

CP5 Enhancements Delivery Plan

31 March 2014

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Introduction

Purpose

The CP5 Enhancements Delivery Plan sets out the outputs, scope and milestones that we are committed to deliver in CP5. It has an entry for every project and ring-fenced fund funded through PR13. It is used both by the regulator, to hold us to account, and by our customers and funders, to give them visibility of our plans. As well as describing our commitments through the periodic review, it also sets out the deliverables for other government sponsored enhancement schemes funded through the Investment Framework.

The Office of Rail Regulation (ORR) published the Final Determination on 31 October 2013. Network Rail accepted the Final Determination on 7 February 2014. This document is part of Network Rail's response to the Final Determination. We have continued to develop our plans for Control Period 5. As we have refined our plans, elements have changed and we set out the changes from the draft plan in the 'changes to the plan' chapter later in the document.

Change control and updates

This document will be updated on a quarterly basis to report progress and to update projects where appropriate. Changes to outputs, scope and regulatory milestones will be approved by the regulator through the change control process before being reflected in our plan.

Consultation

We consulted on our draft CP5 Delivery Plan documents between 18 December 2013 and 31 January 2014. The key points made in the consultation process are summarised later in the document.

We have updated the CP5 Enhancements Delivery Plan to take account of the consultation responses, further development work and our ongoing review of deliverability. Further detail of the scope of the changes made is provided in 'changes to the plan' chapter later in the document.

We received 36 responses to the consultation. The respondents can be split into broad categories and are set out below:

Statutory Rail bodies

- Department for Transport
- Transport Scotland
- ORR
- Transport for London
- Association of Train Operating Companies

Train Operating Companies

- Cross Country
- Northern Rail

- East Coast
- First Great Western
- First Transpennine Express
- First Capital Connect
- Southern
- Southeastern

Local authorities and Passenger Transport Executives

- Broxbourne Council
- Suffolk County Council
- Hertfordshire County Council
- Stoke City Council
- Cumbria County Council
- Nottingham City Council
- Centro
- Metro
- South Yorkshire Passenger Transport Executive (SYTPE)

Railway representative or user groups

- Rail Freight Group
- TravelWatch East Midlands
- Railfuture
- East West Rail Consortium Project Board
- Edenbridge & District Rail Travellers' Association
- Harborough Rail Users
- East Sussex Rail Alliance

Other groups and individuals

- Newark Business Club
- Two responses from individuals

Key themes in the consultation responses

The majority of the issues raised by respondents concerned the Enhancement Delivery Plan. Most respondents had project specific comments.

The DfT raised a number of issues, set out below.

- Electric Spine: DfT has expressed concern that the description of the Electric Spine in the Enhancements Delivery Plan as a development programme is inconsistent with the HLOS. Network Rail has, through discussions with DfT, prioritised some elements of the Electric Spine works for delivery in CP5, whilst stating that a number of elements would undergo development work in CP5 to inform delivery in CP6. This was deemed to be a more

deliverable scope of works. In its response, DfT has reiterated its original HLOS requirement for full delivery in CP5. We are working with DfT and ORR to understand the remit for the Electric Spine works and will then need to assess the deliverability of the specification. We will then update the definition of the Electric Spine if necessary, through the change control process.

- Project scope and outputs: DfT has raised more detailed issues on a number of projects. There is to be a series of tripartite meetings (ORR, NR, DfT) to address the points raised and the overall affordability issue.

Transport Scotland raised concerns in its consultation response that there is inadequate commitment in the plan to improve journey times beyond major enhancements and that some aspects of the Enhancements Delivery Plan give 'a sense of dilution' of Network Rail's commitment to deliver the outputs specified in the HLOS. We are working with Transport Scotland to address these concerns.

As well as comments on individual enhancement schemes, train operators' concerns related primarily to the deliverability of our performance plans and our capital expenditure programme. We are continuing to review our key deliverability risks, focussing on the key dimensions of volume of work, phasing of work, and resource supply capacity.

