge numbers) Kent
Kent	Springhead Road Junction ARS improvement
Kent	Leaf catchers Ashford
Kent	Kearsney bridge strike mitigation
Kent	Grain branch generator
Kent	Wheel lathe Gillingham
Kent	Slide chair improvements Ashford MDU
Kent	Ashford 1295 points
Kent	Surge protectors Kent
Kent	850 and 850 switch diamond enhancement Shepherd's Lane Junction
Kent	Ceramic pot replacement Woolwich and Polhill tunnels
Kent	Slide chair improvements (London Bridge MDU)
Kent	303 and 304 Tunbridge Wells point conversions
Kent	Clay bank track quality recovery programme
LNE	Trespass prevention at Goldthorpe Station
LNE	Autumn rail rover trial
LNE	Vortok Rotorrail rollers at Redcar
LNE	Vortok Cable Guard Clips - Newcastle MDU
LNE	TI21 test equipment for Newcastle and York maintenance depots
LNE	Attack on signalling: covert cameras
LNE	Wind speed signs at Belford and Ulgham Grange
LNE	Covert cameras for Leeds depot
LNE	Covert Cameras - Hitchin depot
LNE	Conversion of semaphore signal illumination to high intensity LED on the Newcastle area
LNE	Remote housing for HPSS spares
LNE	Fitment of track circuit treadles and track circuit monitoring equipment at known leaf fall sites on GN
LNE	Provision of signalling systems seet view at Tyneside IECC - pilot scheme
LNE	Prov Wireless CCTV BTP
LNE	Attack on signalling: cable mitigation works in the Leeds MDU area - Phase 2
LNE	Upgrading existing 4 hole insulated block joints (IBJ) to 6 hole glued IBJ in the Knottingley area
LNE	Conversion of Kirkham Abbey distant signals to motor operated and LED
LNE	CCTV rapid deployment system for the Great Northern area
LNE	Installation of 100 surge protectors on ECML Newcastle
LNE	Delay attribution based on OTMR data

Route	Scheme
LNE	Installation of Schwihag rollers in the York MDU area
LNE	Mitigation works in the North East area by Leeds MDU - Phase 1
LNE	Installation of 240 surge protectors on ECML York
LNE	Interrupter cables for use by the North East area
LNE	Fitment of static converter fault indicators to East Coast (EC) Class 91 & Driver Van Trailer (DVT) fleet
LNE	Interrupter cables for use by the Great Northern area
LNE	Upgrading existing 4 hole IBJ's to 6 hole glued IBJ's - Newcastle
LNE	Provision of Northern Rail train running controllers
LNE	Sheffield station flood mitigation
LNE	Installation of Schwihag Rollers in the Newcastle MDU area
LNE	Upgrading existing 4 hole IBJ's to 6 hole glued IBJ's - York
LNE	Component drop tables at Newton Heath and Neville Hill depot
LNW	Installation of chevrons and new signage - Bridge 124 on the BAG2, Northfield
LNW	Deansgate station additional platform telephone
LNW	Installation of chevrons and new signage - Bridge 16 on the MJC1, Park Avenue
LNW	Boundary fencing enhancement - Sandhills Junction
LNW	Installations of chevrons and new signage at Bridge 30 on the RBS2, Bromford Lane
LNW	Installations of chevrons and new signage at Bridge 38 on the GSJ2, Congreaves Road
LNW	Installations of chevrons and new signage at Bridge 74 on the DBP1, Kettlebrook Road
LNW	Installation of Chevrons and New Signage - Bridge 89 on the DBP1, Kingsbury
LNW	New SPT at Southport Station
LNW	Installations of chevrons and new signage at Bridge 78 on the DBP1, Hedging Lane
LNW	Generator for small DNO supplies
LNW	Installation of platform end fencing at Stockport station
LNW	Live line dropper tool kits (Carlisle & Preston)
LNW	Whitehouse Tunnel (HW) anti-trespass
LNW	Stansted diversionary route knowledge
LNW	Tommy’s Lane, Crewe OHL switch and section insulator
LNW	Suicide reduction at Milton Keynes
LNW	Platform end fencing Birmingham International to Coventry
LNW	Wire integrity testing
LNW	Additional security teams West Midlands and Chilterns
LNW	Installation of UPS, Windsor Bridge
LNW	Bonis Hall Lane low bridge warning
LNW	Point clips cabinets
LNW	Cannock line performance scheme
LNW	Purchase of component tracker
LNW	Chiltern route surge protectors
LNW	Moston fencing enhancement
LNW	Renewal of treadles at Brock level crossing
LNW	Winwick Junction cable burying
LNW	Diverse and buried signal cable route St Helens to Rainhill
LNW	Cross Country Class 170 engine reliability improvement package
LNW	Banbury flood alleviation scheme
LNW	Clifton cable burying and fencing

Route	Scheme
LNW	90xNR60 and 10xCEN54 issue 9 ECUs
LNW	Water Orton flood mitigation
M&C	Electrical generators
M&C	Signalling assistant software
M&C	Interactive virtual train software
M&C	Digital Ti21 track circuits
M&C	Approach control changes at Harpenden and Radlett Junctions
M&C	Point fuses renewal programme
M&C	Erewash Valley asset protection CCTV
National	2010 forward review assessment
National	Schemes to be delivered by Community Safety Partnership Groups
National	ARS+
Scotland	Motherwell SC CCF equipment
Scotland	Temporary cable repair kits
Scotland	East Kilbride linespeed improvements
Scotland	Portable bender units
Scotland	Flood protection at Innerwick (ECML)
Scotland	WCML Hypin enhancements - Phase 2
Scotland	WCML Hypin and cable enhancements
Scotland	Glasgow Central area infrastructure enhancements
Sussex	Simplifier training
Sussex	Ramp end shrouding at London Victoria
Sussex	Rail defect removal
Sussex	BML overloading and Ouse Valley substation transformation
Sussex	Expansion switches upgrade London to Brighton
Sussex	Arundel drainage scheme
Sussex	Wrong route reduction project
Sussex	Right time railway
Sussex	Reduced arcing
Sussex	Installation of Edilons London to Brighton
Sussex	Problematic traction return paths
Wessex	Guildford signal box CIS provision
Wessex	Wessex fatality strategy
Wessex	Vortok conductor rail shrouds
Wessex	Digital Ti21 circuits Berrylands and Pirbright
Wessex	Acoustic detection system
Wessex	Track circuit improvements Dorchester
Wessex	Digital Ti21 circuits Vauxhall and Barnes
Western	Gas point heating EC upgrade Bristol
Western	YM42 signal reliability
Western	Installation of Schwihag rollers Castle Cary
Western	Dawlish Sea Wall warning forecast
Western	716 points life extension at Maindee Junction
Western	Fencing enhancements Goodman's Park, Slough
Western	Gas point heating EC upgrade Plymouth

Route	Scheme
Western	Studley Bridge
Western	FGW radio controlled watches
Western	Reliability improvement mechanical signals
Western	UPS Didcot
Western	TDM digitisation Newport to Magor
Western	Largin SSI earthing improvements
Western	Security guard Southall
Western	Points heating Newton Abbot
Western	Lighting protection Clarbeston Road
Western	OHLE insulation
Western	Thames Valley drain train
Western	Vegetation clearance Stroud Valley
Western	Fencing enhancements South Wales mainline Severn Tunnel to Cardiff
Western	CPBs Station Road Burnham
Western	Campaign renewal of hydrostatic and coolant components
Western	Power off proving Bristol & Gloucester
Western	Installation of lifting jack Exeter depot
Western	ATP infils Drayton to Airport Junction
Western	FGW west fleet reliability improvements
Western	Track circuit improvements Berks
Western	Thames Valley drain train tranche 2
Western	Campaign change of jumper cables on FGW HSTs
Western	Paddington and Hayes IECC performance improvement

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 Network 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 Asset Management and Investment Projects 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-directional 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 is shown below and will be updated as we progress through the control period.

Route	Project description
Kent	Maintenance initiatives
LNE	OLE York-Colton, allow independent isolation
LNE	Templehurst, Hambleton wired crossovers for SLW
LNE	Ground frame conversion for efficient isolations
LNE	Mod Bi-Di Stoke to Colton
LNE	OLE depot independent feeds
M&C	Chesterfield platform for half capacity railway
M&C	LSI slow lines Bedford - Sharnbrook for half capacity railway
M&C	Capacity Sharnbrook-Kettering North-Corby to enable full capacity on diversionary route
M&C	Maintenance initiatives removal of red zone prohibited areas and adjacent line open
M&C	Maintenance initiatives site access and cable routes (efficient engineering access)
M&C	Maintenance initiatives new patrolling process (design patrolling)
Sussex	TOWs and tunnel lighting
Sussex	Access points
Sussex	Isolations (hook switches and floaters)
Sussex	Fixed lighting
Sussex	Storage areas

Route	Project description
Wessex	Waterloo to Weymouth timetable study
Western	Bath to Bristol signalling enhancement
Western	Bristol Birmingham route; level crossing controls crossovers for SLW
Western	Didcot-Swindon timetable investigation for SLW
Western	W10 diversion study
Western	Cardiff Area re-signalling to enable station to operate in two halves

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.

Governance
The Head of Network 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 RIPG. 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 Network Planning is responsible for maintaining a forward programme for disbursement of the fund to provide clarity on the use of the fund throughout CP4. We propose to use RIPG to provide an oversight on the use of the CP5 Development fund.

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 Infrastructure Planning Commission (IPC) 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 is shown below and will be updated as we progress through the control period.

- Northern hub;
- Network electrification;
- Charing Cross refurbishment; and
- Southern DC traction power supply.

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 determinations include 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	- on-train metering (Network Rail contribution) - non-traction metering - carbon reduction strategy - photovoltaic cells on Blackfriars Station roof
Environment protection	- pollution prevention - sites of special scientific interest - lineside vegetation and habitat management
Infrastructure failure	- post Lambrigg improvements - Peascliffe Tunnel flood mitigation - Hampole Dyke scour protection
Level crossing closure	- UWC closure programme - closure of footpath crossings - closure of barrow crossings - closure of Kirknewton AHB crossing
Passenger safety	- trap point mitigation - fitment of enhanced security cameras at FGW stations
Crime	- fitment of forward facing cameras to trains - demolition of redundant lineside buildings
Security	- enhancements to BTP HQ CCTV control hub - enhanced security at key operational locations
SPAD mitigation	- SPAD mitigation
Vegetation management	- lineside tree surveys
Workforce safety	- enhanced Network Rail fleet servicing and maintenance facilities - junction lighting improvements - access point improvements - enhanced catchpit covers
Workforce health	- excessive lever pulls in signal boxes

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 works 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 Customer Information System (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:

- 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.

Volume	
Track	
Rail (km)	0.7
Sleepers (km)	0.7
Ballast (km)	0.7
S&C units	2
Signalling	
SEUs	17
OLE	
OLE (km)	0.7
Civils	
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 0 ahead of starting any substantial works on the existing platforms in order to retain train throughput at current service levels. Platform 0 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 Olympic and Paralympic games. 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.

Activity	**Output**	**Date**
Plant room and shared service yard commissioned (interim state)	Supports station operations.	Sept. 2010
Main train shed interior modifications to link in with Western concourse	Provides new passenger circulation regime for new concourse.	Dec. 2011
Western range refurbishment	Provides operational facilities.	Dec. 2011
Western concourse in use	Enhanced passenger and retail facilities.	Dec. 2011
Main train shed roof renewal	Condition-led renewal.	March 2012
Southern Square reconfiguration	Completes reconfiguration of station concourse and a condition of planning permission.	Sept. 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 and outputs of works described below.

Scope of works
The project lies within the following geographical limits:

Line	Boundary (approximate)
WCML northern limit	North of Denbigh Hall Junction – approx 48m 20ch
WCML southern limit	Linslade Interlocking – approx 43 mile post
Bedford line	Boundary with Marston Vale – approx ¾ mile post
Oxford line	Buffer stops at 1 ½ mile post

The track, S&C and signalling equipment in the Bletchley power signal box control area is either approaching, or has already reached, life expiry with target renewal dates ranging from 2005 for Bletchley power signal box panel to 2015 for Bletchley interlocking.

This project will maximise the opportunity presented by renewals to remodel the track layout and re-signal with modern 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.

The scope of work includes:

- removal of the fixed diamond from Bletchley South Junction (early delivery in conjunction with the Infrastructure Maintenance Delivery Manger (IMDM));
- recovery of out of use track and OLE assets;
- implementation of 3600m of drainage associated with the remodelled track;
- transfer of signalling control to Rugby SCC;
- provide 775m goods loop for regulation and hot axle box detector inspection;
- platforms 4 and 5 extended to accommodate 12-car standage;
- provide bi-directional signalling on platform 5;
- turnback facility clear of the Slow lines from the bi-directional signalling on platform 5;
- bi-directional loop for regulating a 775 metre freight train; and
- turn back in platform 6 for trains up to 4-car length.

Outputs
The following functionality will be provided:

- 125 mph line speed throughout on the Fast lines including through Bletchley South Junction;
- 12-car platform capacity provided on platforms 4 & 5;
- access to train maintenance depot and adjacent civil engineering freight sidings to be preserved;
- direct access to the Bedford lines from the Slow lines independent of whether platform 5 or 6 is occupied;
- route for 775 metre freight Up Slow to branch via flyover and vice versa;
- the Drayton Road Junction will allow an Up Slow to Up Fast and parallel Down Slow to Down Fast move;
- enable entry and exit to the carriage sidings from the north and south;
- 12-car shunt through carriage sidings washer, remaining clear of running lines;
- retain existing stabling for NDS trains;
- retain existing stabling facilities in carriage sidings; and
- retain stone terminal (CEMEX siding) existing standage (437m).

Significant interfaces

- East West Rail Link - this is a third party independent scheme. The Bletchley project will work closely with the East West project to ensure compatibility in designs as far as is 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 intervention of Class 350 rolling stock formations to 12-car during CP4.

Key assumptions

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

Activities and milestones

Activity	**Date**
Commence GRIP stages 5-8	June 2010
GRIP 5-8 detailed design and build starts	Dec. 2010
Commencement of physical works	Dec. 2010
Final signalling commissioning	Dec. 2012
All infrastructure in use	June 2013
Full project completion date including snagging	Sept. 2013

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 upgraded traction power supply system to support the operation of the DfT specified 2020 timetable for the WCML.

Phase one was completed in time for the December 2008 timetable change. Phase two is substantially complete with some residual works due for completion by September 2009.

Phase three is the implementation of an upgraded traction power supply across the balance of the route and is to be completed during CP4 and CP5. It will renew and upgrade the remainder of the 25kV power supply equipment on the WCML between North Wembley MPATS (25.95km) to Carstairs MPTSC (599km) with an upgraded Autotransformer (AT) traction power supply and distribution system.

The scope of works comprises the following work packages:

- modifications and alterations at various electricity supply industry (ESI) connection points on the route to support the increased electrical demand;
- provision of new 25kV AT distribution sites at approx 10km intervals along the route;
- provision of telecoms and SCADA infrastructure for the new AT distribution sites;
- provision of additional 25kV conductors to form the AT Feeder (ATF) throughout the length of the route converted to AT;
- provision of a return screening conductor throughout the length of the route covered by the AT system;
- additional electrical cross bonding throughout the route;
- screening of signals or other structures where required to maintain electrical clearance to the ATF;
- clearance of lineside vegetation to maintain electrical clearance to the ATF;
- re-sectioning of the OLE to reflect the new feeding sections and subsections created by the AT system; and
- recoveries of redundant equipment.

Outputs
The overall programme for the power supply upgrade will support the '2020' design scenario timetable previously agreed with the DfT in 2002. As part of the option development work we are revisiting the timetable and rolling stock assumptions with customers and stakeholders to check that we have the right scope to support CP4 outputs and that this is aligned to CP5 outputs. This will include emerging requirements including potential future electrification of Liverpool to Manchester.

The scheme will also validate the proposal to move to a system design with 12kA fault level which will secure major financial efficiency benefits for future electrification schemes.

A programme of works will be developed so that we secure the most efficient delivery route through CP4 and CP5. The upgraded power supply will remove the traction power supply as a constraint on line speed and capability for WCML from 2020.

Significant interfaces
- LNW route 25kV traction switchgear renewals and overhauls, the renewals will be integrated into the overall programme of works to maximise delivery efficiency;
- renewal of 25kV traction sole user assets 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;
- 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;
- London Midland service interventions; and
- deployment and roll out of IEP on the West Coast route.

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

Activities and milestones

Activity	**Date**
GRIP 4 commences	June 2010
Site works Hillmorton – Tamworth commence	December 2011
Site works North Wembley – Ashton commence	September 2012
Site works Brereton – Crewe commence	December 2012
Site works Hillmorton – Tamworth complete	March 2015
Site works North Wembley – Ashton complete	December 2015
Site works Brereton – Crewe complete	March 2016
Full project completion date	2019

A project review was completed in December 2009, the outputs of the review will drive a need to change the phasing of the works and this will be formalised in due course.

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 (completion of GRIP 2) no preferred scheme has been identified.

Work has been progressing the development of a refined set of options, which are being evaluated in line with DfT requirements to improve capacity within the Stafford area. Capacity improvements will be delivered through upgrading the existing railway, or the construction of a new route, or a combination of both.

Delivery of the project is dependent upon a successful Transport and Works Act (TWA) or Infrastructure Planning Commission (IPC) process. The current forecast for completion of the project is in Control Period 5 (2014/15 – 2018/19), with project development work being undertaken during CP4. The exact timing of project delivery will be dependent upon the final option selected and the planning process.

It is planned to undertake a number of activities during CP4 to advance the project towards the implementation of a final infrastructure solution. A limited range of infrastructure options have already been identified as a GRIP 2 output. These will be taken through GRIP 3 development during CP4, in order to identify the preferred scheme option.

Key deliverables within the scope of GRIP 3 include the production of a final option selection report, a public consultation exercise, indicative project implementation plans, project management plans and environmental management plans.

The final option arising from the GRIP 3 works will be subject to GRIP 4 development and this work will commence during CP4 and is forecast to be completed early in CP5. The complexity of the final option will influence when this work concludes. The key deliverables at this stage will provide greater certainty for project implementation and will allow us to enter GRIP 5 (detailed design) early in CP5.

It is proposed to take into consideration the outputs of a series of consultations with stakeholders prior to the development of a single option in GRIP 4. The results of this consultation and its impact on the project will be presented as part of the planning application.

Some of the physical work will fall within our Permitted Development Rights. However, all options under consideration will require additional land purchase to a varying degree.

Outputs
The Stafford area has been identified as a capacity constraint on the West Coast Main Line, which limits the opportunity to fully exploit the capacity offered by the recent modernisation of the route and limits the ability to provide additional capacity to cater for future forecasted demand growth.

The 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 and Norton Bridge, together with the performance of the infrastructure at these locations.

The project's remit is to address the capacity and performance constraints in the Stafford area, in line with the requirements of the DfT's 2015 service specification.

The requirements of both freight and passenger traffic are being taken into consideration and the impact of external factors will be included within the option appraisal process.

Significant interfaces
The Stafford project must take into consideration the impact and timing of re-signalling projects in the area, the capacity constraints on WCML outside of the Stafford area and the projected demand requirements beyond CP4. Consideration of these elements will help to shape the final project option and define the overall project costs.

The ability to implement the final project option will be dependent on a successful application for a TWA order, or more likely IPC consent. The outputs of a successful planning application will shape the final in-depth development of the recommended option and as such project costs will be updated as the GRIP process proceeds.

The project will take need to take account of the High Speed 2 (HS2) project which is due to report to the Secretary of State in late 2009. This report is expected to provide an indication of whether the new high speed line will be built to serve destinations north of the West Midlands, timescales for doing this, proposed infrastructure corridors and interaction with the existing railway.

Key assumptions
The key assumption is that the planning application will be successful and will support a scheme that will meet the required outputs.

The project also assumes that the plans of HS2 will be sufficiently clear by the end of 2009 to allow measured development of the project options in the context of HS2's proposals.

Activities and milestones
The key activities for CP4 will be work on the identification of a single option and the work to support, and the submission of, an application for planning authority.

During CP4 it is intended that the project will be developed to a point where a single option has been identified, work has been completed on refining that option in terms of technical scope and requirements and an application for planning authority has been made. The planning process is expected to extend beyond the end of CP4 into early CP5.

Activity	**Date**
GRIP 3 complete	September 2010
GRIP 4 commencement	December 2010
Draft TWA/IPC order submitted	September 2012
TWA order/IPC consent complete	June 2015
GRIP 5 commencement	September 2015
GRIP 8 completion	December 2018

We will continue to work with HS2 and DfT to understand the potential impact of the HS2 proposals on the definition of scope and timing of the Stafford project and develop a plan for the route which addresses the issues identified consistent with an agreed long term strategy for the corridor between London and the North West.

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 24 trains per hour (tph) 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 allows 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.

Activity	**Date**
Blackfriars trackswitch	December 2010
12-car operation	December 2011
KO1 operation (Blackfriars bay platforms etc)	April 2012
KO2 operation	December 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, gauge clearance and overhead line equipment (the extent of the scope is dependent on the pantograph design, which is yet to be finalised by the train builder). Further work is required to establish if expenditure relating to bridge resonance and aerodynamic work is required, and this again depends on train design and proposed solutions.

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 Intercity 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.