Background

Document development

The Initial Industry Plans (IIP) were published in September 2011. Both the England & Wales and Scotland plans set out a series of possible enhancement projects for CP5. The enhancements proposed were informed by the Route Utilisation Strategies (RUSs).

The RUSs examined the rail network at a specific point in time and identified where it would not be able to accommodate forecast future demand. This was primarily in terms of capacity, but the RUSs also considered performance and connectivity. Where the demand could not be accommodated, the RUSs sought to find appropriate and best value solutions. The general principle adopted was for simpler and lower cost interventions to be considered before turning to more complex and expensive solutions. In the first instance, optimising the use of existing infrastructure was examined and timetabled solutions were usually sought as preferable to infrastructure works (subject to there being no unacceptable performance impact). The various options were then evaluated using the DfT and Transport Scotland (TS) appraisal criteria and recommendations made.

The High Level Output Specifications (HLOSs) were published by TS and the DfT on 21 June 2012 and 16 July 2012 respectively. These had been informed by the IIP and the RUSs. These set out the enhancements projects, funds and outputs that were required to be delivered by the industry in CP5.

The Network Rail Strategic Business Plan, published on 7 January 2013 set out, in its accompanying enhancements document, the enhancements funds and programmes of work

that would be necessary to deliver the HLOSs. ORR published their Final Determination in October 2013. This set out its assessment of the Strategic Business Plan and determined the funds and programmes of work it deemed necessary to deliver the HLOS. It also contained a funding assumption for enhancements and set out guidelines for an Enhancements Cost Adjustment Mechanism (ECAM) to determine the efficient cost of the enhancements portfolio on a progressive basis.

We have continued to develop the programmes of work required to deliver the HLOSs and in this document provide a statement of the proposed output, scope and milestone commitments of the CP5 enhancements portfolio. The plan also sets out the proposed governance arrangements of funds in CP5.

Network Rail's obligations

This document sets out the outputs and scope of each project at each stage, commensurate to its level of development, and the expected milestones for development and delivery of the projects. Network Rail's initial obligation for each project is to develop it to GRIP 3 (Governance of Railway Investment Projects stage 3). At this stage there will be a further funding submission to ORR for each project (described further below). Once GRIP 3 is completed and funding is established, the project definition page will be change controlled to refine and add detail (where appropriate) to the scope obligation and to convert the GRIP 6 (infrastructure ready for use) milestone to be the regulatory obligation.

In delivering the enhancement programmes funded from the periodic review, we have flexibility to determine the most cost-effective way of delivering the outputs. Enhancements projects required to deliver outputs in accordance with the HLOS fall into different categories, described below.

Committed projects

A number of projects are specified in the HLOSs, including completion of the Thameslink and Crossrail and Reading programmes, East – West Rail, elements of the Northern Hub, Edinburgh to Glasgow Improvements Programme and Borders Rail. Delivery of these projects, with the outputs as specified by DfT and TS, will satisfy the HLOS.

Investment funds

We have been provided with a number of funds in CP5 such as the Level Crossing Fund and Strategic Freight Network Fund. Our obligation is to agree robust governance of these funds with industry and deliver schemes authorised via this governance to draw down on the fund. For a number of funds prospective projects have been identified. As the control period progresses, projects authorised for delivery will be described in the fund pages to a level of detail appropriate to the materiality of spend. There are two types of fund, those ring fenced to deliver maximum benefit within a defined funding limit, and non-ring fenced funds where the outputs and scope of works are unclear at this stage and can be reviewed during the control period. The Depots and Stabling fund and ETCS cab fitment fund fall into the latter category and Network Rail has the flexibility to develop the right solutions in these areas with industry and funders without being at risk of changes in output specifications.

The Electric Spine

The England and Wales HLOS specified an electrification programme intended to increase regional and national connectivity and support economic development by creating a high-capability 25kV electrified passenger and freight route from the South Coast via Oxford and the Midlands to South Yorkshire. There are a number of schemes in the plan that contribute to this aim.

Other electrification projects

There are a number of other electrification projects that have been specified in the England & Wales HLOS in order to deliver benefit in CP5.

Airport and port access

A number of schemes have been specified in order to deliver improved access to airports and ports.

City capacity projects

A number of schemes have been specified in order to deliver improved capacity on key areas of the network.

The England and Wales HLOS also specified a level of capacity that DfT required to be delivered in CP5. There are a number of schemes within the plan that, in total, have been shown to deliver the required capacity within the range of assumptions set out within the plan (for example on rolling stock and timetables). The service changes associated with these projects have been captured in our capacity analysis to demonstrate that we have a plan to achieve the HLOS capacity metrics.

Traction power supply

In order to enable the changes in network capability described above, enhanced traction power is required. Within CP5, Network Rail is committed to improving our approach to traction power enhancements through the embodiment of National Traction Power System Strategies (TPSS).

Any service change affects the traction energy demand and historically, traction power enhancements have focused on enabling specific timetable changes. These enhancements are value engineered to provide efficient solutions on a project by project basis. This can lead to incremental enhancements where a longer term solution would be more optimal.

Our plan is to take a national approach to the development of traction power strategies that are linked to the Long Term Planning Process (LTPP). We will maintain a set of national Integrated Train Service Specifications (ITSS) that will include near term committed outputs as well as future scenarios. We will then identify system options for providing this capability that will include reliability and whole life cost assessments, as well as train service and infrastructure trade offs. This will enable us to provide options to funders for investment in more optimised supplies that may span multiple control periods.

A set of TPSS will be developed within CP5. Some strategies will be prioritised to support CP5 projects that are early enough in their development to benefit from a TPSS. The

remaining TPSS will be aligned with the Route Studies and the LTPP. These TPSS are planned to begin in April 2014 and will continue through to 2017. The time phasing of the TPSS will take into consideration the trade offs between CP5 and future control period projects.

Rolling stock and franchises

The outputs of the projects defined within this document have key dependencies on assumptions on franchising and rolling stock outputs and timescales. In general we have assumed that the existing rolling stock type will operate on the same routes as they do today, unless a different assumption is specified and we have stated this in the key assumptions for the project.

The requirements for additional depot and stabling capacity are dependent on the overall rolling stock requirements and deployment plan. Funding has been provided to Network Rail to enhance depot and stabling capacity and capability. Network Rail will work with DfT, Transport Scotland and train operators to establish the governance arrangements and priorities for these funds.

Stakeholder engagement

Network Rail is the principal point of contact for customers and stakeholders (such as developers and funders) wishing to invest in the rail network infrastructure. Network Rail values its stakeholders and customers and aims to develop good, long-term working relationships that are built upon openness, fairness and trust. As the owner and operator of Britain's railway, Network Rail deals with a wide range of stakeholders. These include train operators (both passenger and freight); funding bodies such as DfT and Passenger Transport Executives; bodies that provide one-off funding, such as local authorities, Transport Scotland, the Welsh Assembly Government and other regional bodies.

The LTPP provides the framework for engagement with a broad body of stakeholders on the required outputs from the railway. The LTPP programme of work will develop proposals for the railway in a way which is flexible enough to take into account the views of the rail industry, funders, specifiers and customers on the requirements to develop the network to meet future demand. The LTPP has been designed to be as inclusive as possible with contributions encouraged both from the rail industry and wider stakeholders. Further information can be found here:

[Long Term Planning Process - Planning policies and plans](#)

Recently, Network Rail restructured to become more accountable to its customers with the creation of ten devolved routes to enable greater local decision making. Regular meetings are held at a route level with a Route Investment Review Group (RIRG). These meetings have an aim to provide a regular opportunity to review with each operator the proposed plans for the development of the network including the programme of planned renewals and enhancement activity and future opportunities.

Whether an enhancement scheme is to be funded, managed and delivered wholly by Network Rail or by a third party, Network Rail has an important role to play regardless of

approach in ensuring that all schemes are compatible and integrated with existing railway operations. The GRIP process specifies when stakeholders are to be engaged through various meetings including Value Management Workshops. These meetings are held at the early GRIP stages to obtain stakeholder input and feedback.