Element	**Route**	**Scope of work** – see note 5	**Notes**
Platforms	ECML	Platform lengthening works at; Stevenage (4), Huntingdon (1), **Peterborough (4)**, Grantham (1), Newark Northgate (3), Retford (3), Durham (1), Littleport (2), Watlington (2), Waterbeach (2)	See notes 1a & 1b
	GWML	Bath (1), Neath (1) and Maidenhead (2)	
Power	ECML	New feeder stations required at Tallington (near Peterborough) and at Newark. New feeder transformer required at existing Ardsley feeder station. Substantial reinforcement of traction power for services between Littlington and Cambridge.	See note 2
Gauging	ECML	Currently identified significant locations; Kings Cross , Haymarket North, Kircaldy station, Glasgow Central Station, location near Sunderland Station, Crosshill Station , Wetheral, Newcastle station, additional locations South of Newcastle Station, Thackley, location between Stockton and Ferryhill, Hartlepool, Ryhope Grange, Seaburn, Park Lane Jn, Hartlepool, Winchburgh Tunnel, location near Harrogate, Aberdour, Burntisland, Dundee Dock St., Dundee Station, Arbroath, additional location between Arbroath – Montrose, Cove Bay, Stocksfield, Corbridge, Greenhead, Brampton, Pollockshields East.	See notes 3 & 4
	GWML	Currently identified significant locations; Wickwar, Paddington Station, Plymouth Station, Devonport Station, Bugle Lewan, St. Blazey, Saltash, Largin – Bodmin, location West of St. Austell, Torquay, Chipping Sodbury, Savernake Pewsey, Savernake, Freshford	See notes 3 & 4

Note 1 – a) Highlighted stations – IEP interfacing with existing project.
b) Figures in brackets indicate number of platform faces to be extended.
Note 2 – Hitchin and Royston power is being upgraded by Thameslink project by December 2015. However IEP services intend to start in March 2015. A change to the introduction of the IEP service on this section of the route has been proposed to the DfT.
Note 3 – Gauging scope is still being refined, gauging verification is still required along all IEP routes.
Note 4 – The assessment of the gauging scope is based on Notional Intercity Vehicle Kinematic Envelope (NIV KE). Scope will be revised once the preferred bidder's design K.E is available.

Note 5 – The scope is based on the Network Rail output document dated February 2009

Outputs
These works facilitate the introduction of the Intercity Express fleet to the currently declared timescales. For CP4, funding covers the implementation works on the East Coast route and development and detailed design on the Great Western route. However, we recognise that the DfT will finalise this position between now and contract award expected in December 2010.

The final output of the programme will be Network Rail infrastructure ready to accept the operation of the Intercity Express trains allowing for the replacement of some existing trains on a 'like for like service' basis i.e. no increase in service levels. The trains are being procured under a "train service provision" (TSP) contract by the DfT which is compatible with Network Rail IEP Train Infrastructure Interface Specification dated November 2007.

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.

The stopping patterns assumed are those detailed in the Indicative Timetable planning information pack part 2, issued in February 2008 by DfT.

To achieve the final output, some of the key deliverables are listed below (but not limited to):

- Infrastructure gauge clearance for the IEP which will in turn require;
    - completion of physical gauge clearance works;
    - certificate of Gauging Authority;
    - updated NRAP certificate; and
    - updated Sectional Appendix;
- completed and operational platform extensions; and
- reinforcement of power supplies aligned to IEP train parameter.

The current baseline is the service and route descriptions contained within Network Rail output document February 2009.

Significant interfaces
East Coast Main Line
- Thameslink – there are multiple interfaces including Peterborough station, Finsbury Park station, Royston platform extension works as well as power supply upgrade synergies. There are opportunities to increase delivery efficiency through combined scope; minimise disruption to the customer and identify potential scope synergies;
- Cambridge station;
- Peterborough station;
- FTN/GSM-R - GSM-R will be rolled out south of Peterborough in time for IEP, however, rollout north of Peterborough is not due to be complete until 18 months after IEP introduction; a mitigation plan is being prepared; and
- Hitchin flyover - works co-ordination in order to minimise disruption through a co-ordinated possession strategy will need to take place. Also confirmation of IEP requirements regarding gauge etc to feed into the specification for both ECML and Cambridge line routes through flyover.

Great Western Main Line
- Reading - the Reading station project has been separately specified by the DfT to include provision for diesel, bi-mode and electric IEP formations, the majority of the works will be completed before IEP arrives on the Great Western Main Line;
- Paddington area - the IEP project has developed effective interfaces with the Network Rail Crossrail project which will lead to a single programme being developed to enable both projects to deliver by 2017; and

- Maidenhead – there are synergies and interfaces with the Crossrail project affecting both platform extensions and delivery timescales. There are opportunities to increase delivery efficiency through combined scope, minimise disruption to customers and identify potential scope synergies.

Key assumptions

- Timescales for the Peterborough station project works are expected to match the delivery requirements for IEP platform extensions;
- the 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;
- platform lengthening scope excludes locations where selective door opening operation has been agreed with DfT;
- all IEP depot and depot access works are excluded from this submission (part of TSP contract requirements);
- scope of works specifically excludes works on West Coast Main Line South;
- ECML works exclude works covering traction power and overhead line works associated with an increase in service level between Hitchin and Edinburgh;
- Great Western Main Line works specifically exclude works covering traction power associated with any possible future operation of electric powered Intercity Express trains.;
- Thameslink key output 2 power upgrade between King's Cross and St. Neots is delivered in accordance with the current programme (December 2015);
- all works are deemed to be within the current boundary of the Network Rail infrastructure; and
- Paddington area;
    - works currently assume 248m IEP trains; and
    - all IEP depot and depot access works are excluded from this submission (part of TSP contract requirements).

Activities and milestones

Route	Activity	Output	Date
East Coast train test route (London / Doncaster)	Receipt of preferred bidder's kinetic envelope (required for all routes).		Mar. 2010
	Contract awarded to preferred bidder (all routes).		Dec. 2010
	Start of detailed design.		Sept. 2010
		ECML test routes infrastructure ready for IEP operation	Sept. 2011
East Coast pre series routes (London to Newcastle)	Engagement of DNO for provision of new supply connection at Tallington and Newark. This is required to reinforce the traction power supply between St. Neots to Doncaster which is known to have insufficient capacity for the proposed enhancements to train service.		March 2010
	Start of detailed design.		March 2011
		ECML Pre-series Infrastructure ready for IEP operation	March 2013

Route	Activity	Output	Date
East Coast series routes (Aberdeen / Inverness and Hitchin -Kings Lynn	Validation of the capability of the reinforced traction power supply to support the proposed 2015/16 timetable. Validation will enable implementation of the proposed reinforcement to the traction power supply system to proceed and introduction of train service enhancements.		March 2010
	Engagement of DNO for provision of additional supply connection at Ardsley. This is required to reinforce the traction power supply between Leeds and Doncaster which is known to have insufficient capacity for the proposed enhancements to train service.		March 2010
	Engagement of DNO for provision of new supply connection at Cambridge. This is required to reinforce the traction power supply between Litlington and Ely which is known to have insufficient capacity for the proposed enhancements to train service.		June 2010
	Start of detailed design.		March 2011
		ECML Series Infrastructure ready for IEP operation	Sept. 2014
Great Western Main Line	Start of detailed design.		March 2012
	Development, detailed design and early works for IEP operation.		March 2014
ECML	ECML balance of implementation.	Project completion	Sept. 2014
GWML	Great Western Main Line significant implementation.	Project completion	Sept. 2015

The programme and milestones for IEP will be revised for the September update to reflect changes to output requirements and to better align with GRIP milestones.

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-GSM-R);
- 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	Date
Target price	The identification of an overall target price for the ONW	Sept. 2010
GRIP 3 stage gate review	GRIP 3 designs for ONW	Dec. 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 the existing Reading signal box in December 2010;
- four new platforms on the north side of the station and a new Transfer Deck by May 2013**;**
- a new south side platform and platform extensions for Waterloo line services by May 2013;
- 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 May 2013;
- new train maintenance facility located to the west of Reading station including replacing the existing facilities, which will be demolished to enable the track layout reconfiguration, now enhanced to cater for additional capacity for HLOS + IEP trains and modern equivalent depot facilities by February 2014;
- grade separation by provision of elevated main lines to the west of the station facilitating improvements to Cow Lane Bridge by July 2015;
- Provision of a new grade separated eastern chord from Oxford Road Junction to the north side of the station by April 2016;
- grade separation of the western chord from Oxford Road Junction to Westbury Line junction by April 2016;
- extensive track layout reconfiguration and resignalling throughout the area; and
- passive provision for a possible future extension of Crossrail and the introduction of AirTrack.

The Transport and Works Order Act was successfully enacted on 28/10/09 thereby securing the lands needed to undertake the project.

Outputs
The intended outputs are:

- passenger trains: a minimum of four 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;
- route (GWML);
- 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, and enhancements for additional trains including IEP and HLOS;
- in June 2009 the DfT revised the requirements for the depot to incorporate change in train fleets using the new depot facility. This resulted in additional scope being added to the project, it is assumed that the increase in funding will be agreed to be added to the RAB by DfT based on a GRIP 4 estimate via the Investment Framework process; and
- 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

Activity	Output	Date
Key output 0: enabling works complete	Signalling enabling works Install temporary crossover in Goods lines	Dec. 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	June 2013
Follow-on works: non key output 1 deliverables	Bridge demolition Platform 11 works Canopy works	March 2014
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	March 2014
Key output 3: Reading West Junction grade separation	Reading West grade separation part 1 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	Sept. 2015
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	June 2016

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 June 2013; 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; and
- 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 to be 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; and
- 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; and
- 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

Activity	Output	Date
Complete phase 1 (west)	50 per cent of new station complete	Dec. 2012
Start phase 2 (east)		March 2013
Complete phase 2 (East)	Main concourse open for use by passengers	March 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 24th 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 assumed with train operators to meet the HLOS capacity metrics. The assumed operational plans are described in the route plans and in each relevant section within the following pages, which also set out the proposed enhancement projects necessary to support these operational plans.

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 majority of the capability enhancement on the Kent route is to be provided early enough to coincide with the start of disruptive construction work at London Bridge in October 2012 in order to enable trains to be lengthened as mitigation for any reduction in train service levels as a result of construction requirements. The exception is for the route to the east of Dartford which, due to the significant levels of track access required during the works at Gravesend, has been programmed for implementation in time for those elements of construction work at London Bridge that start in mid 2014, when the extra capacity facilitated by the platform lengthening can provide further mitigation.

The programme of enhancements will 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. 12-car capability on the Anglia route (Tilbury Loop and Ockendon Branch) into Fenchurch Street.
H. 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 necessary to deliver the operational plans.

Capability change	Necessary projects
(A)	Waterloo International integration 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 platform lengthening.
(B), (D), (E), (F)	Clapham Junction 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
(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 Gravesend route.
(G)	12-car capability on the Tilbury Loop and Ockendon Branch
(H)	12-car capability on the Liverpool Street to Cambridge route 12-car capability on the Liverpool Street to Stansted 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 platform extension works we aim to design solutions that comply with the mandatory requirements of Railway Group Standards. We have identified a significant number of sites where it is not feasible to deliver fully compliant designs within the programme timescales; examples include situations where significant remodelling and/or land outside of railway boundaries becomes needed to comply with the standards. Deviating from the mandatory standards requires permission from the Railway Safety and Standards Board. Securing this permission requires active support from our

customers, therefore we will need to work closely with the train operators to finalise the designs at each station or identify alternative solutions to delivering the capability at sites where we cannot jointly identify satisfactory deliverable infrastructure solutions.

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 plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Run all suburban trains at maximum length	12	London Waterloo	1,200	0
Run all mainline trains at maximum length	79	London Waterloo	8,000	1,200
10-car operation on all suburban services	140	London Waterloo	19,200	7,300

Scope of works
The scope of work 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; and
- signalling moves and alterations;

The following items will be delivered to allow the conversion of Waterloo International station for use by domestic services:

- an additional signal section to facilitate operation of Waterloo International Terminal (WIT);
- moving of buffer stops to create a larger level concourse;
- deck over the orchestra pit connecting 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 Infrastructure Planning Commission submissions;
- 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

Activity	**Output**	**Date**
GRIP 4	Single option developed	June 2010
Submit investment authority for GRIP 5-8	Draw down funds to begin implementation	June 2010
GRIP 5	Detailed design completed	Dec. 2010
GRIP 6	Construction started	Dec. 2010
WIT operational	In time for the December 2011 timetable change	Dec. 2011
Construction completed		Dec. 2013

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 plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Thameside 12-car running on main line	20	Fenchurch Street	2,400	1,600
Thameside 12-car running on Tilbury Loop	28	Fenchurch Street	3,200	2,000

Scope of works
The scope of work necessary to meet our obligation is:

Route	Platforms to be lengthened
Pitsea to Fenchurch Street via Ockendon	Pitsea – platforms 3 & 4 Stanford le Hope – platforms 1 & 2 East Tilbury – platforms 1 & 2 Tilbury Town – platforms 1 & 2 Grays – platforms 1 & 2 Ockendon – platforms 1 & 2
Pitsea to Fenchurch Street via Rainham	Purfleet – platforms 3 & 4 Rainham – platforms 1 & 2 Dagenham Dock – platforms 1 & 2

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

Activity	Output	Date
Completion of detailed design	Relevant GRIP products and successful GRIP 5 stage gate	Dec. 2010
Implementation phase (on-site works)	Physical works, taken into use upon completion	Dec. 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 plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
WA 12-car operation on Liverpool St-Cambridge services	20	Liverpool Street	2,100	800
WA 12-car operation on Liverpool St-Stansted Airport services	36	Liverpool Street	4,900	1,600
WA Inner peak strengthening	24	Liverpool Street	3,700	800

Scope of works
The scope of work necessary to meet our obligation is:

Route	Platforms to be lengthened
Stansted Airport to Liverpool Street	Stansted Mountfitchet – platform 1 & 2 Sawbridgeworth – platform 1 & 2 Broxbourne – platform 2 & 3 Cheshunt – platform 1 & 2
Cambridge to Liverpool Street	Cambridge – one additional 12-car platform face

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 extended platform (platform 1) to be funded entirely by Stansted Airport Limited (STAL) (anticipated circa late 2011). This is an intervention that was agreed to be funded and delivered by STAL subject to certain conditions relating to 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.

It is currently assumed that there will be an SDO or other operational solution to allow 12-car running at the stations below. This is based on the premise that the new SDO enabled rolling stock can be used to operate the services that call at the smaller stations on the Cambridge to Liverpool Street route.

Route	Possible SDO or other operational solution
Stansted Airport to Liverpool Street	Broxbourne (platforms 1 & 4)
Cambridge to Liverpool Street	Shelford Great Chesterford Newport Elsenham Harlow Mill Roydon

Other assumptions are:-

- 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 or air rights are 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

Activity	Output	Date
Complete single option development and outline design for each location	GRIP 4 stagegate reviews completed	June 2010 (all locations)
Tender for detailed design and implementation phase	Invitations to tender	Sept. 2010 (Broxbourne) Dec. 2010 (Cambridge) Dec. 2010 (all other locations)
Implementation phase (on-site works)	Physical works, taken into use upon completion	Dec. 2011 (Broxbourne) Dec. 2011 (Cambridge) Dec. 2011 (all other locations)

This project is planned to 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 plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Run all suburban trains at maximum length	12	London Waterloo	1,200	0
Run all mainline trains at maximum length	79	London Waterloo	8,000	1,200
10-car operation on all suburban services	140	London Waterloo	19,200	7,300

There are a range of options/variations on this strategy, currently being developed by SSWT, DfT and Network Rail, which may reduce the figures above whilst still meeting HLOS targets.

Scope of works
The scope of work necessary to meet our obligation is:

Route	Platforms to be lengthened
Waterloo to Windsor and Eton Riverside (via Richmond)	Vauxhall (platforms 3 and 4) Putney (platforms 2, 3 and 4) Richmond (platforms 1 and 2)[1] Twickenham (platforms 3, 4 and 5) Whitton (platforms 1 and 2) Ashford (platforms 1 and 2) Staines (platforms 1 and 2) Wraysbury (platforms 1 and 2) Windsor and Eton Riverside (platforms 1 and 2)
Hounslow Loop	Queenstown Road (platforms 2 and 3) Wandsworth Town (platforms 1, 2, 3 and 4) Barnes (platforms 1, 2, 3 and 4) Mortlake (platforms 1 and 2) North Sheen (platforms 1 and 2) St Margarets (platforms 1, 2 and 3) Barnes Bridge (platforms 1 and 2) Chiswick (platforms 1 and 2) Kew Bridge (platforms 1 and 2) Brentford (platforms 1 and 2) Syon Lane (platforms 1 and 2) Hounslow (platforms 1 and 2)

Route	**Platforms to be lengthened**
Staines to Weybridge	Egham (platforms 1 and 2) Virginia Water (platform 4) Addlestone (platforms 1 and 2) Weybridge (platform 1)
Raynes Park to Dorking [2]	Raynes Park (platforms 1 and 4) Motspur Park (platforms 1 and 2) Worcester Park (platforms 1 and 2) Stoneleigh (platforms 1 and 2) Ewell West (platforms 1 and 2) Epsom (platforms 1, 2, 3 and 4) Ashtead (platforms 1 and 2) Leatherhead (platforms 1 and 2) Boxhill and Westhumble (platforms 1 and 2)
Kingston Loop and Shepperton Branch [2]	Vauxhall (platforms 7 and 8) Clapham Junction (platform 11) Earlsfield (platforms 2 and 3) Raynes Park (platforms 2 and 3) New Malden (platforms 1 and 3) Norbiton (platforms 1 and 2) Kingston (platforms 2 and 3) Hampton Wick (platforms 1 and 2) Teddington (platforms 1 and 2) Strawberry Hill (platforms 1 and 2) Fulwell (platforms 1 and 2) Hampton (platforms 1 and 2) Kempton Park (platforms 1 and 2) Sunbury (platforms 1 and 2) Upper Halliford (platforms 1 and 2) Shepperton (platform 1)
Hampton Court Branch [2]	Berrylands (platforms 1 and 2) Thames Ditton (platforms 1 and 2) Hampton Court (platforms 1 and 2)
Guildford via Woking [2]	Guildford (Platforms 1 and 2. The capability to turnback a 10-car train in platform 2 is required but due to geographical constraints it is not yet decided whether platform lengthening is appropriate or whether other solutions are appropriate)

Route	Platforms to be lengthened
Guildford via Cobham [2]	Hinchley Wood (platforms 1 and 2) Claygate (platforms 1 and 2) Oxshott (platforms 1 and 2) Cobham and Stoke d'Abernon (platforms 1 and 2) Effingham Junction (platforms 1 and 2) Horsley (platforms 1 and 2) Clandon (platforms 1 and 2) London Road (Guildford) (platforms 1 and 2)
Guildford via Leatherhead [2]	Bookham (platforms 1 and 2)
Chessington Branch [2]	Malden Manor (platforms 1 and 2) Tolworth (platforms 1 and 2) Chessington North (platforms 1 and 2) Chessington South (platform 1)

Note 1 The works planned at Richmond require significant reconstruction of a road overbridge, which may not be achievable until the end of the control period. The interim solution would be the use of SDO.
Note 2 It is assumed that these routes will be operated by Class 455 stock, and that it will not be practicable to implement SDO functionality on this stock. However, if it does prove possible to fit approved SDO functionality on this stock (or if this functionality can be provided by using alternative stock), then we will review and agree with SSWT a list of locations where an SDO solution is an appropriate and cost-effective alternative to platform lengthening.

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:

- the CP4 enhancement scheme to provide additional power supply throughout the South West suburban area;
- Waterloo International integration;
- Sussex route platform lengthening; and
- the Olympic and Paralympic Games (avoidance of possessions during).

Key assumptions

- Delivery dates assume no IPC applications are required;
- Stabling facilities at Feltham (or alternative interim location) are available to SSWT to accommodate any 10-car fleet as it is rolled out for suburban services;
- powers supply will be developed in line with the timescales outlined in this project in order that a 10-car service can be implemented by SSWT without any compromise to sectional running times, performance and timetable;
- planning approvals will be forthcoming for the works required;
- platforms 1 and 2 at Vauxhall and platforms 3, 4, 5 and 6 at Clapham Junction are capable of accommodating 10 car trains without requiring any infrastructure work, but there is a small risk that some minor platform surface work is required; and
- it is also assumed that platform lengthening will not be undertaken at the locations shown in the table below.

Route	Locations where works will not be undertaken
Waterloo to Windsor and Eton Riverside (via Richmond)	Putney (platform 1) Twickenham (platforms 1 and 2) platforms not used for passenger trains Feltham (platforms 1 and 2)[3] Sunnymeads (Platforms 1 and 2) existing use of SDO will continue Datchet (platforms 1 and 2) Clapham Junction (platforms 3, 4, 5 and 6) Vauxhall (platforms 1 and 2) already 10-car capable
Hounslow Loop	Isleworth (platforms 1 and 2) existing use of SDO will continue
Staines to Weybridge	Virginia Water (platform 3) existing use of SDO will continue Chertsey (platforms 1 and 2) existing use of SDO will continue
Raynes Park to Dorking	Dorking (platforms 1, 2 and 3) already 12-car capable
Kingston Loop and Shepperton Branch	Clapham Junction (platform 10) already 10-car capable Wimbledon (platforms 5, 6, 7 and 8) already 10-car capable Kingston (platform 1)
Hampton Court Branch	Surbiton (platforms 1, 2, 3 and 4) already 12-car capable
Guildford via Woking	Esher (platforms 1 and 4) already 12-car capable Hersham (platforms 1 and 2) already 12-car capable Walton-on-Thames (platforms 1 and 2) already 12-car capable Weybridge (platforms 2 and 3) already 12-car capable Byfleet and New Haw (platforms 1 and 2) already 12-car capable West Byfleet (platforms 1, 2 and 3) already 12-car capable Woking (platforms 1, 2, 3, 4 and 5) already 12-car capable Woking (Platform 6). not in scope Worplesdon (platforms 1 and 2) already 12-car capable Guildford (platforms 3, 4, 5, 6, 7 and 8) already 10- or 12-car capable

Note 3 Extending Feltham platforms at the country end will require closure of the level crossing. Extending them at the London end will impact on the entrance to any potential new depot. Further development work will be needed before a firm decision can be made at this location. The interim fallback position would be the use of SDO.

Activities and milestones

Route	Milestone	Date
Waterloo to Windsor and Eton riverside (via Richmond)	GRIP 4 completion (Twickenham, Richmond)	Sept. 2010
	GRIP 4 completion (Windsor, Whitton, Ashford, Vauxhall, Clapham Junction)	Sept. 2010
	GRIP 4 completion (Staines, Wraysbury)	Sept. 2010
	GRIP 4 completion (Putney)	Feb. 2011
	Infrastructure complete (Windsor, Wraysbury, Staines, Ashford, Whitton, Twickenham, Clapham Junction, Vauxhall, Richmond*****)	Dec. 2011
	Infrastructure complete (Putney)	Dec. 2011
Hounslow Loop	GRIP 4 completion	Sept. 2010
	GRIP 4 completion (Queens Town Road, Hounslow)	March 2011
	Infrastructure complete	Dec. 2012
Staines to Weybridge	GRIP 4 completion	March 2010
	Infrastructure complete	Dec. 2012
Raynes Park to Dorking	GRIP 4 completion	March 2011
	Infrastructure completion	Dec. 2013
Kingston Loop and Shepperton Branch	GRIP 4 completion	March 2012
	Infrastructure completion	Dec. 2013
Hampton Court Branch	GRIP 4 completion	March 2012
	Infrastructure completion	Dec. 2013
Guildford via Woking	GRIP 4 completion	March 2012
	Infrastructure completion	Dec. 2013
Guildford via Cobham	GRIP 4 completion	March 2012
	Infrastructure completion	Dec.2013
Guildford via Leatherhead	GRIP 4 completion	March 2012
	Infrastructure completion	Dec. 2013
Chessington Branch	GRIP 4 completion	March 2012
	Infrastructure completion	Dec. 2013

* The programme for Richmond depends on the outcome of negotiations with key stakeholders including local authorities.

Works will be complete in time for the December 2012 and 2013 timetable changes.

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 plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

The below operational plan has been updated in light of Govia's winning franchise bid for South Central. Class 377 stock is assumed to be used for all services.

Assumed operational plan to meet HLOS capacity in CP4

Description	Approximate additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
London Bridge/East Croydon/ Norwood Jn to Victoria via Streatham Hill	12	Victoria/London Bridge	1089	1089
Sutton/Epsom Downs to Victoria via Norbury	18	Victoria	1634	1089
Horsham/ Epsom to Victoria via Hackbridge	10	Victoria	908	545
East Grinstead to Victoria/ LB via Clapham Jn Fast Lines and Sydenham fasts respectively	16	Victoria/ London Bridge	1815	1452
East Croydon/ West Croydon/ Epsom to London Bridge via Sydenham Slow Lines	10	London Bridge	1271	726
Run all suburban trains at maximum length	12	London Waterloo	1,200	0
Run all mainline trains at maximum length	79	London Waterloo	8,000	1,200
10-car operation on all suburban services	140	London Waterloo	19,200	7,300

Scope of works
The scope of works necessary to meet our obligation is:

Location	Platform extensions	Civil engineering	Track / signalling	Other
Platforms 3, 4, 5 and 6	None	None	None	Possible minor surface works to facilitate use of existing 10 car platforms.
Platforms 11, 14 and 15	Extend platform x 3	Lengthening of platforms	None identified	None identified

Outputs
This project would contribute to the achievement of 10-car suburban operation into Victoria from the Sussex route by December 2013 and Waterloo from the Wessex route by December 2012

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.
- North London Railway Infrastructure Project
- East London Line Extension Phase 2

Key assumptions

- That SDO will not be an acceptable alternative at this location;
- a capacity of 90.75 has been assumed per class 377 vehicle;
- that no developer contributions will be available within CP4 to fund enhancements to the passenger circulating space at Clapham Junction. The planning application submitted by Land Securities was turned down by the Local Authorities and the proposals have subsequently been withdrawn; and
- further development work on a scheme to improve the stepping distances on platforms 15 and 16 will continue in conjunction with this project, but as the major realignment work is no longer necessary to enable the required platform extensions to platforms 14 and 15 any work will be funded from an alternative source.

Activities and milestones

Location	Activity	Date
Platforms 14 and 15*	Complete GRIP4	Sept. 2011
	Complete GRIP5	June 2012
	Commence works on site	June 2012
	Complete works on site	Dec. 2013
	Commence 10-car Operations	Dec. 2013
Platform 11**	GRIP 4 completion	March 2012
	Infrastructure completion	Dec. 2013

* Platforms 14 and 15 – will be delivered in line with the Sussex route suburban area timescales for the Norbury route.
****** Platform 11 will be delivered in line with the 10-car south west suburban railway timescales for the Waterloo to Windsor and Eton Riverside route.

The platform lengthening works will be complete in time for the December 2013 timetable change. Minor works on platforms 3 to 6 will be complete for the December 2011 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 plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans. The below operational plan has been updated in light of Govia's winning franshise bid for South Central.

Assumed operational plan to meet HLOS capacity in CP4

Description	Approximate additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
London Bridge/East Croydon/ Norwood Jn to Victoria via Streatham Hill	12	Victoria/London Bridge	1089	1089
Sutton/Epsom Downs to Victoria via Norbury	18	Victoria	1634	1089
Horsham/ Epsom to Victoria via Hackbridge	10	Victoria	908	545
East Grinstead to Victoria/ LB via Clapham Jn Fast Lines and Sydenham fasts respectively	16	Victoria/ London Bridge	1815	1452
East Croydon/ West Croydon/ Epsom to London Bridge via Sydenham Slow Lines	10	London Bridge	1271	726

Scope of works

The scope of work that is necessary to meet our obligation is set out in the following table which lists locations where work is necessary to deliver the 10-car, and in some cases 12-car, capability. The locations are grouped by five operational route groupings plus a separate category for the stations core to all routes on the Victoria slow lines.

Route	Platforms to be lengthened
Victoria Core stations: 10-car	Clapham Junction[1] (platforms 14 and 15) Wandsworth Common* (platforms 1 and 2) Balham (platforms 1and 2)
Sutton/ Epsom Downs <> Victoria Central via Norbury: 10-car	Streatham Common* (platforms 1 and 2) Norbury (platforms 1, 2) Thornton Heath* (platforms 1 and 2) Selhurst* (platforms 1 and 2) West Croydon[2] (platforms 1, 3 and 4) Waddon (platforms 1 and 2) Wallington (platforms 1 and 2) Sutton (platforms 3* and 4*) Epsom Downs
East Grinstead <> Victoria Central (fast lines from Windmill Bridge Jn)/ London Bridge (fast lines from Norwood Jn): 12-car	East Grinstead (platforms 1* and 2*) Oxted (platforms 1 and 2) Upper Warlingham (platforms 1 and 2) Sanderstead (platforms 1 and 2)

Route	Platforms to be lengthened
London Bridge <> Victoria Central (via Streatham Hill) & East Croydon/ Norwood Jn <> Victoria Central (via Streatham Hill): 10-car	Streatham Hill (platforms 1 and 2*) Gypsy Hill (platform 2) Crystal Palace (platforms 1*, 2* ,4 and 6, with platform numbers based on the post ELLX station layout)
East/ West Croydon <> London Bridge (via Sydenham slow lines) & Epsom <> London Bridge (via West Croydon and Sydenham fast lines from Norwood Jn): 10-car	Norwood Junction (platforms 1 and 5) Sydenham platform 2 Forest Hill* (platforms 1 and 2) Honor Oak Park (platforms 1 and 2) Brockley (platforms 1 and 2) New Cross Gate* (platforms 2 and 5)
Horsham/ Epsom <> Victoria via Hackbridge[1]: 10-car	Carshalton (platforms 1 and 2) Cheam (platforms 1 and 2) Mitcham Eastfields* (platforms 1 and 2)

Note 1 Clapham Junction, platforms 14 and 15 were formerly included in the scope of project 15.05 in the March 2009 Delivery Plan.

Note 2 Platforms 3 and 4 will be required for 12-car operation for Thameslink services in CP5. Development of a 10 car solution for CP4 will be consistent with that requirement. The country end turnback will be delivered in 2009/10 for 10-car operation as part of shortly to be completed East London Line works. Bay Platform 1 is presently in scope for a 10-car extension within CP4. This is subject to a scheme to extend beyond the present buffer stop in the country direction being feasible.

* Denotes locations where a derogation from standards will be required in order to deliver presently listed scope.

Epsom, Leatherhead, Ashtead and Box Hill and Westhumble sit within the scope of the Route 3 project ’10-car south west suburban railway’.

All stations East and West Croydon to London Bridge via the Sydenham slow lines are required for 12-car operation for Thameslink services in CP5. Development of a 10-car solution for CP4 will be consistent with that requirement. Where work is taking place to extend platforms / move S&C or signals in CP4, early delivery of 12-car capability will also take place at the same time, where it is efficient to do so.

Where land is required and cannot be purchased directly, it is intended that Infrastructure Planning Commission (IPC) applications will be made.

Outputs

This project will allow 10- and in some cases 12-car services to run on the operational routes:

- A 10-car service for Victoria core stations;
- a 10-car service for Sutton / Epsom Downs <> Victoria Central via Norbury;
- a 12-car service for East Grinstead <> Victoria Central (fast lines from Windmill Bridge Jn)/ London Bridge (fast lines from Norwood Jn);
- a 10-car service for London Bridge <> Victoria Central (via Streatham Hill) and East Croydon/ Norwood Jn <> Victoria Central (via Streatham Hill);
- a 10-car service for East/ West Croydon <> London Bridge (via Sydenham slow lines) and Epsom <> London Bridge (via West Croydon and Sydenham fast lines from Norwood Jn); and
- a 10-car service for Horsham/ Epsom <> Victoria via Hackbridge.

Significant interfaces

- Strategic route 2: power supply upgrade project. Key to delivery of lengthened services on some of the routes outlined in this project;
- 10-car south west suburban railway at Epsom, Leatherhead, Ashtead, Box Hill and Westhumble;

- 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; 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 operations on the Sydenham slow lines route by this point.

Key assumptions

- It is assumed that SDO capable rolling stock will now be in use on the operational routes outlined above during CP4, though it is recognised that the dates when this stock may become available could be subject to change;
- a capacity of 90.75 passengers per carriage has been assumed per class 377 vehicle;
- it is assumed that the platforms listed in the second table below will remain unmodified and any longer trains calling in CP4 will need to utilise Selective Door Opening (SDO) or vehicles locked out of use. With the exception of Norwood Junction, where a mix of fast and slow line services can call at the fast line platforms, fast line platforms at stations are not listed as they are uniformly assumed to be out of scope at all locations; and
- No work is presently being undertaken by Network Rail on enhancements to depot and stabling facilities/ associated depot power supply 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 were tabled by bidders for the South Central franchise, the winner of which was announced in June 2009. Network Rail has provided comments on the feasibility of each of these proposals to the Department for Transport as part of the re-franchising process.

Operational route	**Stations where SDO or vehicles locked out of use will be required for longer trains to call**
Victoria Core stations: 10-car	Battersea Park (platforms 3 and 4)
Sutton/ Epsom Downs <> Victoria Central via Norbury: 10-car	Carshalton Beeches (platforms 1 and 2) Belmont Banstead
East Grinstead <> Victoria Central (fast lines from Windmill Bridge Jn)/ London Bridge (fast lines from Norwood Jn): 12-car	Dormans (platforms 1 and 2) Lingfield (platforms 1 and 2) Hurst Green (platforms 1 and 2) Woldingham (platforms 1 and 2) Riddlesdown (platforms 1 and 2) South Croydon (platforms 3, 4 and 5)[3]
London Bridge <> Victoria Central (via Streatham Hill) & East Croydon/ Norwood Jn <> Victoria Central (via Streatham Hill): 10-car	Gypsy Hill (platform 1[4]) West Norwood (platform 1 and 2)
East/ West Croydon <> London Bridge (via Sydenham slow lines) & Epsom <> London Bridge (via West Croydon and Sydenham fast lines from Norwood Jn): 10-car	Norwood Junction (platforms 3, 4 and 6) Anerley (platforms 1 and 2)[5] Penge West (platforms 1 and 2)[5] Sydenham (platform 1)
Horsham/ Epsom <> Victoria via Hackbridge: 10-car	Warnham (platforms 1, 2) Ockley (platforms 1, 2) Holmwood (platforms 1, 2) Ewell East (platforms 1, 2) Hackbridge (platforms 1, 2) Mitcham Junction (platforms 1, 2)

Note 3 It may not be possible to call 12-car services at South Croydon using SDO. Network Rail is presently investigating the operational impact of SDO operation at this location.
Note 4 Subject to derogations being achieved it may be possible to move this platform into scope.
Note 5 Stations outside the scope of this project, but within the 12-car Thameslink scope will be developed in conjunction with any other Thameslink 12-car schemes that are developed by this project.

Activities and milestones

East Grinstead Route: (East Grinstead <> Victoria Central (fast lines from Windmill Bridge Jn)/ London Bridge (fast lines from Norwood Jn): 12-car)	**Date**
Complete GRIP4	June 2010
Complete GRIP5	Sept. 2010
Commence works on site	Dec. 2010
Complete works on site	Sept. 2011
Commence 12-car Operations	Dec. 2011

Sydenham Route: (East/ West Croydon <> London Bridge (via Sydenham slow lines) & Epsom <> London Bridge (via West Croydon and Sydenham fast lines from Norwood Jn): 10-car)	**Date**
Complete GRIP4	Sept. 2010
Complete GRIP5	Dec. 2011
Commence works on site	Dec. 2011
Complete works on site	April 2012
Commence 10-car operations	May 2012

Norbury Route: (Victoria Core stations: 10-car) (Sutton/ Epsom Downs <> Victoria Central via Norbury: 10-car)	**Date**
Complete GRIP4	Sept. 2011
Complete GRIP5	June 2012
Commence works on site	June 2012
Complete works on site	Dec. 2013
Commence 10-car Operations	Dec. 2013

Streatham Hill Route: (London Bridge <> Victoria Central (via Streatham Hill) & East Croydon/ Norwood Jn <> Victoria Central (via Streatham Hill): 10-car)	**Date**
Complete GRIP4	March 2012
Complete GRIP5	Dec. 2012
Commence works on site	Dec. 2012
Complete works on site	March 2013
Commence 10-car Operations	Dec. 2013

Hackbridge Route: Horsham/ Epsom <> Victoria via Hackbridge: 10-car	**Date**
Complete GRIP4	March 2012
Complete GRIP5	Dec. 2012
Commence works on site	Dec. 2012
Complete works on site	March 2013
Commence 10-car Operations	Dec. 2013

The delivery dates in the table, in particular those for the East Grinstead route 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. The currently envisaged scope of works for enhancements to power supply on Route 2 are detailed in the Route 2 – power supply enhancements project section.

Project definition: Kent train lengthening

This work package covers several projects previously listed separately (15.07 to 15.13). They have been amalgamated here into a single package for ease of reference.

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Southeastern December 2009 timetable SLC2 franchise commitments: St Pancras domestic service via High Speed One	174	St Pancras	11,000	5,800
Southeastern December 2009 timetable SLC2 franchise commitments: Victoria service change from 17tph to 16tph in high peak	-12	Victoria	-1,200	-1,200
Train lengthening to Victoria in CP4 within existing infrastructure capability constraints	4	Victoria	400	400
Train lengthening to Charing Cross / Cannon Street in CP4 within existing infrastructure capability constraints	30	London Bridge	5,200	4,400
Train lengthening infrastructure schemes: 12-car operations Sidcup line to Dartford	10	London Bridge	1,200	900
Train lengthening infrastructure schemes: 12-car operations Bexleyheath line to Dartford	12	London Bridge	1,400	1,200
Train lengthening infrastructure schemes: 12-car operations Greenwich line to Dartford	8	London Bridge	900	700
Train lengthening infrastructure schemes: 12-car operation Sevenoaks (via Hither Green) stopping services	10	London Bridge	1,200	900
Train lengthening infrastructure schemes: 12-car operations Hayes line	10	London Bridge	1,200	900
Train lengthening infrastructure schemes: 12-car operations Dartford to Gravesend	8	London Bridge	900	700
Train lengthening schemes (SDO assumed) 12-car operations: stopping services via Sole Street	8	Victoria	500	500
Train lengthening schemes (SDO assumed) 8-car operations: Maidstone East line	4	Victoria	200	200

Scope of works
The scope of works required to deliver the outputs is shown below.

Locations listed in the first column will undergo platform extension works whilst locations in the second column will undergo minor infrastructure works as necessary (typically signal and Driver Only Operation equipment relocations) to accommodate the longer trains stated.

Project	**Platforms in scope of works to support 12-car Class 465 operations**	
	Platform lengthening	**Minor infrastructure works**
15.10 – 12-car operations Sidcup and Bexleyheath routes	New Cross (platforms B, C) Blackheath (platforms 1, 2) Eltham (platforms 1, 2) Welling (platforms 1, 2) Bexleyheath (platforms 1, 2) Barnehurst (platforms 1, 2) Dartford (platforms 1, 2, 3, 4) Hither Green (platforms 5, 6) Mottingham (platforms 1, 2) Grove Park (platform 4)	St Johns (platforms 1, 2) New Cross (platform A) Lewisham (platforms 1, 2, 3, 4) Waterloo East (platform A) Blackheath (platform 2) Kidbrooke (platforms 1, 2) Falconwood (platforms 1, 2) Bexley (platform 1) Crayford (platform 1) Lee (platforms 1, 2) New Eltham (platforms 1,2) Sidcup (platforms 1, 2) Albany (platforms 1, 2)
15.11 – 12-car operations Hayes and Sevenoaks (stopping) services	Chelsfield (platform 1) Knockholt (platform 2) Dunton Green (platform 2)	Hither green (platforms 3, 4) Grove Park (platform 5) Elmstead Woods (platforms 1, 2) Chislehurst (platforms 3, 4) Petts Wood (platforms 3, 4) Orpington (platforms 4, 5, 6, 7, 8) Cheslfield (platform 2) Knockholt (platform 1) Dunton Green (platform 1) Ladywell (platforms 1, 2) Catford Bridge (platform 1, 2) Lower Sydenham (platform 1, 2) New Beckenham (platforms 1, 2) Clock House (platforms 1, 2) Elmers End (platforms 2, 3) Eden Park (platforms 1, 2) West Wickham (platforms 1, 2) Hayes (platforms 1, 2)
15.12 – 12-car operations Greenwich and Woolwich route	Maze Hill (platform 1) Westcombe Park (platforms 1, 2) Charlton (platforms 1, 2) Plumstead (platforms 1, 2) Abbey Wood (existing plats 1, 2) Erith (platforms 1, 2) Slade Green (platforms 1, 2)	Deptford (platforms 1, 2) Greenwich (platforms 1, 2) Woolwich Arsenal (platforms 1, 2) Belvedere (platforms 1, 2)

15.13 – 12-car Dartford to Rochester route	Stone Crossing (platforms 1) Greenhithe (platforms 1, 2) Swanscombe (platforms 1, 2) Northfleet (platforms 1, 2) Gravesend (platforms 1, 2 and new platform 3)	Stone crossing (platform 2)

Platforms not mentioned within the geographic scope of the routes (above) can already support 12-car Class 465 trains with the exception of Charing Cross which is described in the 'key assumptions' section (below).

Outputs
Platform lengths for 12-car trains will be provided on all suburban routes from Charing Cross and Cannon Street with the exception of Woolwich Dockyard station and stations east of Gravesend. Other capability will include:

- 12-car turnback capability at Sidcup;
- 12-car turnback capability at Plumstead or Abbey Wood (subject to Crossrail phasing plans); and
- 12-car turnback capability at Dartford.

Significant interfaces
The significant interfaces for this project are:

- construction works for Key Output 2 of the Thameslink Programme. These will potentially reduce capacity through London Bridge for much of the later part of CP4, and would therefore require longer trains to be in place in mitigation during this period;
- a scheme by Southeastern to modify Class 465 vehicles such that both sets of passenger doors on the rear vehicle on 12-car formations do not open at Charing Cross;
- the CP4 enhancement scheme to provide additional depot and stabling capacity, which is led by DfT;
- the CP4 enhancement scheme to provide additional power supply throughout the Kent suburban area; and
- construction works for Crossrail between Woolwich and Abbey Wood, together with the safeguarding of a potential future Crossrail extension to Gravesend.

Key assumptions

- Southeastern's franchise agreement will be modified to include a requirement to meet the CP4 HLOS peak capacity metrics, with additional rolling stock provided as necessary
- 12-car operation in the suburban area will utilise 3 x 4-car Class 465 units, with reconfigured vehicle interiors if necessary. The scheme will also be designed to allow for the operation of 12-car Class 375, 376 or 377 sets;
- 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. Only platforms 1, 2, 4 and 6 are confirmed as capable for use by these trains, this limitation is reflected in our assumptions regarding the overall contribution of the Kent train lengthening package to the peak capacity metric;
- 2-car Class 466 vehicles will be banned from operation in 12-car formations, since the additional platform length required cannot realistically be provided at critical sites;
- turnaround drivers will be provided at Charing Cross if necessary to avoid increased turnaround times at that location reducing the number of trains which can run;
- any main line trains (those operating east of Swanley and south of Sevenoaks) to be lengthened will be operated by SDO equipped rolling stock (Class 375 or 377) so longer platforms are not required;
- splitting and joining is required at Dartford and Orpington, to enable 12-car sets to meet high peak requirements, whilst allowing shorter trains to run off peak. Splitting and joining capability at other locations will be provided to the extent necessary to deliver the capacity metric; and

- derogations from standards will be required to deliver certain items in the above listed scope. We are assuming that stakeholder support will be forthcoming where necessary.

It is also assumed that the platforms listed in the second column, below, will remain unmodified and any longer trains calling in CP4 will need to utilise Selective Door Opening (SDO). In additional to the above a rear vehicle only doors inhibit system will be required at Charing Cross for 12-car Class 465 vehicles (projects 15.10 – 15.13).