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

- Rail Delivery Group (RDG) and Planning Oversight Group (POG): we have developed our enhancement programme with oversight and engagement from POG, a sub-group of RDG. POG will continue to have a role in the industry governance of funds and TOC engagement in the enhancement 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 (RIRG): 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;
- fund specific engagement: funds have cross industry governance boards as detailed within the fund definition pages of this document; and
- project specific engagement: each programme and project is required to involve stakeholders in project development under the GRIP process to ensure effective engagement particularly with affected train operators of a scheme.

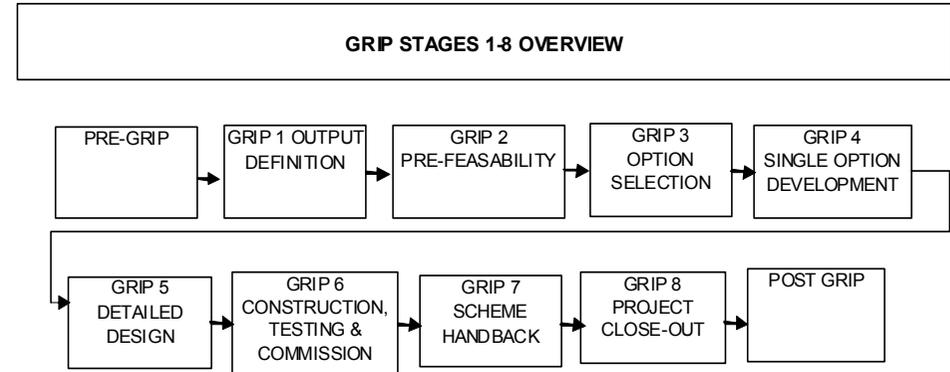
Project development

Our projects are developed through the GRIP framework. The constituent projects 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 4.

Projects are progressed to single option selection. At this stage the project will progress through ECAM to determine its efficient funding contribution to the overall enhancements portfolio funding.

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 start dates. The key milestones for each project required to deliver the HLOS are:

- GRIP 2 completion (indicator), where scope options that will deliver the required outputs have been identified;
- GRIP 3 completion (regulated output), where the single option of scope to deliver the outputs has been identified;
- GRIP 4 completion (indicator), project scope is further developed;
- GRIP 6 start on site (indicator), the project has started physical work; and
- GRIP 6 practical completion, the infrastructure is available for customer use.



The final milestone is an indicator until a project has completed GRIP 3 and the funding available has been determined. At this stage it becomes the regulated output for the project.

The milestones in this plan now represent a baseline for the control period. Throughout the control period 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 asset renewals; and
- resource and capability constraints.

A key area of capability constraint that has been identified is that of electrification design and development. It is especially important that our review of efficient delivery takes into account both these resource constraints and our stakeholders' aspirations with relation to the electrification portfolio.

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 outputs, scope and milestones in the plan and seek their endorsement to changes to the detail set out in this plan. We will use change control, for example, to update our plan when we have identified the single scope option for the project and transform the GRIP 6 milestone to be the regulated commitment. We will provide regular updates of the plan on our website with a clear audit trail showing how the change was agreed. Changes to the scope, outputs or regulated milestones of a project as set out in this plan require approval

from ORR before the plan can be updated. In order to achieve acceptance of a change we will provide necessary evidence of justification to ORR, including:

- evidence to demonstrate that the project still delivers the required output as described in the HLOSs;
- evidence of support (or objection) from the affected train operators; and
- a revised delivery plan entry.

We will publish on our website an updated enhancements plan, containing approved changes, on a quarterly basis.

We are currently discussing the output, scope and milestones of a number of additional projects with DfT. As these requirements are agreed we will seek to change control the projects into our plan. These projects include:

- Ely – Soham double tracking;
- Syston – Stoke gauge enhancements;
- Windermere branch electrification;
- Wigan – Bolton electrification; and
- Stratford station (development only).

Enhancements cost adjustment mechanism (ECAM)

ECAM is a new mechanism developed between Network Rail and ORR to determine the efficient level of funding available to deliver the enhancements portfolio in CP5. The mechanism will determine the level of funding for enhancements against which Network Rail will out or under perform in the control period.

As projects complete GRIP 3 they will provide evidence to ORR to demonstrate:

- the output is consistent with the HLOS, including capacity analysis where appropriate;
- an update of the business case assumptions to demonstrate value for money, where appropriate;
- evidence of operator buy-in to the selected option;
- a delivery plan change control submission to set out project milestones;
- evidence to demonstrate that the estimate contains planned efficiency initiatives, wherever appropriate;
- a defined strategy on compliance to Technical Specifications for Interoperability (TSIs) and other relevant statutory provisions; and
- evidence that the selected option is the best whole life cost solution.

ORR will then assess the submission and determine the efficient cost of the project. The funding associated with the project will then be added to the overall funding available to deliver the enhancements programme and Network Rail will retain the flexibility to fund projects as required for delivery from this funding. A forward plan of ECAM submissions, based on completion of GRIP 3 milestones as shown in this document, will be provided to ORR on a regular basis.

ECAM does not apply to Thameslink, Crossrail, EGIP or Borders, as these have their own funding agreements. It also does not apply to the funds (ring-fenced or otherwise) or to projects that have rolled over from CP4, as the efficient price of these projects was determined during the last periodic review.

TOC engagement and efficiency

The biggest driver for efficiency in a project is in the identification of the appropriate solution to an output requirement. Identifying the wrong solution or scope could result in a significant amount of expenditure being inefficiently incurred.

For CP5 there are a number of enhancements for which the early stage design options or business case evaluation have not yet been developed. In order for the industry to address issues raised in the McNulty Rail Value for Money study, and identify the most efficient scope (and therefore best value for money) to deliver the required output, early operator engagement is essential. TOCs and FOCs are currently engaged in projects via value management workshops and RIRGs, however further incentivisation of the desired behaviours has been provided for through the periodic review.

The Final Determination states that, if demonstrated that TOC engagement in a project has directly resulted in efficiencies of scope or access arrangements, then a payment can be made by Network Rail to the TOC and this will be deemed a legitimate project cost during ECAM. There is further work to be done over the next couple of months to determine both the list of projects to which this process can practically be applied and also the mechanism by which it works. We will work with our stakeholders to develop these ideas further and hence develop the most efficient scope solutions to the required output requirements.

Further information

Further detail on a number of enhancements projects can be found at the following link.

[The Plan. Our plan for rail in Britain - Network Rail](#)

Funding assumptions

The funding assumptions made in the Final Determination by ORR are shown below.

England and Wales	Funding assumption (£bn 2012/13 prices)
Thameslink and Crossrail	3.1
Ring-fenced funds	1.2
Electrification schemes	3.0
Other committed schemes	1.5
Other named schemes and CP4 rollover	0.8
HLOS capacity metric schemes	0.7
Other adjustments	0.5
Additional funding to draft determination	0.6
Total	11.4

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In addition to the projects contained in the funding shown above, there are further projects which have rolled over from the end of CP4 to the start of CP5 described in the document. This plan also sets out detail for Investment Framework projects and funds that roll-over from CP4 to CP5, and the funding for these (Swindon-Kemble and the CP4 Stations Commercial Property fund).

Network Rail has also been provided with investment funding to reduce risks to the workforce through investment to enable the taking of faster and safer isolations, develop technologies to improve protection and warning for track workers and develop specialised, safer road-rail vehicles. These investments will be governed by Network Rail's investment regulations. These investment proposals are not regulated outputs and are therefore not addressed in this document. We will report on these in the Annual Return.

Scotland	Funding assumption (£m 2012/13 prices)
EGIP	490
Borders	174
Other Scottish projects	477
Ring fenced funds	145
Other adjustments	58
Other additional funding to draft determination	12
Total	1,356

In addition to the projects contained in the table above, Network Rail is currently progressing the development of two projects contained in the Strategic Business Plan not specifically required to deliver the HLOS or included in the Final Determination. However, Carstairs Junction remodel and the Edinburgh Suburban Electrification projects will contribute to improving journey times and reducing carbon emissions as required by the Scottish Ministers HLOS and are therefore subject to further discussions with funders to determine how they will be funded for implementation in CP5.