Project	**Locations where SDO will be required if longer trains are to call**
15.07 – 12-car Swanley to Rochester route	Farningham Road (platforms 1, 2) Sole Street (platforms 1, 2)
15.08 – 8-car operation Maidstone East Line	Kemsing (platforms 1, 2) Barming (platforms 1, 2) Bearsted (platforms 1, 2) Hollingbourne (platforms 1, 2) Harrietsham (platforms 1, 2) Lenham (platforms 1, 2) Charing (platforms 1, 2)
15.09 – 6-car operation Victoria to Bellingham	This service is no longer expected to operate in CP4. In the event of this changing SDO will be required in the following: Clapham High Street (platforms 1, 2) Wandsworth Road (platforms 1, 2)
15.11 – 12-car operations Hayes and Sevenoaks (stopping) services	Hither Green (platforms 1, 2) – fast lines Grove Park (platforms 2, 3) – fast lines Elmstead Woods (platforms 1, 2) – fast lines Chislehurst (platforms 1, 2) – fast lines Petts Wood (platforms 1, 2) – fast lines
15.12 – 12-car operations Greenwich and Woolwich route	Woolwich Dockyard platforms 1, 2
15.13 – 12-car Dartford to Rochester route	Higham (platforms 1,2) Strood (platforms 1, 2) Rochester (platforms 1, 2, 3, 4)
N/A – Charing Cross main line services	Pluckley (platforms 1, 2) Tunbridge Wells (platforms 1, 2)

Activities and milestones

Activity (sites except project 15.13: east of Dartford)	**Date**
Commence detailed design (GRIP5)	June 2010
Award construction contract	Sept. 2011
Commence works on site	Dec. 2011
Complete works on site	June 2012
Commence 12-car Class 465 operations (not east of Dartford)	Oct. 2012

Activity (project 15.13: east of Dartford)	**Date**
Complete GRIP4	Dec. 2010
Commence detailed design (GRIP5)	June 2011
Award construction contract	March 2013
Commence works on site	May 2013
Complete works on site	May 2014*
Commence 12-car Class 465 operations to Gravesend	May 2014*

* Due to the significant levels of track access required for the works at Gravesend, this has been programmed for implementation in time for those elements of construction works at London Bridge that start in mid 2014, when the extra capacity facilitated by the platform lengthening can provide further mitigation.

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 assumed with train operators to meet the HLOS capacity metrics. The assumed 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 plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Southeastern December 2009 timetable SLC2 franchise commitments: St Pancras domestic service via High Speed One	174	St Pancras	11,000	5,800
Southeastern December 2009 timetable SLC2 franchise commitments: Victoria service change from 17tph to 16tph in high peak	-12	Victoria	-1,200	-1,200
Train lengthening to Victoria in CP4 within existing infrastructure capability constraints	4	Victoria	400	400
Train lengthening to Charing Cross / Cannon Street in CP4 within existing infrastructure capability constraints	30	London Bridge	5,200	4,400
Train lengthening infrastructure schemes: 12-car operations Sidcup line to Dartford	10	London Bridge	1,200	900
Train lengthening infrastructure schemes: 12-car operations Bexleyheath line to Dartford	12	London Bridge	1,400	1,200
Train lengthening infrastructure schemes: 12-car operations Greenwich line to Dartford	8	London Bridge	900	700
Train lengthening infrastructure schemes: 12-car operation Sevenoaks (via Hither Green) stopping services	10	London Bridge	1,200	900
Train lengthening infrastructure schemes: 12-car operations Hayes line	10	London Bridge	1,200	900
Train lengthening infrastructure schemes: 12-car operations Dartford to Gravesend	8	London Bridge	900	700
Train lengthening schemes (SDO assumed) 12-car operations: stopping services via Sole Street	8	Victoria	500	500
Train lengthening schemes (SDO assumed) 8-car operations: Maidstone East line	4	Victoria	200	200

Scope of works
Traction power modelling has been completed with the enhanced train service. This has highlighted constraints in the existing network. The next stage is to complete constructability assessments to remove the constraint and to finalise the scope required. The scope of works necessary to deliver the output is:

	Description of work
E&P Distribution – Dartford loop	
DNO supply points	Increase of firm service capacity at three sites and alterations to HV feeding network
TPH / substation	6 - 8 track paralleling hut (TPH) to substation conversions
Electric track equipment	35 - 45km of double track ETE conversion to high current specification Impedance bonds changed to type 3
E&P Distribution – Dartford to Strood	
TPH / substation	3 - 4 track paralleling hut to substation conversions
Electric track equipment	Impedance bonds changed to type 3
E&P Distribution – Chislehurst to St Mary Cray / Sevenoaks	
TPH / substation	3 - 4 substation enhancements
Electric track equipment	Impedance bonds changed to type 3
E&P Distribution – Hayes branch	
TPH / Substation	1 substation enhancement
Electric track equipment	Impedance bonds changed to type 3

- The project is being developed and delivered progressively and hence there will be several packages of work of each area;
- the modelling is being completed progressively and will be a crucial feed into understanding the total 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; and
- although the modelling results are critical in understanding the scope of the project there is concurrent work being undertaken to understand the detailed requirements and funding of this project.

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;
- ELL;
- New Cross Grid enhancement;
- Crossrail;
- regenerative braking project;
- national SCADA project;
- platform extension projects;
- traction power supply renewals;
- separation of LUL power supply system; and
- LUL S stock introduction.

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 enabling additional growth on other routes including:
    - 12-car operation on the Sidcup route to Dartford;
    - 12-car operation on the Bexleyheath route to Dartford;
- no specific requirement to reduce journey times or improve 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;
- costs associated with train entry into service requirements such as safety case and system compatibility are not included;
- rolling stock configurations are as agreed and detailed in the Southern DC traction power supply programme specification;
- rolling stock and the new configurations will be operating on existing power levels;
- Class 395 rolling stock dc maximum current draw for 12 car formation is 4kA;
- no special requirements for depots (new and old) or stabling of trains, including both temporary and permanent, have been included;
- this project will be required to modify and / or enhance elements of the SCADA system; and
- current Rules of the Route will remain unchanged.

Activities and milestones

Activity	**Output**	**Date**
Completion of GRIP 3	Identification of single option	June 2010
Project completion	Completion of infrastructure works (GRIP 6)	Oct. 2012, consistent with the Train Lengthening details in section 15.07 to 15.13

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 plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Southeastern December 2009 timetable SLC2 franchise commitments: St Pancras domestic service via High Speed One	174	St Pancras	11,000	5,800
Southeastern December 2009 timetable SLC2 franchise commitments: Victoria service change from 17tph to 16tph in high peak	-12	Victoria	-1,200	-1,200
Train lengthening to Victoria in CP4 within existing infrastructure capability constraints	4	Victoria	400	400
Train lengthening to Charing Cross / Cannon Street in CP4 within existing infrastructure capability constraints	30	London Bridge	5,200	4,400
Train lengthening infrastructure schemes: 12-car operations Sidcup line to Dartford	10	London Bridge	1,200	900
Train lengthening infrastructure schemes: 12-car operations Bexleyheath line to Dartford	12	London Bridge	1,400	1,200
Train lengthening infrastructure schemes: 12-car operations Greenwich line to Dartford	8	London Bridge	900	700
Train lengthening infrastructure schemes: 12-car operation Sevenoaks (via Hither Green) stopping services	10	London Bridge	1,200	900
Train lengthening infrastructure schemes: 12-car operations Hayes line	10	London Bridge	1,200	900
Train lengthening infrastructure schemes: 12-car operations Dartford to Gravesend	8	London Bridge	900	700
Train lengthening schemes (SDO assumed) 12-car operations: stopping services via Sole Street	8	Victoria	500	500
Train lengthening schemes (SDO assumed) 8-car operations: Maidstone East line	4	Victoria	200	200

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;
- introduction of High Speed domestic stock (including diversionary routes);
- freight (Class 92 diversionary route);
- East London Line;
- Crossrail;
- regenerative braking project;
- SCADA project;
- traction power supply renewals;
- separation of LUL power supply system; and
- LUL S stock introduction.

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 section 3 will be funded separately and take place in CP4 enabling additional growth. The Thameslink Programme will deliver significant elements of traction power supply improvements on Sussex routes;
- rolling stock configurations are as agreed and detailed in the southern DC traction power supply programme specification;
- rolling stock and the new configurations will be operating on existing power levels;
- no specific requirement to improvement 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;
- costs associated with train entry into service requirements such as safety case and system compatibility are not included;
- no additional requirements for depots (new and old) or stabling of trains, including both temporary and permanent, have been included;
- this project will be required to modify and / or enhance elements of the SCADA system; and
- current Rules of the Route will remain unchanged.

Activities and milestones

Activity	Output	Date
Completion of National Grid works	Works by others, required before Network Rail works	Dec. 2014
Commission into service new traction supplies from New Cross Grid	End of main project delivery phase	Sept. 2015
Completion of 66kV decommissioning	Removal of redundant infrastructure	Sept. 2016
Project close-out (GRIP 8)	Project completion	Dec. 2016

Project definition: Route 2 – power supply enhancements

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans. The below operational plan has been updated in light of Govia's winning franchise bid for South Central. Class 377 stock is assumed to be used for all services.

Assumed operational plan to meet HLOS capacity in CP4

Description	Approximate additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
London Bridge/East Croydon/ Norwood Jn to Victoria via Streatham Hill	12	Victoria/London Bridge	1089	1089
Sutton/Epsom Downs to Victoria via Norbury	18	Victoria	1634	1089
Horsham/ Epsom to Victoria via Hackbridge	10	Victoria	908	545
East Grinstead to Victoria/ LB via Clapham Jn Fast Lines and Sydenham fasts respectively	16	Victoria/ London Bridge	1815	1452
East Croydon/ West Croydon/ Epsom to London Bridge via Sydenham Slow Lines	10	London Bridge	1271	726

Scope of works
Traction power modelling has been completed with the enhanced train service. This has highlighted constraints in the existing network. The next stage is to complete constructability assessments to remove the constraint and to finalise the scope required.

	Description of Work
E&P Distribution - East Grinstead branch	
HV cable upgrade	30km of new 33kV feeders to replace existing 11kV feeders
Substations	4 -5 new substations
Electric track equipment	Impedance bonds changed to type 3

- The project is being developed and delivered progressively and hence there will be several packages of work of each area;
- the modelling is being completed progressively and will be a crucial feed into understanding the total cost and deliverability of works. All service changes assumed in the output section of the project as well as those detailed as significant interfaces have been included in the modelling specification; and
- although the modelling results are critical in understanding the scope of the project there is concurrent work being undertaken to understand the detailed requirements and funding of this project.

Significant interfaces
- Thameslink Programme;
- Wessex and Kent train lengthening;
- freight (Class 92 diversionary route);
- New Cross Grid enhancement;
- East London Line;
- West London Line;

- SCADA project;
- traction power supply renewals;
- separation of LUL power supply system; and
- LUL S stock introduction.

Key assumptions

- A capacity of 90.75 passengers per carriage has been assumed per class 377 vehicle;
- 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 section 3 will be funded separately and take place in CP4 enabling additional growth. The Thameslink Programme will deliver significant elements of traction power supply improvements on Sussex routes;
- rolling stock configurations are as agreed and detailed in the Southern DC traction power supply programme specification;
- rolling stock and the new configurations will be operating on existing power levels;
- no specific requirement to improvement 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;
- costs associated with train entry into service requirements such as safety case and system compatibility are not included;
- no additional requirements for depots (new and old) or stabling of trains, including both temporary and permanent, have been included;
- this project will be required to modify and / or enhance elements of the SCADA system; and
- current Rules of the Route will remain unchanged.

Activities and milestones

Activity	**Output**	**Date**
Completion of GRIP 3	Identification of single option	June 2010
Project completion	Completion of infrastructure works (GRIP 6)	Sept. 2011, consistent with the train lengthening details in section 15.06

Project definition: Route 3 – power supply enhancements

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Run all suburban trains at maximum length	12	London Waterloo	1,200	0
Run all mainline trains at maximum length	79	London Waterloo	8,000	1,200
10-car operation on all suburban services	140	London Waterloo	19,200	7,300

Scope of works
Traction power modelling has been completed with the enhanced train service. This has highlighted constraints in the existing network. The next stage is to complete constructability assessments to remove the constraint and to finalise the scope required.

Description of work	
E&P Distribution – Hounslow loop	
HV cable upgrade	Upgrade of 33kV feeders
Substations	4 - 6 substations enhancements
Electric Track Equipment	Impedance bonds changed to type 3 and some high current enhancement
E&P Distribution – Hounslow to Reading	
Grid supply enhancement	Staines
HV cable upgrade	Upgrade of 33kV feeders
Substations	7 - 9 substations enhancements
Electric Track Equipment	Impedance bonds changed to type 3
E&P Distribution – Wimbledon to Guildford via Woking	
HV cable upgrade	Upgrade of 33kV feeders
Substations	6 - 9 substations enhancements
Electric Track Equipment	Impedance bonds changed to type 3 and some high current enhancement
E&P Distribution – Hampton Court Junction to Guildford via Cobham	
HV cable upgrade	Upgrade of 33kV feeders
Substations	2 - 3 substations enhancements
Electric Track Equipment	Impedance bonds changed to type 3

Modelling of the services changes and the impact of other schemes (significant interfaces) is a critical element of the project. This work has been completed and there is an ongoing assessment as to the impact on the 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
- Thameslink Programme;
- Wessex train lengthening;
- Freight (Class 92 diversionary route);
- New Cross Grid enhancement
- East London Line
- West London Line
- SCADA project;
- traction power supply renewals;
- separation of LUL power supply system;
- LUL S stock introduction
- SWT diversionary routes;
- Farnham re-signalling; 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 Thameslink Programme and other schemes listed in section 3 will be funded separately and take place in CP4 enabling additional growth. The Thameslink Programme will deliver significant elements of traction power supply improvements on Sussex routes;
- rolling stock configurations are as agreed and detailed in the Southern DC traction power supply programme specification;
- rolling stock and the new configurations will be operating on existing power levels;
- no specific requirement to improvement 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;
- costs associated with train entry into service requirements such as safety case and system compatibility are not included;
- no additional requirements for depots (new and old) or stabling of trains, including both temporary and permanent, have been included;
- this project will be required to modify and / or enhance elements of the SCADA system; and
- current Rules of the Route will remain unchanged.

Activities and milestones

Activity	Output	Date
Completion of GRIP 3	Identification of single option	Sept. 2010
Project completion	Completion of infrastructure works (GRIP 6)	Dec. 2011, Dec. 2012 and Dec. 2013, consistent with the train lengthening details in section 15.04

Project definition: Route 5 – Power supply enhancements

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
WA 12-car operation on Liverpool St-Cambridge services	20	Liverpool Street	2,100	800
WA 12-car operation on Liverpool St-Stansted Airport services	36	Liverpool Street	4,900	1,600
WA Inner Peak strengthening	24	Liverpool Street	3,700	800

Scope of works

Volume	Location			
E&P distribution				
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 has been completed, work is ongoing to understand the impact on the scope, cost and deliverability of the 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 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 Traction Power Design National Specialist team will also identify what work will be required for Crossrail services in CP5, which could have an impact on works identified purely for West Anglia 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

Activity	**Output**	**Date**
Complete outline design	GRIP 4 designs suitable for tendering detailed design and implementation stage	Sept. 2010
Complete project implementation (GRIP 6)	Delivery of project requirements	Dec. 2011
Project close-out (GRIP 8)	Project completion	March 2012

Project Definition: Route 6 – Power supply enhancements

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Thameside 12-car running on main line	20	Fenchurch Street	2,400	1,600
Thameside 12-car running on Tilbury Loop	28	Fenchurch Street	3,200	2,000

Scope of works

Supply Point	Works
West Ham	Increase Firm Supply Capacity (FSC) to 14 MVA
Barking	Provision of motor switches
Southend Central	Increase FSC to 14MVA

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
- EDF agreement to the proposed firm supply capacity increase is obtained;
- 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	Date
Complete outline design	GRIP 4 designs suitable for tendering detailed design and implementation stage	Sept. 2010
Complete project implementation (GRIP 6)	Delivery of project requirements	Dec. 2011
Project close-out (GRIP 8)	Project completion	March 2012

Project Definition: Route 7 – Power supply enhancements

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
GE two additional main line services	24	Liverpool Street	2,500	0
GE eight extended main line services to 12-car	32	Liverpool Street	3,000	0
GE one extended Southminster service to 12-car	4	Liverpool Street	400	400
GE alterations to rolling stock allocations on main line services	0	Liverpool Street	1,200	1,100
GE two additional peak electric line services	8	Liverpool Street	1,700	900

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 has been completed and the an assessment of the impact on scope, cost and deliverability of the works is ongoing. 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
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 Fambridge 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 Traction Power Design National Specialist team 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

Activity	**Output**	**Date**
Complete programme specification	Baseline project scope	Sept. 2010
Complete outline design	GRIP 4 designs suitable for tendering detailed design and implementation stage	Dec. 2010
Complete project implementation (GRIP 6)	Delivery of project requirements	Dec. 2011
Project close-out (GRIP 8)	Project completion	March 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, train interfaces, introduction of S Stock trains;
- South West Trains - agreement of commercial and technical arrangements and train interfaces in Wessex;
- South East Trains/Southern Trains - agreement of commercial and technical arrangements and train interfaces; and
- Airtrack.

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	Date
Agree technical and commercial arrangements with LUL and SWT	Arrangement established to allow project to proceed	Sept. 2010
Implementation authority	Authority to proceed to build project	Sept. 2011
Implementation commence	Work commenced	March 2012
Completion	Outputs delivered	March 2014

Southern capacity package

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plans are summarised in the tables included within this document and are described further 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.

Project definition: Gatwick Airport remodelling and passenger capacity scheme

There is a change control application in progress for this project

Network Rail's obligation

Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans. The below operational plan has been updated in light of Govia's winning franshise bid for South Central. Class 377 stock is assumed to be used for all services.

Assumed operational plan to meet HLOS capacity in CP4

Description	Approximate additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
London Bridge/East Croydon/ Norwood Jn to Victoria via Streatham Hill	12	Victoria/London Bridge	1089	1089
Sutton/Epsom Downs to Victoria via Norbury	18	Victoria	1634	1089
Horsham/ Epsom to Victoria via Hackbridge	10	Victoria	908	545
East Grinstead to Victoria/ LB via Clapham Jn Fast Lines and Sydenham fasts respectively	16	Victoria/ London Bridge	1815	1452
East Croydon/ West Croydon/ Epsom to London Bridge via Sydenham Slow Lines	10	London Bridge	1271	726

Scope of works

The scope of works will 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 will form the first phase of a fully integrated transportation facility which is intended for delivery in a future control period.

Outputs

The project will 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 will 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.

Significant interfaces

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

Key assumptions

- A capacity of 90.75 passengers per carriage has been assumed per class 377 vehicle;
- it is expected that core outputs will be deliverable within the limits of Network Rail land; and
- third party funding may be secured to enable an enhanced scope of works to be completed.

Activities and milestones

Activity	**Date**
Outline design complete (GRIP 4)	Sept. 2010
Design and build commencement (GRIP 5-8)	June 2010
Delivery timescale	Dec. 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 plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans. The below operational plan has been updated in light of Govia's winning franshise bid for South Central. Class 377 stock is assumed to be used for all services.

Assumed operational plan to meet HLOS capacity in CP4

Description	Approximate additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
London Bridge/East Croydon/ Norwood Jn to Victoria via Streatham Hill	12	Victoria/London Bridge	1089	1089
Sutton/Epsom Downs to Victoria via Norbury	18	Victoria	1634	1089
Horsham/ Epsom to Victoria via Hackbridge	10	Victoria	908	545
East Grinstead to Victoria/ LB via Clapham Jn Fast Lines and Sydenham fasts respectively	16	Victoria/ London Bridge	1815	1452
East Croydon/ West Croydon/ Epsom to London Bridge via Sydenham Slow Lines	10	London Bridge	1271	726

Scope of works
- Increased passenger circulation area on the concourse;
- substantially increased gateline capacity;
- improved passenger flows from the platforms to the concourse;
- increased passenger circulation space on the platforms; and
- reduced passenger numbers using the main station concourse and associated platform ramps.

The current preferred scheme, developed with stakeholders, will improve passenger flows through the main station building by remodelling the overall concourse. Platform accommodation will be removed to ensure improved circulation space. A mid-platform dispersal bridge will also be provided to allow entry / exit to the station laterally through third party lands to the east and west rather than solely through the main station building.

Network Rail has created an East Croydon Project group to work closely with key stakeholders such as the London Borough of Croydon.

Passive provision for an additional platform to the west of the station has been 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

- A capacity of 90.75 passengers per carriage has been assumed per class 377 vehicle; and
- it is assumed that external funding will be made available from London Borough of Croydon Section 106 contributions (circa £1-2 million) to further enhance the output of the scheme, the provision of the mid-platform dispersal bridge is dependent upon this. An element of TfL interchange funding may also be made available to improve the connections with bus and tram.

Activities and milestones

Activity	**Output**	**Date**
Complete GRIP 4	Single option development	Sept. 2010
Commence planning approvals		Sept. 2010
Complete planning approvals		June 2011
Complete GRIP 5	Detailed scheme design	Sept. 2011
Commence works on site		Dec. 2011
Complete site works		Dec. 2013

Project definition: Seven Sisters improved access

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
WA 12-car operation on Liverpool St-Cambridge services	20	Liverpool Street	2,100	800
WA 12-car operation on Liverpool St-Stansted Airport services	36	Liverpool Street	4,900	1,600
WA Inner peak strengthening	24	Liverpool Street	3,700	800

Scope of works
Further development work will give more detailed scope and level of works required. At Seven Sisters station work will include widening staircases, extending canopies and providing additional seating, lighting and 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

Activity	Output	Date
GRIP 1 – 3	Option selection	March 2013
GRIP 4 – 8	Project completion	March 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 3rd Up line;
- Finsbury Park to Alexandra Palace 3rd Down line improvements;
- ECML level crossings;
- Hitchin grade separation;
- York Holgate Junction 4th 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 scheme is necessary to support the operational plans:

- 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; and
- 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.

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 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.

An Infrastructure Planning Commission (IPC) application 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
W9 and W10 gauge clearance from Pyewipe Junction to Loversall Carr Junction will be funded from outside of this project.

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 IPC is required, this will impact on the timescales for the completion of the overall project.

Activities and milestones

Activity	Output	Date
Completion of GRIP 3	Critical step towards defining single option for implementation	June 2010
Bridge strengthening and track renewals work	Delivery of RA10 / 60mph and RA8 / 75mph to enable more freight trains to utilise this route	Dec. 2013
Remodelling of Werrington Junction area	Provision of a junction capable of handling traffic without detrimental impact on ECML performance	Dec. 2013 assuming no IPC required. If IPC 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	March 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.

Volume	**Peterborough**
Track	
Rail (km)	0.5 (new plain line) 2 (relay plain line)
S&C units	15
SEUs	50
OLE (km)	3
Platform lengthening (m)	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.

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 IPC is required; and
- Network and Station Change will be required;

Activities and milestones

Activity	Output	Date
GRIP 3	Single option report	June 2010
Review of business case	Benefits confirmed	Sept. 2010
Network Change approved	Regulatory consent obtained	Dec. 2011
Station Change approved	Regulatory consent obtained	Dec. 2011
GRIP 4	Outline design complete	March 2012
GRIP 5	Detailed design complete	Dec. 2012
GRIP 6	Construction works complete	March 2014
GRIP 7/8	Project close out	June 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 3rd 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 3rd line at Hornsey and Harringay.

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

Outputs
The scheme provides for a 3rd 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.

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 3rd line at 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 serving the Up Slow 2 to be capable of accommodating 6x20m vehicles of class 313 type rolling stock and the length of the existing platform face serving the Up Slow 1 to be retained as is;
- line speed improvements on the former Up goods line to be more comparable with the existing Up slow line speeds;
- reinstate 3rd Up platform at Finsbury Park for 12x20m vehicle trains to accommodate train types such as class 317/319/365 and future Thameslink trains;
- new crossover from Up Canonbury to Up Moorgate lines south of Finsbury Park station;
- 'reversal' of Up slow 2 / Up slow 1 crossover north of Finsbury Park station so that it provides access from Up slow 1 to Up Slow 2 instead; and

- consequent improvements to platform access from underpass to accommodate additional passenger numbers.

Significant interfaces
This project interfaces with Finsbury Park to Alexandra Palace 3rd 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**	**Date**
Network Change	Regulatory approval	March 2011
Station Change	Regulatory approval	March 2011
GRIP 4	Outline design	March 2011
GRIP 5-8 authority	Authority to progress GRIP 5-8	March 2011
GRIP 5	Detailed design	Dec. 2011
GRIP 6	Construction	Dec. 2013
GRIP 7	Handback	March 2014
GRIP 8	Project close out	June 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 3rd 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**
Track	
Rail (km)	0.5 (new PL)
Sleepers (km)	0.5
Ballast (km)	0.5
S&C units	22
Signalling	
SEUs	46
OLE (km)	1.6
Platform lengthening (m)	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.

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 3rd 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;
- 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

Activity	**Output**	**Date**
Network Change approved	Regulatory approval	March 2011
Station Change approved	Regulatory approval	March 2011
GRIP 4	Outline design	March 2011
GRIP 5-8 authority	Authority to progress GRIP 5-8	March 2011
GRIP 5	Detailed design	Dec. 2011
GRIP 6	Construction	Dec. 2013
GRIP 7	Handback	March 2014
GRIP 8	Project close out	June 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

- 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 has been completed resulting in risk ranking scores. Proposed options are now being 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 IPC 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

Activity	Output	Date
GRIP 4	Single options to be fully developed	March 2011
Planning issues	To be resolved	Sept. 2011
GRIP 5 – 8	Implementation	March 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 70mph 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 will 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 will 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 inquiry;
- Network Change will be required; and
- ROGS approval may be required.

Activities and milestones

Activity	Output	Date
Network Change approved	Regulatory approval	Sept. 2010
GRIP 4	Outline design complete	Dec. 2010
TWA order made	TWA order received	March 2011
GRIP 5	Detailed design complete	June 2012
GRIP 6	Construction works complete	March 2014
GRIP 7/8	Project close out complete	June 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 4th 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**
Track				
Rail (km)	0.8	0.10		0.9
Sleepers (km)	0.46	0.10		0.5
Ballast (km)	0.46	0.10		0.5
S&C units	3	2		5
Signalling				
SEUs	8	4	4	16
OLE				
OLE (km)	0.40	0.10		0.50

Outputs
The scheme will 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 will 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 IPC or land / property requirements; and
- TOCs and FOCs will sign up to a possession strategy.

Activities and milestones

Activity	Output	Date
GRIP 4 (Finish)		Sept. 2010
GRIP 5 (Finish)		Sept. 2011
GRIP 6 (Finish)		March 2012
GRIP 7 (Finish)	Specified outputs delivered	June 2012
GRIP 8 (Finish)		Sept. 2012

Project definition: Shaftholme Junction remodelling

Network Rail's obligation
Our obligation is to deliver this project in CP4.

Scope of works

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

A new non-electrified double track chord 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 will 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 IPC order. The project does not make any additional active or passive provisions - noting the project leaves in the existing Skellow to ECML chords 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 where 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.

The specific requirements of the project are:

- provision of a 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 3000 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 IPC 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

Activity	Output	Date
Submit IPC order		June 2011
Completer GRIP 4		Dec. 2011
IPC order comes into force		Dec. 2011
Complete GRIP 5		March 2012
Complete GRIP6		March 2014
Complete GRIP 7	Removal of freight trains going to and from the Skellow line off the ECML	March 2014
Complete GRIP 8		June 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

It has been agreed with the train operating company and DfT that this project is no longer required to sustain the operational plan.

Project definition: FCC train lengthening

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Additional 1 LDHS tph King's Cross to York/Lincoln	0	King's Cross	1600	500
Progressive lengthening of outer suburban services from 8-car to 12-car	36	King's Cross	3700	2100
TransPennine Express train lengthening	1	Newcastle	200	100

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, where necessary, and possible relocation of existing equipment.

Volume	Location	
	Royston	Letchworth
Total platform lengthening (m)	83	136

Project development will involve the OLE, signalling, track and civils disciplines. Station change will be required and 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 the other outer suburban stations that FCC and ourselves have identified as needing 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. FCC, as SFO at all affected stations, is a key stakeholder; and
- the IEP project has requested that the Royston Down extension is able to accommodate IEP services, it may be efficient to deliver IEP capability at the same time as the FCC platform lengthening scheme.

Key assumptions
This project assumes that the existing platforms at Arlesey, Biggleswade and Sandy are extended within the same timescales as this project and are funded by the Thameslink Programme. The Thameslink

Programme will also fund the extension of platforms at Finsbury Park at the end of CP4. We assume provision of additional outer suburban units for FCC through the 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 at GRIP 3. This stage has been extended to allow further analysis of the options for Royston Down, which include derogations and possible Network Change issues to be considered. 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	Date
GRIP 4	GRIP 4 design	June 2010
GRIP 5	Design	Dec. 2011
GRIP 6 - 8	Implementation and close out	June 2012

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 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 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

Activity	Output	Date
Defect removal and campaign changes (tunnels)	Removal of all identified defects and campaign changes within the wire runs	June 2010
Vegetation	Clearance of all known risk areas	Sept. 2010
Neutral sections	Delivery of 78 neutral sections	Dec. 2010
Defect removal and campaign changes	Removal of all identified defects and campaign changes within the wire runs	Dec. 2011

St Pancras - Sheffield linespeed improvements

There is a change control application in progress for this project.

Network Rail's obligation

Our obligation is to deliver this project in CP4.

Scope of works

Volumes	**Multiple locations between London and Sheffield**
Track	
Rail (km)	5
Sleepers (km)	3
Ballast (Tonnes)	30000
S&C units	8
Signalling	
New signals*	28
Civils	
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 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. 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.

The critical milestones relate to the access permissible to the railway and the ability to tie into the high output track renewals in 2009 and other renewals. In 2009, high output track renewals will realign the track to the new geometry wherever that can be achieved between 58 miles and 63.5 miles on the Bedford to Leicester section and between 37 miles and 48 miles on the Luton to Bedford section. The line speed in these sections will be increased when all the other asset clearance work is complete.

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

This project will improve the capability of the infrastructure to enable a minimum eight minute improvement in journey times between London and Sheffield for services calling at Leicester, Derby and Chesterfield. The primary outputs are to deliver the line speed increases detailed below. The project aims to increase line speeds where they are currently below the 125mph capability of the class 222 and HST trains operating over the route. The table shows sections of line (between the given mileages) where it has been identified that the current speed can be raised. 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 changes will result in reduced Sectional Running Times (SRTs) for class 222 and HST operated services between London, Nottingham, Derby and Sheffield. Subject to the timetable interaction between these services and other passenger and freight services on the route, the relevant SRT reductions (which will depend on calling patterns) will provide opportunities to improve some journey times for services

operating on the Midland Main Line between St Pancras International and Derby, Nottingham and Sheffield.

Intended linespeed improvements - Up Fast

Start		Finish		Existing Speed	Proposed Speed
Miles	Chains	Miles	Chains	mph	mph
115	31	115	7	100	110
115	7	109	41	110	120
108	62	108	29	100	110
108	29	106	41	110	120
106	22	104	45	110	120
104	45	101	58	110	125
101	58	100	42	110	120
100	42	100	0	90	105
100	0	99	18	90	110
99	0	98	73	15	40
98	45	98	28	50	80
97	13	95	74	80	100
95	47	92	50	100	110
92	50	92	36	95	100
91	67	84	24	100	110
83	10	82	62	60	85
82	62	82	40	75	85
82	40	82	0	75	100
82	0	79	30	100	110
79	30	78	73	100	105
77	75	73	0	100	110
73	15	72	35	90	105
72	35	72	19	90	100
71	1	69	70	100	110
69	70	66	65	100	120
66	65	66	17	100	110
66	17	65	72	90	105
65	72	65	27	90	105
65	27	65	11	65	85
64	75	64	23	80	85
63	20	58	20	110	125
56	38	55	80	110	115
55	80	42	52	110	125
42	52	42	23	100	115
42	23	42	19	100	125
42	19	30	79	110	125
30	17	29	57	90	100
29	57	28	78	95	100
25	0	24	64	105	110
24	64	20	77	110	125
20	77	20	30	100	105
19	21	18	38	100	110
18	38	12	70	110	125
12	6	11	38	100	110

Intended linespeed improvements – Down Fast

Start		Finish		Existing Speed	Proposed Speed
Miles	Chains	Miles	Chains	mph	mph
11	38	12	6	100	110
12	71	18	39	110	125
18	39	19	21	100	110
19	62	20	0	95	100
20	31	20	78	100	105
20	77	24	65	110	125
24	65	25	1	105	110
28	27	29	59	95	100
29	59	30	17	90	100
31	0	42	19	110	125
42	19	42	24	100	125
42	24	42	53	100	115
42	52	49	61	110	125
50	11	56	1	110	125
56	1	56	39	110	115
58	21	63	21	110	125
64	24	64	76	65	85
64	76	65	11	65	75
65	11	65	16	80	75
65	16	65	28	80	85
65	28	66	18	100	105
66	18	66	66	100	110
66	66	69	71	100	120
69	71	71	2	100	110
72	20	72	36	90	100
72	36	73	0	90	105
73	0	73	16	100	105
73	16	77	76	100	110
78	74	79	31	100	105
79	31	82	1	100	110
82	1	82	41	75	80
82	41	82	62	75	85
82	62	83	10	60	85
84	25	91	68	100	110
92	51	95	47	100	110
97	36	98	28	90	95
98	28	98	46	50	95
98	46	98	73	15	50
98	73	99	0	15	40
102	1	104	46	110	120
104	46	106	23	110	125
106	42	108	30	110	120
108	30	108	62	100	110
109	42	111	0	110	125
111	0	111	46	100	125
112	11	115	7	110	120
115	7	115	31	100	110
115	36	118	31	110	120

Significant interfaces
There is significant dependence with the track renewal programme and there are other interfaces with Thameslink Programme, East Midlands signalling renewal and the gauge clearance projects.

Key assumptions
- There will be synergies with renewal programmes;
- improved asset quality is not required - existing levels will be maintained;
- level crossing closures can be achieved; and
- existing rolling stock (HST and class 222) will be used.

Activities and milestones
Work is programmed around planned track renewals with two High Output Ballast Cleaning sites planned for 2009. The new linespeed geometry will be included for the first site and has been proposed for the design of second site. Remaining works will be programmed once the future track renewals programme has been agreed.

Activity	Output	Date
Realignment of track between Bedford and Leicester		Dec. 2009
Realignment of track between Luton and Bedford		Dec. 2009
First Package	Timetable change	Dec. 2011
Second Package	Timetable change	Dec. 2012
Third Package	Timetable change	Dec. 2013

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**
Track				
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
Signalling				
SEUs	3	1	6	2

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 Summer period of 2013.

Network Change will be required for this project, there maybe some elements that also require station change.

The scheme will split the existing platform 4 to create a wing platform and a 6-car bay platform. It will also allow operations from the west to use existing platform 6. Passive provision will be made for a new 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 project will maximise synergy with the East Midlands signalling renewal scheme.

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	Date
GRIP 4	Development of a single option	June 2011
GRIP 5-8	Authority granted	June 2011
Start on site		Sept. 2011
Civils complete*		Dec. 2012
Signalling installation complete*		June 2013
Blockade starts		July 2013
GRIP 6 completion	Commissioning	Aug. 2013
GRIP 7		Sept 2014

***** pre-blockade works only.

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 assumed with train operators to deliver HLOS capacity metrics. The assumed operational plans are summarised in this document and described further 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 - South Ruislip loop;
- Route 17 - train lengthening; and
- Route 19 - East Midlands train lengthening.

Project definition: Bromsgrove electrification

Network Rail's obligation
Our obligation is to deliver the scheme in CP4.

Scope of works
A High Level Options Assessment report (GRIP 2) has been produced detailing the scope required for this project. This includes the following work to be done:

- extension of electrification from Barnt Green (51m 67ch) to Bromsgrove (56m 00ch);
- the existing signalling equipment between Barnt Green (51m 67ch) and Bromsgrove (56m 00ch) requires immunisation works which will result in a complete signalling renewal and control transfer;
- permanent way works at the site of a re-located Bromsgrove station to provide adequate infrastructure to turn back trains; and
- five over bridges between Barnt Green and Bromsgrove have been identified for either bridge reconstruction or track lowering and are being examined due to insufficient clearance for electrification.

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 and may well be delivered by Network Rail, there are opportunities for efficiencies in adopting an integrated approach. The station relocation is necessary for electrification and is required as soon as possible in order to alleviate the overcrowding on services to/from Birmingham and to meet demand. A staged strategy for both schemes could be of benefit to 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. The additional services offer a significantly enhanced frequency for passengers in Bromsgrove and further improvements in journey times between Bromsgrove and the intermediate locations e.g. Birmingham University.

Significant interfaces
- Bromsgrove station re-location. This is a third party enhancement that is now a pre-requisite of the extension of the Cross City line to Bromsgrove, to provide the opportunity to install turn back facilities. 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 track work cannot be provided at the current site. Options for an efficient layout of the new station are being developed. Funding for the new station may require business case justification for some or all of the funding streams.
- 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;
- 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;
- other committed journey time improvements;
- Seven Day Railway opportunities; 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 facilities to turn back trains. The additional track work and signalling required to operate the turn back will be provided under this project.

The project will take in to account our commitments to network-wide performance improvements, further improvements to passenger journey times for long distance services and longer term freight growth.

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.

Activity	**Output**	**Date**
Start GRIP 4	Start development of single option	Sept. 2010
Station re-location GRIP 4 final option	Agree final option with partners	June 2010
Station re-location	Completion of station relocation in interim layout	Dec. 2011*
Start GRIP 5	Start detailed design	June 2011
GRIP 5-8 contracting	Award contract to preferred bidder	Dec. 2011
GRIP 6 construction	Start on site	March 2012
GRIP 6 commissioning	Construction completed	Dec. 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 in CP4.

Scope of works
Improving capacity on the Redditch branch has been examined to GRIP 2 and current options include:

- provision of a passing loop between Alvechurch and Redditch or ¾ mile of additional track from Redditch towards Barnt Green;
- additional platform face at Redditch; and
- removal of the footpath level crossing at Alvechurch to improve line speed and safety.

Most of this work will fall within Network Rail's Permitted Development rights. However, the additional platform and additional track (passing loop or ¾ mile track at Redditch) will require additional land purchase. 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 will be required in addition to previously owned railway land which has been sold and developed as residential.

Obtaining the above required amount of additional land may result in a Compulsory Purchase Order (CPO) under the transport and works act. This may dictate which option is most feasible. 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 (creating a standard 20 minute interval), from the current two trains to three trains an hour between Barnt Green and Redditch.

The most likely option to achieve three trains an hour is an additional platform at Redditch station. The extra platform and associated infrastructure is 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. The electrification to Bromsgrove and Redditch Branch Enhancement 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;
- Seven Day Railway opportunities;
- 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 3- and 6-car formations.

The project will take in to account our commitments to network-wide performance improvements, further improvements to passenger journey times for long distance services and longer term freight growth.

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.

Activity	Output	Date
Start GRIP 4	Start development of single option	June 2010
Start GRIP 5	Start detailed design	March 2011
GRIP 5-8 contracting	Contract awarded to preferred bidder	June 2011
GRIP 6 construction	Start on site	Sept. 2011
GRIP 6 commissioning	Construction completed	Dec. 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
The proposed project is one element of the wider Evergreen 3 project which aims to deliver the 100 minute journey time objective between the West Midlands and London Marylebone. This particular project focuses on raising the line speed at Aynho Junction (between Banbury and Bicester) in both directions. In the Up direction (towards London) the line speed will be increased from 60mph to 90mph and in the Down direction (towards the West Midlands) the junction speed will be increased from 40mph to 85mph. It is likely that the signalling and track elements will be separately managed by DB Regio UK Ltd as part of their Evergreen 3 project.

Outputs
The primary output of the project is to improve journey times between Reading / London Marylebone and central Birmingham.

The principal train operators along the route (CrossCountry, Chiltern Railways and WSMR) have wider aspirations to reduce overall journey times between key destinations. CrossCountry aims to reduce overall journey times between Birmingham and Thames Valley; Chiltern Railways 100 minutes from London Marylebone to Birmingham Moor Street; WSMR 2 hours 30 minutes between London Marylebone and Telford Central. These aspirations will be achieved by improved line speed increases, rolling stock changes and timetable interventions.

Our initial analysis indicates that the infrastructure intervention will contribute between 1 and 1.5 minutes journey time reduction towards the overall achievement of the 100 minute journey time objective between the West Midlands and Marylebone.

Reliability of the asset is essential to ensure a robust service, and the project must therefore consider current weaknesses in the civils and track assets which would prevent this reliability from being realised.

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.

Current territory renewals funding would be used to supplement that provided by Chiltern Railways and Network Rail to enable the PSR to be raised. To deliver this project, additional third party funding contribution is required.

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.

A principal assumption is that the 75mph Permanent Speed Restriction north of the former Fenny Compton Signal Box location (96m to 97 ¼ m) would be removed to recover valuable time from the current journey time. Line-speeds on approach to this section are between 90mph and 95mph EPS, but substantial further work is required to provide support to the embankment earthworks if the reduction in journey time is to be realised.

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.

Activity	Output	Date
Commence GRIP 5 – 8	Authority approved	June 2010
Construction starts	Start on site	Sept. 2010
Completion (GRIP 8)	Project commissioned	Dec. 2011

Project Definition: Route 16 – South Ruislip Loop

Network Rail's Obligation
Our obligation is to ensure the delivery of the necessary infrastructure to facilitate the operational plan with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below. Also to asset protect the works as detailed below as part of Chilterns Railways Evergreen 3 project.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700-0959 capacity impact	0800-0859 capacity impact
South Ruislip loop	20	Marylebone	2366	709

Scope of works
This project focuses on providing increased capacity through the provision of a new loop at South Ruislip, to include:

- a new junction at Northolt Park station;
- a new 100mph down line between Northolt Junction and South Ruislip (0m 70ch NAJ1 to 0m 35ch NAJ2);
- retention of the existing down line as a loop for stopping trains; and
- revised connections and facing crossover for access to the West Waste terminal and the route to Paddington.

It is likely that the signalling and track elements will be separately managed by DB Regio UK Ltd as part of their Evergreen 3 project.

The proposed project is one element of the wider Evergreen 3 project which aims to deliver the 100 minute journey time objective between the West Midlands and London Marylebone.

Outputs
The primary output of this project is to increase passenger capacity into London Marylebone during the morning peak hours of 0700-0959.

The scheme will enable a timetable recast so that calls at stations between London and Gerrards Cross can be concentrated into revised and additional London to Gerrards Cross inner suburban trains. These services will be looped to allow faster services to overtake at West Ruislip in the morning peak towards London, and in the new loop provided at South Ruislip in the evening peak. The benefits of the new timetable structure comprise enhanced capacity provision for key markets such as Beaconsfield, High Wycombe, Haddenham & Thame and Bicester, consequent from the concentration of inner stops proposed. The new layout is also linked to the wider Evergreen 3 proposals which include significant linespeed enhancements.

The scheme is expected to facilitate an additional 20 vehicle arrivals at London Marylebone in the 3 hour peak, contributing to the HLOS metrics. This assumption is supported by detailed timetable development work that has been undertaken as part of the wider Evergreen 3 project.

Line capacity is also created north of South Ruislip by providing the loop, which will benefit many markets on the Chiltern route.

Significant interfaces
It is intended that the installation and commissioning of the loop at South Ruislip, together with its associated signalling alterations, will be delivered as an integral part of Project Evergreen 3, the large scale upgrade of the railway infrastructure between London and Aynho Junction, sponsored and delivered by Chiltern Railways as a third party enhancement. In order to secure efficiency in design and construction resources, the works at South Ruislip will be included in Chiltern Railways' main design and construction contract, and as a consequence timescales for the implementation will be linked to the overall programme for the Evergreen 3 works.

Key assumptions

- Chiltern Railways UK will deliver this scheme as part of their larger Evergreen 3 proposals;
- Chiltern Railways will progress Project Evergreen 3 in accordance with their current programme and funding plan; and
- in the event that Project Evergreen 3 does not progress, the South Ruislip loop still has the ability to deliver both capacity and journey time benefits.

Activities and milestones

Activity	Output	Date
Commence GRIP 5-8	Commence detailed design	May 2010
Construction starts	(Evergreen 3 project)	May 2010
Completion (GRIP 8)	(Evergreen 3 project)	Dec. 2011

Dates above are based on current expected Evergreen 3 programme timescales.

Project definition: Route 17 - train lengthening

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The agreed operational plans are described in the route plans.

HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
West Coast intercity train lengthening	(Shown under Route 18)	Birmingham	2,200	700
Train lengthening on Birmingham suburban services	65	Birmingham	10,200	7,500

Scope of works
The scope reflects agreements with the train operators and other stakeholders.

Achieving the capacity targets as detailed within the High Level Output Statement requires the Train Operator's to deploy additional rolling stock. The preferred method for deploying extra stock will be achieved through operating longer train services; as agreed in the Operators' 'Operational Plans'. Accommodating longer rolling stock formations requires various enabling works at the stations detailed below.

Corridor	Rolling stock	Stations	Tranche	Platforms
Stourbridge	DMU Class 150, 170 and class 172 type units in formations no greater than 6 vehicles.	Droitwich Spa	2	1, 2
		Kidderminster	2	1, 2
		Lye**	2	1, 2
		Langley Green	2	1, 2
		Cradley Heath	2	1, 2
Stratford on Avon	DMU Operational Class 150 and class 172 type units in formation no greater than 6 vehicles.	Wythall	1	1, 2
		Spring Road***	2	1, 2
		Whitlocks End	1	1, 2
		Yardley Wood	1	1, 2
Leamington	DMU Operational Class 150 and class 172 type units in formation no greater than 6 vehicles.	Widney Manor	1	1, 2
		Small Heath	2	3, 4
Derby	DMU Operational Class 170 type units in formations of 2, 3, 4, and 5.	Wilnecote*	2	1, 2
Coventry	EMU Operational Class 323, 350 and a likely new build type unit in formations on no greater than 8 vehicles.	Hampton-in-Arden	2	1, 2
Cannock	DMU Operational Class 170 type units in formations no greater than 4 vehicles.	Hednesford	2	1
		Rugeley Trent Valley	2	1

* or SDO, subject to an agreed Operational Plan
** or SDO 6 car, 5 car platforms
*** or SDO 6 car, 5 platforms

Outputs
The output requirements are to provide interventions to enable longer passenger trains to operate on the above routes. Platform lengthening is one way of achieving requirements for longer trains with other methods including selective door opening (SDO).

Outputs requirements for the corridors are:

- Stourbridge 6x23m car capability;
- Stratford 6x23m car capability;
- Leamington 6x23m car capability;
- Derby 4x23m car capability;
- Coventry 8x23m car capability;
- Cannock 4x23m car capability.

Significant interfaces

- Introduction of new rolling stock;
- NSIP;
- West Midlands resignalling programme;
- West Midlands & Chilterns RUS recommendations; and
- East Midlands platform lengthening

Key assumptions

The additional rolling stock is delivered to the agreed timescales and the stations below will operate using SDO.

Corridor	Rolling stock	Stations	Platforms
Stourbridge	Class 150 and new build of suburban diesel unit (Class 172)	Hagley	1, 2
		Blakedown	1, 2
		Lye (6 car SDO) 5-car platform	1, 2
Stratford	Class 170 DMU to 6 car formations	Wilmcote	1, 2
		Wooton Wawen	1, 2
		The Lakes	1, 2
		Earlswood	1, 2
		Wood End	1, 2
		Spring Road (6 car SDO) 5-car platform	1, 2
Leamington	Class 170 DMUs up to 6 car formations	Hatton	1, 2, 3
		Lapworth	1

Activities and milestones

Activity	Output	Date
Start GRIP 4 Tranche 1	Start development of single option development	Mar. 2010
Start GRIP 4 Tranche 2	Start development of single option development	Sept. 2010
Start GRIP 5 Tranche 1	Start detail design	Dec. 2010
Start GRIP 5 Tranche 2	Start detail design	Feb. 2011
GRIP 6 construction Tranche 1	Start on site	Mar. 2011
GRIP 6 construction Tranche 2	Start on site	July 2011
GRIP 8 commissioning Tranche 1	Platform scheme implemented	Dec. 2013
GRIP 8 commisioning Tranche 2	Platform scheme implemented	Dec. 2013

Project definition: East Midlands train lengthening

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Lengthening of East Midlands Trains and Cross Country trains	6	Leicester	612	510
Lengthening of East Midlands Trains	10	Nottingham	1170	936

Scope of works
The project will deliver:

- Lengthening of platforms 1 and 2 at Loughborough to accommodate 10 x 23 metre class 222 vehicles. In addition to the platforms this will require the removal of a turnout and sidings and alteration to the platform starting signal;
- Lengthening of platform 2 at Stansted airport to accommodate 4 x 23 metre class 170 vehicles;
- The fitment of Cross Country Class 170/1 DMU's with selective door opening (SDO). This will allow four car trains to operate on the Birmingham to Stansted Airport route.

The maximum potential platform lengthening at Loughborough and Stansted Airport is shown in the table below.

Volume	Location	
	Loughborough P1 and 2	Stansted P2
Platform lengthening (m)	235	97

Loughborough platform extensions are currently authorised to GRIP 4. Stansted platform 2 is currently authorised to GRIP 3. Cross Country Class 170 units SDO fitment is authorised to GRIP 4.

Outputs
This scheme will provide additional carrying capacity on East Midlands routes by operating longer passenger trains. This will require platform lengthening to accommodate 10x23m (class 222) vehicle trains at Loughborough and 4x23m (class 170) vehicle trains at Stansted Airport. In the case of Loughborough, capacity currently exists for 4 or 5 car trains, but any longer is unavailable as they are not on the platform. The types of trains that service Loughborough do not have gangways between units for passengers to walk through the train. Currently, any train that cannot be accessed from the platform have many spare seats available. This project will allow the full passenger carrying capacity of all trains stopping at Loughborough to be utilised.

Significant interfaces
This project interfaces with the National Stations Improvement Programme and is dependent on the access for All footbridge at Loughborough for the removal of the station barrow crossing.
It also interfaces with the [platform 1 extension at Stansted Airport, which is being delivered by Network Rail East Anglia.

Key assumptions
- Civils, track engineering and signalling works required;
- it is assumed that East Midlands Trains will run up to 10-cars at Loughborough and CrossCountry will run up to 4-car on Birmingham to Stansted route with SDO.

Activities and milestones profile

(Loughborough platform extension)

Activity	Output	Date
GRIP 4 commencement	Single option development	Dec. 2009
GRIP 5-8	Detailed design and construction	June 2011
GRIP 6 completion	Project operational	March 2012
GRIP 8 completion	Project close out	March 2012

(Stansted Airport)

Activity	Output	Date
GRIP 4 commencement	Single option development	Dec. 2009
GRIP 5-8	Detailed design and construction	Dec. 2011

(Class 170 SDO)

Activity	Output	Date
GRIP 4 commencement	Single option development	May 2010
GRIP 5-8	Detailed design and construction	Aug. 2010
GRIP 6 completion	Project operational	Dec. 2010
GRIP 8 completion	Project close out	Jan. 2011

Northern urban centres - Yorkshire

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plans are summarised in this document and described further in the route plans.

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

- additional stabling and servicing in the Huddersfield and Skipton areas to accommodate up to 34 and 16 (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; and
- additional stabling and servicing at Ickles in the Sheffield area to accommodate up to 25 additional vehicles per night for Northern Rail as part of the DfT Rolling Stock Strategy.

The interventions described in this section remain based on the assumptions made in earlier documents regarding the quantum and deployment of additional rolling stock. There is yet no certainty, in terms of agreement between DfT and its franchised train operators, of the actual infrastructure requirements. We therefore plan to prioritise on the basis of discussions held with train operators that have identified those interventions most likely required to deliver an increase in capacity.

Project definition: Capacity improvements (Leeds area)

We have made limited progress on the development of the project as the rolling stock plan, which we assumed would be published in July 2009, has not yet been agreed and we are therefore not yet able to develop a revised plan for these programmes. We will continue to work with DfT and our customers to identify the most appropriate infrastructure interventions and will update our plan when the requirements for the project are determined.

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Northern Rail / TransPennine Express train lengthening and additional services	112	Leeds	12100	6500
Northern Rail / TransPennine Express train lengthening and additional services	13	Sheffield	1600	1300

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. On some corridors additional shuttle services over the section of route where crowding occurs are proposed as these make better use of rolling stock.

We have examined a number of options to improve platform capacity at Leeds to accommodate the longer and additional services that terminate / start there. The preferred option is joining platforms 13 and 14 to provide an additional through platform and thereby allow platform 15 to be used mainly as a long turnback platform.

Other works are to include new turnback facilities, clear of the running lines, at Horsforth (4x23m vehicles) and Micklefield (6x23m vehicles). The latter may require the existing Micklefield station to be relocated. To allow for growth beyond CP4 the turnbacks will have provision to allow formations longer than necessary for CP4 train formations.

Scope could 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 but this is subject to clarification of Northern Rail's operational plan. Also two additional signal sections between Harrogate and Horsforth (in each direction) are being provided to free up capacity for the Horsforth to Leeds shuttles.

The proposed scope of works includes new and enhanced stabling and servicing facilities at Skipton and in the Huddersfield area to accommodate circa up to 16 and 34 (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). The exact number will be determined once Northern Rail's operational plan is confirmed.

Platform lengthening scope is as follows:

- the development work covers understanding the requirements to extend existing station platforms as shown below. This will involve mainly civil engineering, however some signalling and permanent way work will be necessary at some locations; and
- the work only accommodates the longest length train to call at these stations to meet CP4 HLOS growth, so additional passive provision has not been considered.

Corridor	Stations	Number of platforms
Skipton – Leeds	Cononley	2
	Steeton & Silsden	2
	Crossflatts	2
	Bingley	2
	Saltaire	2
	Shipley	2
Ikley-Leeds	Ben Rhydding	2
	Burley-in-Wharfedale	2
	Menston	2
	Guiseley	2
Selby-Leeds	South Milford	2
	Micklefield	See note *
	East Garforth	2
Knottingley-Glasshaughton	Knottingley	2
	Pontefract Monkhill	2
Wakefield Kirkgate - Castleford- Leeds	Wakefield Kirkgate	1
	Normanton	2
	Castleford	1
	Woodlesford	1
Stalybridge-Huddersfield	Mossley	2
	Marsden	3
	Slaithwaite	2
Brighouse-Leeds	Mirfield	2
	Ravensthorpe	2
	Cottingley	2
Doncaster-Leeds	South Emsall	2
	Fitzwilliam	2
	Sandall	2
	Outwood	2

* Micklefield station is relocated to provide the turnback (see above) and the new station will have three 6 x 23m platforms, (2 through and 1 turnback)

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 Skipton and Huddersfield Hillhouse, the latter is subject to the successful release of the Strategic Freight Site; and
- works involving signalling and permanent way works on the main network, and permanent way, signalling, civil engineering and plant works in the internal depot facility.

Outputs
The strategy for each corridor can be seen below.

Corridor	Length / rolling stock types
Skipton – Leeds	6 x23m Class 14X, 15X, 17X, 321, 333, 35X
Ikley-Leeds	6 x23m Class 14X, 15X, 17X, 321, 333, 35X
Selby-Leeds	6 x 23m, Class 14X, 15X, 17X, 18X, 35X
Knottingley-Glasshaughton	4 x 23m Class 14X, 15X, 17X, 35X
Wakefield Kirkgate - Castleford- Leeds	4 x23m Class 14X, 15X, 17X, 35X
Stalybridge-Huddersfield	4 x 23m Class 14X, 15X, 17X, 35X
Brighouse-Leeds	4 x 23m Class 14X, 15X, 17X, 35X
Doncaster-Leeds	4 x 23m Class 14X, 15X, 17X, 321, 333, 35X

Significant interfaces
- Interfaces with a potential Regional Funding Allocation 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 circa 140 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.

The Northern Rail operational plan confirms that the infrastructure schemes above are required, and is agreed by July 2009.

It is assumed that infrastructure works are not required at the below stations.

Corridor	Stations
Skipton – Leeds	Skipton Keighley
Ikley-Leeds	Ilkley
Selby-Leeds	Selby Garforth Crossgates
Knottingley-Glasshaughton	Glasshaughton
Stalybridge-Huddersfield	Greenfield
Brighouse-Leeds	Brighouse Dewsbury Batley Morley Wakefield Westgate

Activities and milestones

Activity	Output	Date
Stabling GRIP4	Complete outline design	Dec. 2010*
Stabling GRIP 4	Complete consents	March 2011
Stabling GRIP 5-6	Complete detailed design and construction	Dec. 2012
Stabling GRIP 7	Complete handback	March 2013
Platform lengthening GRIP4	Complete outline design	Sept. 2010
Platform lengthening GRIP 5-6	Complete detailed design and construction	March 2013
Platform lengthening GRIP 7	Complete handback	June 2013
Horsforth Turnback and additional signals GRIP 4	Complete outline design	Sept. 2010
Horsforth Turnback and additional signals GRIP 5-6	Complete detailed design and construction	June 2012
Horsforth Turnback and additional signals GRIP 7	Complete handback	Sept. 2012
Remainder of schemes GRIP 4-8	Complete outline design, detailed design and construction	March 2013 – March 2014

* The critical milestones are to develop and deliver the depot facilities by early / mid CP4 (i.e. approximately 2011 - 2013).

Project definition: South Yorkshire - train lengthening

We have made limited progress on the development of the project as the rolling stock plan, which we assumed would be published in July 2009, has not yet been agreed and we are therefore not yet able to develop a revised plan for these programmes. We will continue to work with DfT and our customers to identify the most appropriate infrastructure interventions and will update our plan when the requirements for the project are determined.

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Northern Rail / TransPennine Express train lengthening and additional services	13	Sheffield	1600	1300

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	Stations	Number of platforms
Sheffield – Barnsley-Darton	Chapeltown	2
Sheffield-Moorthorpe	Rotherham Central	2
	Swinton	3
	Bolton-on-Dearne	2
	Goldthorpe	2
	Thurnscoe	2

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.

Corridor	Length / rolling stock types
Sheffield – Swinton - Moorthorpe	4 x23m Class 14x, 15x, 17x
Sheffield – Barnsley – Darton	4 x23m Class 14x, 15x, 17x

Significant interfaces
- Interfaces with platform extensions on the West Yorkshire sections of the routes above are covered by the capacity improvements (Leeds area) project; and
- the scheme will interface with the tram train trial (phase 1) at Chapeltown and could interface at Rotherham Central under phase 2 of the tram train trial.

Key assumptions
- Additional land purchase will not be required, but Station Change and internal property clearance will be needed;

- Northern Rail receive their full complement of additional vehicles under the DfT Rolling Stock Plan of circa an additional 140 vehicles and therefore Northern Rail's operational plan requires that some 4 car trains operate on the Sheffield to Leeds via Moorthorpe and via Barnsley routes to meet CP4 HLOS metrics;
- it is assumed that the rolling stock (both cascaded and new) is a mixture of Class 14X, 15X, and 17X;
- the rolling stock plan is agreed in July 2009; and
- we do not secure any operational derogation / local operational instruction to operate trains and flex stopping distances that exceed the current platform length except at Bolton-on Dearne.

Other platform extensions between Wakefield Kirkgate and Leeds and Fitzwilliam and Leeds are included in the West Yorkshire metrics

The stations shown below do not require infrastructure works.

Corridor	**Stations**
Sheffield – Barnsley-Darton	Meadowhall Elsecar Wombwell Barnsley Darton
Sheffield-Moorthorpe	Meadowhall Moorthorpe

Activities and milestones

Activity	**Output**	**Date**
GRIP 4	Outline design completion	Sept. 2010
GRIP 5-6	Detailed design and construction completion	March 2013
GRIP 7-8	Handback	June 2013

The programme reflects the lack of clarity in relation to the DfT / Northern Rail Rolling Stock Plan and the implications on the scope required to deliver the outputs.

Until we know exactly the Northern Rail Operational Plan it is difficult to determine which platforms are to be progressed and in what order of priority.

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 2011/12.

Project definition: South Yorkshire - stabling for Northern

We have made limited progress on the development of the project as the rolling stock plan, which we assumed would be published in July 2009, has not yet been agreed and we are therefore not yet able to develop a revised plan for these programmes. We will continue to work with DfT and our customers to identify the most appropriate infrastructure interventions and will update our plan when the requirements for the project are determined.

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Northern Rail / TransPennine Express train lengthening and additional services	13	Sheffield	1600	1300

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. Subject to the Strategic Freight Site being secured, Ickles Yard (north of Rotherham) is the preferred option.

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 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.

The facility will cater for Class 14X, 15X and 17X vehicles.

Significant interfaces
- There are potential interfaces with platform extensions on the South Yorkshire sections of the routes; and
- the scheme could interface 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;
- Northern Rail receive their full complement of additional vehicles under the DfT Rolling Stock Plan of circa 140 additional vehicles;
- the rolling stock plan is agreed in July 2009;
- Northern Rail's operational plan is confirmed to require a depot in South Yorkshire; and
- the types of vehicles to be cascaded / new build for the South Yorkshire area are Class 14X, 15X and 17X.

Activities and milestones

Activity	Output	Date
GRIP4	Complete outline design	Dec. 2010
GRIP 4	Complete consents	March 2011
GRIP 5 - 6	Complete detailed design and construction	Dec. 2012
GRIP 7	Complete handback	March 2013

The programme reflects the lack of clarity in relation to the DfT / Northern Rail Rolling Stock Plan and the implications on the scope required to deliver the outputs

Northern urban centres - Manchester

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plans assumed with train operators to deliver HLOS capacity metrics. The assumed operational plans are summarised in this document and described further 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 and modest infrastructure interventions between Hadfield – Glossop and Manchester Piccadilly.

The interventions described in this section remain based on the assumptions made in earlier documents regarding the quantum and deployment of additional rolling stock. There is yet no certainty, in terms of agreement between DfT and its franchised train operators, of the actual infrastructure requirements. We therefore plan to prioritise on the basis of discussions held with train operators that have identified those interventions most likely required to deliver an increase in capacity.

Project definition: Route 20 - platform lengthening

We have made limited progress on the development of the project as the rolling stock plan, which we assumed would be published in July 2009, has not yet been agreed and we are therefore not yet able to develop a revised plan for these programmes. We will continue to work with DfT and our customers to identify the most appropriate infrastructure interventions and will update our plan when the requirements for the project are determined.

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Pendolino lengthening	(Shown under Route 18)	Liverpool Lime Street	200	200
Pendolino lengthening	(Shown under Route 18)	Manchester Piccadilly	900	500
TPE lengthening	14	Manchester Piccadilly	2,300	1,000
Northern train lengthening	54	Manchester Piccadilly	6,100	5,800
Northern train lengthening	13	Liverpool Lime Street	1,300	1,300
TPE lengthening	1	Liverpool Lime Street	300	100

Scope of works
Achieving the capacity targets for Manchester and Liverpool, as detailed within the High Level Output Specification, requires the Train Operators to deploy additional rolling stock. The primary method for deploying extra stock will be through operating longer train services which is yet to be finalised in the Operators' Operational Plans. Accommodating longer rolling stock formations will require various infrastructure enabling works at the stations detailed in the outputs below.

The scope covers ten major routes equating to ninety platforms all requiring some type of enabling works. Some locations may require minimal works such as relocating platform end fences, whilst others will need signalling alterations, OLE modifications and platform lengthening. The final scope will be further understood at GRIP 3.

Outputs
The output requirements are to provide interventions to enable longer passenger trains to operate on the corridors below. Platform lengthening is one way of achieving requirements for longer trains with other methods including selective door opening (SDO). Following discussions with Northern Rail and TPE following output is agreed for commencing GRIP 3:

The overall operational platform strategy for each route can be seen over the page.

Corridor	Stations	Platforms	Output requirements
Atherton	Swinton	1,2	4 vehicles
	Walkden	1,2	
	Wigan Wallgate	3	
	New Lane	1,2	
	Bescar Lane	1,2	
	Orrell	1,2	
	Upholland	1,2	
	Rainford	1,2	
Bolton	Bromley Cross	1,2	4 vehicles
	Clifton	1,2	
	Darwen	1,2	
	Hall I'Th' Wood	1,2	
	Langho	1,2	
	Moses Gate	1,2	
	Ramsgreave and Wilpshire	1,2	
	Adlington	1,2	6 vehicles
	Blackrod	1,2	
	Bolton	1,2	
	Chorley	1,2	
	Kirkham and Wesham	1,2	
	Layton	1	
	Poulton-Le-Fylde	1,2	
	Cherry Tree	1,2	3 vehicles
	Pleasington	1,2	
	Bamber Bridge	1,2	
	Andsell & Fairhaven	1	2 vehicles
	Huncoat	1,2	
Calder Valley	Mills Hill	1,2	4 vehicles
CLC	Glazebrook	1,2	4 vehicles
	Padgate	1,2	
	Sankey	1,2	
	West Allerton	1,2,3	
	Humphrey Park	1,2	
Hadfield	Flowery Field	1,2	4 vehicles
St Helens	Bryn	1,2	4 vehicles
	Eccleston Park	1,2	
	Garswood	1,2	
	Thatto Heath	1,2	
Stockport	Chapel-en-le-Frith	1	4 vehicles
	Woodsmoor	1,2	
	Middlewood	1,2	
	Dove Holes	1,2	
	Ashley	2	
	Plumley	2	
	Greenbank	1,2	
	Cuddington	1,2	
	Delamere	1,2	
	Mouldsworth	1,2	

Significant interfaces
There are interfaces within Network Rail with other Manchester capacity proposals such as:

- route 20 stabling for Northern;
- DfT's Rolling Stock plan currently being developed for Northern Rail and TPE;
- route 20 capacity enhancements; and
- Salford Crescent station redevelopment.

The emerging Northern 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 vehicle lengths are required on all radial routes from Manchester;
- 6 x vehicle 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**	**Date**
GRIP 3	Completion	June 2010
GRIP 4	Completion	Sept. 2011
GRIP 5-6	Completion	Sept. 2013
GRIP 7	Commission	Dec. 2013

Project definition: Route 20 – stabling for Northern

We have made limited progress on the development of the project as the rolling stock plan, which we assumed would be published in July 2009, has not yet been agreed and we are therefore not yet able to develop a revised plan for these programmes. We will continue to work with DfT and our customers to identify the most appropriate infrastructure interventions and will update our plan when the requirements for the project are determined.

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Pendolino lengthening	(Shown under Route 18)	Liverpool Lime Street	200	200
Pendolino lengthening	(Shown under Route 18)	Manchester Piccadilly	900	500
TPE lengthening	14	Manchester Piccadilly	2,300	1,000
Northern train lengthening	54	Manchester Piccadilly	6,100	5,800
Northern train lengthening	13	Liverpool Lime Street	1,300	1,300
TPE lengthening	1	Liverpool Lime Street	300	100

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.

The number of additional vehicles to be provided to Northern Rail is currently not finalised and thus the train operator has been unable to confirm its requirements for additional stabling. It is anticipated that as soon as the operational plan is available, the scope of this project will be confirmed. However, in consultation with the Operator (Northern Rail) we have currently identified Guide Bridge area as a possible location.

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 and Blackpool North.

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 Rail rolling stock deployment strategy;
- Northern Rail 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; and
- Guide Bridge to be in use by December 2012.

Activities and milestones

Activity	**Output**	**Date**
GRIP 3	Feasibility completion	Dec. 2010
GRIP 4	Single option design completion	March 2012
GRIP 5-6	Detailed design and construction completion	Dec. 2012

Project definition: Salford Crescent station redevelopment

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Pendolino lengthening	(Shown under Route 18)	Liverpool Lime Street	200	200
Pendolino lengthening	(Shown under Route 18)	Manchester Piccadilly	900	500
TPE lengthening	14	Manchester Piccadilly	2,300	1,000
Northern train lengthening	54	Manchester Piccadilly	6,100	5,800
Northern train lengthening	13	Liverpool Lime Street	1,300	1,300
TPE lengthening	1	Liverpool Lime Street	300	100

Scope of works
Currently we are in discussions with the train operator and other stakeholders to finalise the options that deliver most benefit and, meets HLOS targets. The options consist of the following interventions:

The project is limited to the redevelopment of the station and possible minor remodelling of the track layout between Windsor Bridge north and south junctions. Station works may include:

- lengthening the current platforms to accommodate services 6 vehicles in length;
- slewing of tract to accommodate longer platforms and possible additional platforms;
- minor track modifications at Windsor Bridge Junction;
- some rationalisation of station building on the current platforms;
- possible widening and/or an additional platform; and
- modifications to the station access arrangements (e.g. DDA compliance).

Outputs
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.

Development work undertaken until now has proceeded on the basis of a project that would provide local development, regeneration and connectivity benefits as well as providing provision for further capacity improvements in future - in addition to meeting the HLOS targets for Manchester. This more significant project was identified as a result of stakeholder consultation and was predicated on additional funding from external sources. Partly as a result of the referendum on the Greater Manchester TIF proposal, that level of external funding is now not forthcoming. This project will now concentrate on the measures needed to meet the stated HLOS targets for Manchester, for which Salford Crescent station is currently a significant constraint. This is likely to include extending the current platforms to accommodate 6 car trains and measures to provide sufficient capacity on the platforms for growth in passenger numbers.

Significant interfaces
There are interfaces within Network Rail and other Manchester capacity 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) and University of Salford (in respect of redevelopment of their adjacent campus).

External funding is expected to contribute towards the development of a larger scheme than is required by Network Rail to meet the requirements set by these external stakeholders.

Key assumptions

- Train formation up to 6 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	Date
GRIP 3	Option selection report complete	Dec. 2010
GRIP 5	Detailed design complete	Sept. 2012
GRIP 6	Construction start	Sept. 2013
GRIP 6	Construction complete	Dec. 2014

Project definition: Route 20 capacity enhancements

We have made limited progress on the development of the project as the rolling stock plan, which we assumed would be published in July 2009, has not yet been agreed and we are therefore not yet able to develop a revised plan for these programmes. We will continue to work with DfT and our customers to identify the most appropriate infrastructure interventions and will update our plan when the requirements for the project are determined.

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Pendolino lengthening	(Shown under Route 18)	Liverpool Lime Street	200	200
Pendolino lengthening	(Shown under Route 18)	Manchester Piccadilly	900	500
TPE lengthening	14	Manchester Piccadilly	2,300	1,000
Northern train lengthening	54	Manchester Piccadilly	6,100	5,800
Northern train lengthening	13	Liverpool Lime Street	1,300	1,300
TPE lengthening	1	Liverpool Lime Street	300	100

Scope of works
The scope requires additional infrastructure to support both additions and the extensions of existing passenger services. The corridors identified for infrastructure interventions are as follows;

Hadfield corridor
- Raise the line speed between Dinting and Glossop and between Dinting and Hadfield to 50mph;
- raise the line speed between Guide Bridge to Dinting to 90mph (where possible); and
- replace all fixed distant signals to working distant signals.

The above interventions will facilitate the addition of another class 323 unit to be deployed in to the existing cycle.

Stalybridge Turnback
- Additional crossovers west side of Stalybridge station;
- additional bay platform on the west side of Stalybridge station;
- platform lighting and seating; and
- other track and signalling alterations.

The creation of a turnback facility on the Victoria side of Stalybridge station will allow some existing services that currently terminate at Manchester Victoria to be extended through to Stalybridge, supporting current terminating services between Manchester Victoria and Stalybridge. The above interventions will improve operational moves by eliminating the crossing of the up and down Guide Bridge lines and accommodating the loop lines, and improve onboard capacity between Stalybridge and Manchester by increased service frequency.

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.

The Hatfield Infrastructure intervention will facilitate 6 additional vehicle arrivals into Manchester Piccadilly during the 3 hour peak – subject to timetable paths available between Ardwick Junction and Manchester Piccadilly.

We anticipate that the north bay at Stalybridge would facilitate additional vehicle arrivals into Manchester Victoria - 12 vehicles in the 3 hour am peak and 10 vehicle departures in the pm peak. Additionally, the Stalybridge bay platform provides a conflict free turnback facility, allowing services the benefit to terminate avoiding main line.

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;
- Victoria station commercial development; and
- Salford Crescent remodelling.

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:

- DfT to finalise its rolling stock plan by July 2009;
- Northern Rail and TPE to define 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
Hadfield intervention

Activity	Output	Date
GRIP 1	Completion GRIP 1	March 2010
GRIP 2	Completion GRIP 2	Dec. 2010
GRIP 3	Feasibility and Capacity Modelling	Sept. 2011
GRIP 4	Completion GRIP 4	March 2013
GRIP 5 -8	Completion and Commission	March 2014

Stalybridge intervention

Activity	Output	Date
GRIP 4	Completion	Sept. 2010
GRIP 5	Completion GRIP 5	Sept. 2012
GRIP 6 - 8	Completion and commission	June 2013

Northern urban centres – Liverpool - Leeds linespeed improvements

Network Rail's obligation
Our obligation is to deliver this project in CP4.

Scope of works
The project scope is for track, signalling, structures and earthworks alterations to take place at locations between Leeds Station and Ardwick Junction for the route via Diggle tunnel and Liverpool Lime Street station to Manchester Oxford Road station via the Chat Moss route.

On completion of the GRIP 3 study, we expect the scope to become more defined and include:

- suggestive signalling alterations to accommodate higher line speeds;
- review of some restrictive signalling alterations;
- possible track realignments;
- track tamping and drainage works;
- gauge re-profiling; and
- timetable interventions.

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.

It is recognised that, achieving improved journey times will require both the defined infrastructure interventions, combined with an industry agreed timetabling intervention.

The line speed improvements will manifest as revised Sectional Running Times over the section between Liverpool Lime Street and Leeds. The scope of infrastructure and timetabling works required to achieve these time savings are currently being assessed.

Specific infrastructure interventions being examined include potential increased speeds, for example, Ardwick to Ashburys potentially restoring a 40/60 mph differential, Stalybridge to Diggle from 65 mph to 75mph, Huddersfield to Heaton Lodge 70 mph to 85 mph, Mirfield to Batley 60/75 mph to 80mph, Edge Hill to Astley from 75 mph to 90mph and Patricroft to Ordsall from 75mph to 90 mph.

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	Date
GRIP 3	Option selection report complete	June 2010
GRIP 4/5	Detailed design commences	Sept. 2010
GRIP 6	Staged implementation of line speed improvements commences	March 2011
GRIP 6	Construction complete	Dec. 2013
GRIP 8	Project complete	March 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 assumed with train operators to deliver HLOS capacity metrics. The assumed operational plans are summarised in this document and described further 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) - the Network Rail renewal of the Cardiff area signalling system.

Key assumptions
Cardiff Area Signalling Renewal (CASR) will be delivered to time.

Activities and milestones

Activity	Output	Date
Phase 1	Signalling commissioning. Valley Lines/Queen Street	December 2012
Permanent way works	New S&C and track to Queen Street platforms 0 and 4.	December 2012
Phase 2A/2B Barry / VOG	Predominantly a signalling commissioning	2A June 2013 2B September 2013
Phase 3	Permanent way - new S&C 70mph ladders at Longdyke Marshfield – Newtown signalling commissioning	June 2013
Phase 4A Cardiff Central platforms 4/6/7	Permanent way blockade with signalling commissioning	June 2014
Phase 4B Cardiff east/west and central	Major signalling commissioning and permanent way	June 2014
Phase 5 Leckwith-Llanharan	Predominantly a signalling commissioning	June 2015
Additional permanent way stages	Permanent way recoveries	March 2015
GRIP 6	Completion	September 2015
GRIP 7	Completion	September 2016
GRIP 8	Completion	December 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 June 2011;
- redoubling the single line track section between Moreton-in-Marsh and Evesham and also to the west of Evesham station by August 2011; and
- linespeed improvements.

Delivery Works comprise two principal elements:

- Enabling Works including a blockade of Chipping Campden Tunnel (completed in Summer 2009)
- The Main Commissioning to be delivered in 2 Phases:
    - Phase 1 Ascott-under-Wychwood – Charlbury: June 2011
    - Phase 2 Morton-in-Marsh – Evesham: August 2011

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 (completed October 2009);
- 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 North 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

Key assumptions
The project must be delivered prior to works for the Reading station area redevelopment project.

Activities and milestones profile:

Activity	Output	Date
GRIP 6	Enabling Works (including Chipping Campden Tunnel)	July – August 2009
GRIP 6	Main Works: Commencement	June 2010
GRIP 6	Main Works Phase 1: practical completion/commissioning between Charlbury and Ascot-under-Wychwood	June 2011
GRIP 6	Main Works Phase 2 – Practical compleion/commissioning between Morton-in-Marsh and Evesham	August 2011
GRIP 8	Project Completion	August 2012

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 project will enhance the linespeed on approximately 18 miles of track between Bristol Parkway and Gloucester and between Cheltenham and Birmingham. To be a cost effective programme the enhancement must piggyback on the planned high output S&C and conventional track renewals planned on the route during 2010/11 to 2012/13. In addition to achieving a line speed of 100 mph, the project will explore the possibility of raising the linespeed capability to 110 mph over approximately 30 miles in each direction, to be realised once relevant level crossing renewals are completed at the end of CP4 / early CP5 along with other relevant additional works that may be required.

Outputs
A line speed increase to 100 mph for the majority of the route, resulting in improved performance robustness, the ability to recover better from delays and running time improvements for the Bristol – Birmingham leg of the cross country network.

Significant interfaces
- Plain line and High Output track renewals programme 2010/11 through to 2012/13;
- S&C track renewal programme - maximising renewals work through the S&C renewal programme;
- seven day railway project – additional crossovers, improved track worker access points and enhancements to level crossings which would enable improved single line working opportunities;
- Bristol Parkway 4th platform - provision of an additional platform face abutting existing platform 2;
- interaction with the Bromsgrove station relocation project;
- interaction with Bromsgrove electrification and Redditch branch improvement;
- interaction with Birmingham Gateway project;
- 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 4th line; and
- Shaftholme Junction remodelling.

Key assumptions
Delivery of this project is dependent on the availability of High Output equipment programme.

Activities and milestones

Activity	Output	Date
GRIP 6	Start on site	Sept. 2010
Project completion		Dec. 2012

Works will be complete in time for the December 2012 timetable change, though some changes to linespeed may be possible beforehand, depending on the phasing and location of the renewals sites in each years' programme.

Project definition: Maidenhead and Twyford (relief lines)

Network Rail's obligation
Our obligation is to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver HLOS capacity metrics. The assumed operational plan is summarised in the table below and described further in the route plans.

Assumed operational plan to meet HLOS capacity in CP4

Description	Additional vehicles involved	Station served	0700 – 0959 capacity impact	0800 – 0859 capacity impact
Strengthening of Thames Valley services	53	Paddington	4100	1600
Strengthening of cross-Bristol services	12	Bristol Temple Meads	100	100

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

Activity	Date
Decision on project progression	June 2010

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
The objective of the Network Rail Works is to create the rail infrastructure to facilitate the following service pattern, whilst maintaining loading gauge and capacity for freight traffic (numbers stated are in each direction):

- 4tph Stratford to Richmond;
- 2tph Stratford to Camden Road (peak hours only);
- 2tph Stratford to Clapham Junction; and
- 2tph Clapham Junction to Willesden.

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)	Dec. 2010
Completion of construction, testing and commissioning (GRIP 6)	June 2011
Scheme handback (GRIP stage 7)	June 2011
Project close out (GRIP stage 8)	Sept. 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.

Scope of works

Volume	
Fibre Cabling (km)	665
GSM-R Sites (qty)	125

The project will 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 (NRCI).

The operational license for the National Radio Network (NRN) expires in 2012 for southern England (i.e. south of the 'Severn / Wash line') and in December 2015 for the remainder of the British Isles. Trackside GSM-R base transceiver equipment will be installed as required, together with fibre-optic connections to the Fixed Telecoms Network (FTN), thus providing (as a minimum) a level and quality of driver-signaller communication equivalent to the existing NRN service.

Planning approval will be required for all GSM-R sites under the 'Permitted Development Rights' process.

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.

Outputs
The output will be the provision of GSM-R coverage on freight-only branch lines.

Significant interfaces
The key interface is with the main FTN / GSM-R delivery programme.

Key assumptions

- All new infrastructure will be constructed and installed on land owned by Network Rail;
- the delivery rate of the substantive FTN/GSM-R programme shall be maintained;
- the scope volumes cited above assume that design rules applied elsewhere for the provision of radio coverage using GSM-R technology are also appropriate for freight-only branch lines: any viable relaxation of the design rules will be identified on a site-by-site basis during the project development phase and managed as programme efficiency; and
- where branch lines are part-privately owned, radio coverage to minimum operational standards will be extended only as far as the NRCI boundary.

Activities and milestones
With the exception of the developmental phase (GRIP stages 1 to 3) the project's activities and milestones will be structured in the same way as those of the main FTN/GSM-R programme.

- The 40 no. freight-only branch lines south of the 'Severn-Wash' line will be installed with GSM-R base station sub-system equipment and brought into operation by December 2012; and
- for all other sites (i.e. those north of the 'Severn-Wash' the number of completions is tabled below, broken out by work package milestones.

Cumulative quantity of 'northern' branch lines equipped and brought into use	**Date**
18	Sept. 2012
24	Dec. 2012
36	June 2013
52	June 2013
111	June 2013
154	July 2013

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.

Network electrification programme

Network Rail's obligation
Our obligation is to deliver this project in CP4.

Scope of works
On 23rd July 2009 the Department for Transport (DfT) published Britain's Transport Infrastructure: Rail Electrification, confirming government support for a programme of electrification. The projects supported, to be RAB funded, were the GWML (to Bristol, Oxford, Newbury and Swansea) and Liverpool – Manchester via the Chat Moss route.

On 26th October 2009 Network Rail published the Network RUS: Electrification Strategy, with a core strategy consisting of electrification of MML, GWML and two strategic infill schemes (Liverpool – Manchester and Gospel Oak – Barking).

A further DfT announcement on 14th December 2009 indicated support for electrification of the Lancashire Triangle, incorporating routes from Huyton – Wigan, Preston – Blackpool and Deal Street Junction to Euxton Junction. This was associated with an increase of the RAB funding mechanism. Taken together with the existing Liverpool - Manchester project, this now presents the opportunity for a rolling programme of electrification schemes in the North West (outlined below as North West Electrification)

Project definition: Great Western Main Line electrification

Network Rail's obligation
Our obligation is to develop the extension of electrification of the Great Western Main Line (GWML) from Maidenhead (the furthest extent of the Crossrail project) and to deliver the scope of works described below.

Scope of works
A Client Remit has been produced detailing the scope required for this project. This includes the extension of electrification on the core route as follows:

- from Maidenhead (ELR: MLN 24m 19ch) to Wootton Bassett Junction (83m 07ch);
- Wootton Bassett Junction (ELR: SWB 83m 07ch) to Patchway (112m 68ch);
- Patchway (ELR: BSW 5m 61ch) to Severn Tunnel Junction (16m 24ch);
- Severn Tunnel Junction (ELR: SWM2 / SWA 148m 43ch) to Swansea High Street (216m 07ch);
- Reading (ELR: BHL 36m 75ch) to Newbury (53m 06ch);
- Didcot (ELR: DCL 52m 66ch) to Oxford (63m 41ch);
- Swindon (ELR: MLN1 83m 07ch) to Bristol Temple Meads (119m 22ch);
- Stoke Gifford Junction (ELR: BSW / FEC 00m 00ch) to Bristol Temple Meads (5m 77ch).

The work will also include essential short connecting lines at junctions and depot access lines to facilitate maintenance and stabling of rolling stock. Private Siding connections will be costed separately and discussed with the funder and holder of the Private Siding Agreement.

Outputs
This project facilitates the further introduction of electric train service operation on the Great Western Main Line (GWML) between London and Oxford, Newbury, Bristol and Swansea.

Significant interfaces
- Crossrail. From 2017 the Crossrail scheme will deliver an electrified passenger train service linking the west of London to the east and southeast via new dedicated infrastructure through central London. Crossrail services will interweave with national train operating company services on Network Rail infrastructure north-east and west of London. Crossrail will provide an intensive service for stations in the western suburban area – Paddington to Heathrow Airport and Maidenhead.
- The Intercity Express Programme (IEP) is planned to introduce a fleet of electric and bi-mode Super Express Trains capable of 125mph on key business routes on the GWML from 2016.
- Reading Station Area Redevelopment will provide additional capacity and performance benefits for both the GWML and north-south routes with additional platforms, track layout reconfiguration and associated signalling alterations. The project is due to be completed in 2016.
- Western Mainline Signalling Renewal. The existing signalling equipment along much of the route requires immunisation works. The proposed timescales for electrification will drive amendments to the existing signalling renewal plan for the route.

Key assumptions
It is assumed that:

- Electrification of the main and relief lines between Airport Junction and Maidenhead will be provided by the Crossrail project. Electrification between Paddington Main Line station and Airport Junction already exists for Paddington to Heathrow services.
- Changes to the existing electrification between Paddington and Airport Junction that may be required for Super Express Train operations will be met by the Intercity Express Programme.
- Signalling renewal and immunisation work throughout the route will be undertaken in advance of electrification to provide electrification immune signalling.
- Electrification of the IEP depots will be included within the "train service provision" (TSP) contract by the DfT to support the IEP introduction.
- Delivery of electrification of the open routes between major junctions will be achieved by use of the application of modular techniques of construction and the deployment of rapid delivery systems, ie a factory train system. The techniques can be developed to enable electrification work to take place with the adjacent line open to traffic, with a six-hour productive shift.
- The Western Programme Integration Team will be established from 1st April 2010 to coordinate the access, possessions and programme integration issues across all the major Western programmes. A key role will be to integrate the various programmes to deliver the key outputs, for example operation of electric services to Swansea from December 2017.
- The electrification project will be able to obtain all relevant consents in a timely manner and without impacts on the project programme.

Activities and milestones
The DfT target is for electrification to be completed for electric train operation to Newbury, Oxford and Bristol by December 2016 and to Swansea by December 2017. A full programme, including implementation, will be developed and delivered as part of GRIP 3 outputs, with implementation likely in a number of different phases. This will include identification of further milestones for GRIP stages 4 – 8 for each of the phases of GWML electrification. Network Rail's specific commitments are as follows:

Activity	Output	Date
GRIP 2	GRIP 2 report	July 2010
GRIP 3	Single option selection	August 2011
GRIP 6	Completion of electrification works London – Newbury, Oxford and Bristol	To be confirmed at GRIP 3
GRIP 6	Completion of electrification works London – Swansea	To be confirmed at GRIP 3

Project definition: North West electrification

Network Rail's obligation
Our obligation is to develop and then deliver the scope of works described below.

Scope of works
A client remit has been produced detailing the scope required for this project.
This includes AC overhead electrification and associated power supplies for the following routes including all running lines and crossovers (except where indicated):

- Bootle Branch Jn – Earlestown East Jn (ELR: DSE)
- Earlestown West Jn – Earlestown South Jn (EEE)
- Newton-le-Willows Jn – Deal Street Jns (DSE)
- Parkside Jn – Lowton Jn (PJL)
- Ordsall Lane Jn – Castlefield Jn (COL)
- Deal Street Jns – Manchester Victoria East Jn (MVE1/MVM) including all 6 platforms at Manchester Victoria
- Deal Street Jns – Euxton Jn (MVE1/MVE2)
- Preston Fylde Jn – Blackpool North including platforms 1 to 8 at the latter (PBN)
- Huyton Jn – Springs Branch Jn (SBH1/SBH2/SBH3/SBH4)
- Ordsall Lane Jn – Windsor Bridge South Jn

Private Siding connections will be costed separately and discussed with the funder and holder of the Private Siding Agreement.

Other works will include signalling immunisation, track lowering and bridge reconstructions on the above routes, together with provision of power supplies.

Outputs
This project facilitates the introduction of electric train operation on passenger and freight services on the routes shown above. This project offers the opportunity to increase capacity, which would be realised by the introduction of electric units on a number of services currently operated by diesel units.

Significant interfaces

- Liverpool - Leeds – linespeed improvements.
- Gauge enhancement to W10, Bootle Branch – WCML via Huyton.
- Salford Crescent station redevelopment.
- Route 20 platform lengthening.
- Route 20 stabling for Northern. Alterations to the depot at Blackpool may be required to provide additional stabling capacity. Electrification of the route to Blackpool may now require electrification within the depot.
- Stalybridge remodelling (as part of renewals scheme). Extension of electrification from Manchester Victoria to Stalybridge will be examined as a potential specific further option.
- The Northern Hub proposes significant investment from 2014 in rail across Northern England, including some of the routes affected by the electrification project

Key assumptions
This project does not currently include the introduction of new rolling stock or route clearance for electric units. The introduction of electric rolling stock and any consequent infrastructure alterations or enhancement to these routes will be remitted and implemented by other projects.

This work will be capable of implementation within Network Rail's permitted development rights. If it is determined that additional powers require to be sought, for instance through an application to the Infrastructure Planning Commission, there would be an impact on the implementation programme.

Activities and milestones
The DfT target is for electrification to be completed as follows:

1. 2013: Liverpool - Manchester (via Chat Moss)
2. 2014: Huyton - Wigan
3. 2015: Preston - Blackpool
4. 2016: Manchester - Preston

The current programme assumption is that this project would be delivered in four phases. A full project programme, including implementation, will be developed and delivered as part of GRIP 3 outputs. The precise extent of the four phases, together with the target commissioning dates for each phase, will be determined as part of the GRIP 3 development. This will include identification of further milestones for GRIP 4 - 8 for each of the selected phases of North West Electrification. Network Rail's specific commitments are shown in the table below.

Activity	**Output**	**Date**
GRIP 2 for Liverpool - Manchester	GRIP 2 report	July 2010
GRIP 2 for the other routes in this programme	GRIP 2 report	January 2011
GRIP 3	Single option selection	September 2011
GRIP 6	Completion of electrification	To be confirmed at GRIP 3

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 Network 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 given 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 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.

Schemes that are being worked on from this fund are as follows:

- Grangemouth east facing freight connection;
- rail enhancements between Aberdeen and Inverness;
- further electrification of the rail network;
- rail enhancements between Aberdeen and the Central belt;
- G+SW line speed increases; and
- Rail enhancements on the Highland Main Line.

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 Network 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 1. A more detailed (usually quantitative) appraisal should be completed at the end of GRIP 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.

Schemes authorised to draw down from the fund are shown below and the table will be kept updated through the control period.

Schemes Grip 4 or above:	**Output**	**Target Delivery Date**
Grangemouth Branch Improvements	Freight Capability	2009/10
Larbert Aster TC replacement	Performance	2010/11
Langloan S&C renewal enhancement	Performance/Journey time	2010/11
Newbridge West Jn S&C renewal	Performance/Journey time	2010/11
Ladybank/Hilton Line speed improvements	Journey time	2010/11
Paisley Corridor Bi-directional signalling	Performance	2011/12
Schemes below Grip 4		
Hurlford PSR removal	Performance	2010/11
Dumfries Station Turnback Facility	Performance	2011/12
Laurencekirk New Loop Facility	Freight Capability	2011/12
Keith S&C renewal	Performance/Journey time	2012/13
Stirling Middle Jn S&C renewal	Performance/Journey time	2012/13
Midcalder Jn S&C renewal enhancements	Performance	2012/13
Glasgow South Suburban Signalling	Performance/Capacity	2012/13
Ladybank/Hilton Line speed improvements	Journey time	2013/14

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

- 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 station to be constructed at Caldercruix, but relocated from the position specified in the Act to a new location between Station Road and Main Street Caldercruix;
- new station to be constructed at Armadale in the location specified in the Act;
- new station to be constructed at Blackridge at OS reference points East 290618 and North 667076;
- 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 (but not Blackridge access road), where required, to be provided as follows at each station location:
    - Drumgelloch Station – 358 spaces;
    - Caldercruix Station – 169 spaces;
    - Blackridge Station - 54 spaces;
    - Armadale Station – 199 spaces;
    - Airdrie Station – no change;
    - Uphall Station – 170 additional spaces;
    - Bathgate Station – 400 spaces; and
    - Livingston North Station – amendments to existing car park layout
- passive provision will be made (so far as is reasonably practicable) for an additional station at Plains;
- 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;
- 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**
Commence blockade Airdrie station	17 July 10	17 July 10
Route available for driver training	20 Sep. 10	20 Sept. 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 16th February 2009.

Project definition: Paisley corridor improvements (PCI)

Introduction

On 17th September 2009, the Scottish Government announced the cancellation of the branch line element of the Glasgow Airport Rail Link/Paisley Corridor Resignalling (GARL/PCR) project but the intention that the main line works proceed as planned. These revised CP4 Delivery Plan pages serve to describe the works to be delivered, which has been renamed the Paisley Corridor Improvements (PCI) project.
The PCI project comprises, with one exception, what had been known as the Main Line works under the (GARL/PCR) project Delivery Plan, which was published by Network Rail in March 2009. This includes the works at Glasgow Central and Elderslie. The exception is the formation of a new junction near Paisley St James to connect the airport branch to the existing network, such works not being required under PCI. Also included in this revised Delivery Plan is development activity in relation to the options for future use of the additional capacity provided by the PCI works.

Key Outputs

- To provide railway infrastructure to support what was intended under GARL to be 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 (the "GARL Service"), such work to exclude any works to construct a branch line to the airport. The additional capacity provided by these works will facilitate the opportunity for improvements to the Ayrshire and/or the Inverclyde train service to be implemented, consistent with the capability of the enhanced infrastructure and Control Period 4 performance requirements, such that passenger benefits can be realised.
- The renewal of the existing signalling assets controlling the network between Shields and Paisley Gilmour Street due to such equipment currently approaching life expiry.

Roles of the Parties

- Transport Scotland (TS) is the Authorised Undertaker (AU) for GARL under the GARL Act 2007 and the project client for GARL, under which the former GARL components of the PCI project will be delivered. TS shall retain AU responsibilities for the revised project.
- Network Rail (NR) is the project client for the PCR component of PCI and will procure the design and construction of PCI and shall become the infrastructure operator. For works related to the GARL component of PCI, including all PCI works on the Paisley corridor, design and construction work will comply with the Environmental Statement and the Code of Construction Practice.

Scope of Works

The Network Rail scope of works is as follows:

- 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 Cowlairs;
- 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;

- 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;
- timetable development activities and performance modelling, based on December 2009 timetable, relating to potential future use of the PCI infrastructure, to include rework of the GARL service timetable to reflect future use of the PCI infrastructure and identification of potential new infrastructure required; and
- development of any potential additional infrastructure required by the reworked timetable to end GRIP 3. Further development beyond GRIP 3 and delivery of any such additional infrastructure requirements is excluded from this Delivery Plan but may be added at a future date under change control arrangements.

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 the 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 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; and
- 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 directly procure the new rolling stock that will be required for potential improvements to the Ayrshire and/or the Inverclyde train service. 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 PCI project other than as detailed in the Route Capability section above;
- the project is to be developed on the basis of the December 2009 timetable;
- it is recognised that the infrastructure to be implemented has been designed to deliver the GARL service timetable which is assumed to:
    - include airport services which generally operate between the hours of 0530 and midnight seven days per week;
- the GARL service timetable is assumed to be developed on the basis that:
    - Ayrshire services will be operated by 3-car, 4-car, 6-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-car, 4-car and 6-car trains using Class 380 units whilst talking cognisance that peak-hours services may be supplemented by Class 314 units;
    - GARL services to operate on a 15 minute frequency;
- the GARL service timetable is assumed to feature a journey time between Glasgow Central and Glasgow Airport (in both directions) of 16 minutes, with an aspiration to achieve a 15 minute journey time;
- all of Network Rail's activities for this project as detailed in this Delivery Plan will be RAB financed during CP4;
- a Franchise Change Notice will be signed between First ScotRail and Transport Scotland to cover all of First ScotRail's involvement in the design development, construction and operational phases of the project;
- a Supplementary Track Access Agreement will be entered into between Network Rail and First ScotRail to facilitate the commencement of operations of any new timetable proposals; and
- operability of any alternative timetable options may be dependent on any additional infrastructure changes as may be identified in the GRIP 3 study highlighted above.

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
2	Complete Glasgow Central Works	Network Rail	Monitoring	June 10
3	Award Main Line D&B contract – Signalling & Telecoms (S&T)	Network Rail	Monitoring	March 10
4	Award Main Line D&B contract – all other disciplines except for S&T	Network Rail	Monitoring	April 10
5	Main Line first commissioning	Network Rail	Monitoring	July 11
6	Main Line second commissioning and Main Corridor works substantial completion	Network Rail	Critical	Jan. 12
7	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 the obligations in the GARL/PCR delivery plan (March 2009) that formed the basis of the efficient cost estimate in the regulatory funding determination for CP4.

December 2009 Delivery Plan (PCI): Revised cost estimate will follow confirmation of revised scope as proposed in this draft.

Transport Scotland approval will be required for items which materially seek to change the client's requirements (excluding PCR). 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 Network Rail's change control process for the CP4 Delivery Plan Enhancements Programme: statement of scope, outputs and milestones.

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.

This output has been delivered and the enhanced rail service was brought into operation in December 2009.

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 Determinations. Currently, this covers the development of the following projects:

- Edinburgh to Glasgow Improvement Programme including electrification (EGIP); and
- Class 380 introduction – stabling and route infrastructure works.

Scope of Works
EGIP
Network Rail is currently undertaking the following:

- GRIP 4 development of the proposed 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;
- GRIP 3 development of 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 and further enhancements to enable the operation of 2 fast services per hour between Edinburgh and Glasgow Central via Shotts or Carstairs; and
- GRIP 5 detailed design of a new station at Gogar providing a link to Edinburgh Airport via the tram network.

Class 380 introduction – stabling and route infrastructure works
Network Rail is currently progressing works to enhance platforms and infrastructure on the Ayrshire, Inverclyde and North Berwick routes to permit the new Class 380 rolling stock to operate. In addition Network Rail is progressing enhancements to Ayr Townhead and Yoker depots to support the increased stabling requirements for rolling stock.

Activities and milestones
The following milestones are agreed. Subject to further discussion we would expect to establish milestones for further development and implementation.

Activity	Milestone
New Rolling Stock depot enhancements - Ayr Townhead completion	August 2010
New Rolling Stock depot enhancements - Yoker completion	June 2010
New Rolling Stock platform extensions completion	October 2010
OLE relocation work	March 2011
Waverley Steps	To be confirmed
EGIP Electrification	To be confirmed
EGIP Enhancements Programme	To be confirmed

Project definition: Ayrshire and Inverclyde Infrastructure Enhancements for Class 380 Train Introduction

Key outputs

Route infrastructure

- Platform extensions and alterations on the Ayrshire, Inverclyde and Glasgow to North Berwick routes to accommodate planned formations of the Class 380 train; and
- overhead line alterations to allow introduction of the Class 380 train.

Stabling and depot works

- Enhancement of stabling and light maintenance capacity at Ayr Townhead and Yoker depots to support an increase in train numbers at these depots resulting from introduction of the new Class 380 trains.

Scope of works to be delivered by Network Rail

Platform extensions

Platform extensions and associated works, such as OLE and S&T alterations, shall be carried out at the following sites in accordance with the preferred options within the GRIP 4 outputs.

Station	Length to be accommodated	Platforms
Largs	7 car	1,2
Ayr	8 car	3,4
Gourock	8 car	1,2,3
Ardrossan Harbour	7 car	1
Wemyss Bay	8 car	1,2
Ardrossan South Beach	7 car	1
Ardrossan Town	7 car	1
Kilwinnning (Largs and Ayr)	7 car	1,2,3,4
Greenock West	6 car	1,2
Stevenston (Up)	7 car	1
Fort Matilda	6 car	1,2
Johnstone	7 car	1,2
Troon	7 car	1,2
Irvine	7 car	1,2
Bishopton	6 car	1,2
Saltcoats*	7 car	1,2
Prestwick International	7 car	1,2

Works to stations where platforms are currently of adequate length

The following stations currently have platforms that are long enough to accommodate the required formations of trains. The current operational length however is not long enough. Consequently, works are required to provide the required operational platform lengths

Station	Length to be accommodated	Platforms
Prestwick Town	7 car	1,2
Greenock Central	6 car	1,2
Paisley Gilmour Street (Inverclyde)	6 car	1,2
Paisley Gilmour Street (Ayr)	8 car	3,4
Port Glasgow	6 car	1,2
Cardonald	6 car	1,2
Hillington East	6 car	1,2
Paisley St James	6 car	1,2
Hillington West	6 car	1,2
Woodhall	6 car	1,2

Works to facilitate the use of on train Automatic Selective Door Operation (ASDO)
The following stations have been identified as sites where Automatic Selective Door Operation (ASDO) should be used. Network Rail will ensure the necessary infrastructure works are carried out at these locations to allow the use of ASDO.

Station	ASDO Length Setting	Platforms
Stevenston (Down)	5 car	2
West Kilbride	5 car	1
Drumfrocher	5 car	1
Inverkip	5 car	1
Branchton	5 car	1
Barassie	5 car	1,2
Cartsdyke	5 car	1,2
Fairlie	5 car	1
Bogston	5 car	1,2
Dalry	5 car	1,2
Glengarnock	5 car	1,2
IBM	5 car	1
Langbank	5 car	1,2
Kingsknowe	3 car	1,2
Newton on Ayr	5 car	1,2
Whinhill	5 car	1
Lochwinnoch	5 car	1,2
Milliken Park	5 car	1,2
Howwood	5 car	1,2

Stepping distance alteration works
An assessment has been made of the train to platform stepping distances against the requirements of the Technical Specification for Interoperability: Persons of Reduced Mobility (TSI:PRM) and it has been identified that consideration should be given to altering platforms to reduce current stepping distances at 48 platforms (42 platforms on the Ayrshire and Inverclyde routes and 6 platforms on the Glasgow to North Berwick route). The following is required at the identified locations:

- survey and recommendation of works to improve stepping distances;
- detailed design of stepping alteration works: and
- implementation of stepping alteration works.

Overhead line alterations
An assessment of compatibility of the Class 380 train with the traction power infrastructure identified that the following works are required:

- relocation of Cook Street neutral sections; and
- relocation of booster overlap at Prestwick Town (BT001 on Up Ayr line at structure LA50/16).

Ayr Townhead depot
- Provision of stabling capacity as detailed within Transport Scotland's Project Brief, Version 2 of February 2009:

Unit length (vehicles)	Unit Length (m)	Number of units on site
2-car (Class 156)	46	3
3-car (Class 380)	71	9
4-car (Class 380)	95	7

- provision of Controlled Emission Toilet (CET) emptying and replenishment equipment on the depot reception lines. These CET points should be provided in a manner which will allow the simultaneous discharge and filling of a minimum of 3 toilets at any one time;
- and extension of the West headshunt to accommodate an 8 car Class 380 train.

Yoker depot

- Provision of CET emptying and replenishment equipment facilities in a manner which will allow the simultaneous discharge and filling of a minimum of 4 toilets at any one time. Facilities should accommodate trains in 20m 6-car formations.

Key interfaces

- Class 380 gauging correction works;
- Paisley Corridor improvements;
- Miscellaneous planned NR infrastructure renewals;
- Shields depot enhancement; and
- Phase 1/2 rolling stock procurement project.

Key assumptions

- Reference (Form A) designs for platform works have been developed using Issue 3 of the Class 380 Kinematic Envelope (KE), supplied by Siemens on 19/2/09. A subsequent KE was issued by Siemens on 27/5/09. This will be used for detailed design purposes. It is assumed that the differences between the KEs issued will require no alterations or re-work to design development carried out to date. However, if for some reason this has changed from that used at GRIP 4, this may require some rework to outline design.
- Reference designs have been carried out using Class 380 train dimensions detailed on drawings A6Z00002209648 version D, A6Z00002209644 version E, A6Z00002249851 version D, A6Z00002209645 version E, A6Z00002209647 version E, and A6Z00002209646 version E. These will also be used for detailed design purposes.
- The completion date at Prestwick International Station is dependant on agreements being in place between the station owner (Infratil), NR and TS. Agreement to progress works at this location has been granted by TS later than other stations so development work has not progressed in line with that at other locations.
- The key milestone dates assume that the stepping and gauging correction works at the platform extension/ alteration sites can be progressed without adversely impacting on the programme for the extension/ alteration works. At this stage, the programme dates for implementation of all of the stepping work is unclear and therefore its impact on the key milestone dates, if any, cannot be determined. NR will work efficiently with the Operator and TS to ensure suitable temporary measures can be implemented if key milestone dates cannot be met. The key milestone dates for implementation of all stepping alteration works will be agreed on completion of design.
- The completion dates for the implementation of infrastructure works to facilitate the use of on train ASDO assume that these works comprise only the movement of carstop signs at stations.
- Other site specific assumptions are detailed within the specific GRIP3 Option Selection Reports and GRIP 4 designs.

Activities and milestones

Milestone	Stations	Completion Date
Design of stepping distance alteration works	-	30th June 2010
Delivery of lengthened platforms	Ayr, Johnstone, Troon, Irvine, Kilwinning (platforms 3 and 4)	25th Aug 2010
	Largs, Gourock, Ardrossan Harbour, Wemyss Bay, Ardrossan South Beach, Ardrossan Town, Greenock West, Stevenston (Up), Fort Matilda, Bishopton, Saltcoats, Prestwick International, Kilwinning (platforms 1 and 2)	31st Oct 2010
Delivery of extended operational platform length	Prestwick Town, Paisley Gilmour Street (platforms 3 and 4)	25th Aug 2010
	Greenock Central, Paisley Gilmour Street (platforms 1 and 2), Port Glasgow, Cardonald, Hillington East, Paisley St James, Hillington West, Woodhall	31st Oct 2010
Delivery of ASDO enabling works	Barassie, Dalry, Glengarnock, Newton on Ayr, Lochwinnoch, Milliken Park, Howwood	25th Aug 2010
	Stevenston (Down), West Kilbride, Drumfrocher, Inverkip, Branchton, Cartsdyke, Fairlie, Bogston, IBM, Langbank, Kingsknowe, Whinhill	31st Oct 2010
Completion of Ayr Townhead depot	-	23 Aug 2010
Completion of Yoker depot	-	25th Aug 2010
Completion of OLE relocation works	-	3rd Sept 2010

Change Control Process

The obligations and 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 TS or NR.

Any changes to the obligations set out in this Delivery Plan shall be subject to the change control process agreed with the ORR.

Project definition: Waverley Steps Redevelopment

Key outputs

The key outputs of the scheme are to improve quality of access and interchange for all users of the Steps. and to provide a DDA compliant route between Waverley Station and Princes Street via Waverley Steps.

Scope of works to be delivered by Network Rail

Network Rail proposes to provide covered, well lit, improved access, including step free and DDA compliant access, between Waverley Station and Princes Street, Edinburgh level by delivering:

- Three banks of two side by side covered and lit escalators connecting with the existing internal station mezzanine link bridge. This existing mezzanine link bridge affords easy access to all platforms;
- Removal and reconstruction of seven varying flights of stone steps, which will be covered and properly lit;
- A new feature pedestrian entrance to Waverley Station on Princes Street which will be capable of being closed and secured during station closure hours;
- Provision of two sixteen person lifts, located within the existing station footprint but adjacent to the Princes Mall Shopping Centre, which will connect with the internal station mezzanine link bridge via a new section of bridge and;
- Level access to and from the lifts to Princes Street by means of a pedestrian walkway across the roof of the Princes Mall Shopping Centre. This will provide compliant DDA access from Princes Street to the station platforms.
- The scope of works will deliver the project as consistent with the GRIP 5 design.

Key interfaces

The Project will also interface with the following projects that are being delivered separately by Network Rail:

- The Waverley Station Roof Renewal Project

The Project will also interface with the following project being delivered by other organisations:

- The Edinburgh Tram Project which is being delivered by tie Limited.

Key assumptions

- The granting of a TAWS Order by the Scottish Ministers in acceptable terms including deemed planning permission is forthcoming by 14th January 2010.
- Network Rail will become the owner of the completed Assets.

Activities and milestones

Milestone No.	Description	Completion Date
1	Granting of TAWS Order	May 2010
2	Start on Site	Feb 2011
3	Escalator Commissioning	Dec 2011
4	Phase 1 Completion	Dec 2011
5	Lift Commissioning	Jul 2012
6	Phase 2 Completion	Jul 2012