Changes to the Plan

A number of updates have been made to the Funds sections to take into account the consultation response. There have also been minor clarifications of outputs on nearly all projects. Other changes are shown in the table below.

Unique Identifier	Project name	Change
CR003	East West Rail	Project description clarification
CR005	Northern Hub	Scope, milestones
CR008	Station security	New entry – CP4 completion
CR009	FTN/GSM-R inclusion of freight-only branch lines	New entry – CP4 completion
ES002	Derby station area remodelling	Milestones
ES003	Electric Spine Development Programme	Milestones
A001	Ely North Junction capacity improvement	Output, scope, milestones
A003	West Anglia main line capacity increase	Output, milestones
A005	Gospel Oak to Barking electrification	New entry – Investment Framework
K001	Kent traction power supply upgrade	Scope, milestones
K003	East Kent re-signalling phase 2: enhancements	Output, scope, milestones
S001	Sussex traction power supply upgrade	Scope, milestones
S002	Redhill additional platform	Output, milestones
S003	Uckfield line train lengthening	Scope, milestones
S004	London Victoria station capacity improvements	Scope, milestones
WX001	Waterloo	Output, scope, milestones
WX002	South London HV Grid (Wimbledon) upgrade	Scope, milestones
WX003	Reading, Ascot to London Waterloo train lengthening	Scope, milestones
WX007	DC regeneration	Output, scope, milestones
WX008	Route 3 – power supply enhancements	New entry – CP4 completion
W001a	Great Western electrification	Scope, milestones
W002a	Intercity Express Programme: Western capability	Project description clarification
W002b	Intercity Express Programme: specific GWML capacity schemes	Output, scope, milestones
W003	Thames Valley branch lines electrification	Scope, milestones
W004	Thames Valley electric multiple unit capability works	Scope, milestones
W005	Western rail access to Heathrow	Output, milestones
W006	Oxford Corridor capacity improvements	Milestones
W007	Dr Days Junction to Filton Abbey Wood capacity improvements	Project description clarification
W008	Bristol Temple Meads station capacity (incl. Midland Shed)	Project description clarification
W009	West of England diesel multiple unit capability works	Scope, milestones
W010	Swindon to Kemble redoubling	Milestones

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Unique Identifier	Project name	Change
W011	Westerleigh to Barnt Green linespeed increase	New entry – CP4 completion
LNE001	Northern Programme (Yorkshire)	Restructuring
LNE002b	Intercity Express Programme (IEP) – East Coast power supply upgrade	Milestones
LNE007	Tram Train pilot	New entry – Investment Framework
EM002	St Pancras to Sheffield linespeed improvements	New entry – CP4 completion
LNW001	North West electrification	Scope, milestones
LNW002	North Trans-Pennine electrification – West	Output, scope, milestones
LNW003	Stafford area improvement scheme	Project description clarification
LNW004	West Coast power supply upgrade phase 3B	Project description clarification
LNW005	Birmingham New Street Gateway project	Milestones
LNW007	Chiltern Main Line train lengthening	Scope, milestones
LNW009	Bromsgrove electrification	Project description clarification
LNW011	Redditch branch enhancement	Project description clarification
SC002	EGIP – Initial Phase Key Output 1	Project description clarification
SC003	EGIP – Initial Phase: Key Outputs 2, 3 & 4	Project description clarification
SC008	Rolling programme of electrification (Scotland)	Output, scope, milestones
SC009	Aberdeen to Inverness improvements phase 1	Output, scope, milestones
SC010	Highland Main Line journey time improvements (phase 2)	Output, scope
SC011	Motherwell area stabling	Project description clarification
SC012	Motherwell resignalling enhancements	Project description clarification

Summary

England and Wales

Ring-fenced funds

Level Crossing Risk Reduction Fund, National Stations Improvement Programme (NSIP), Access for All (AfA), East Coast Connectivity Fund, CP6 Development Fund, Network Rail Discretionary Fund (NRDF), Strategic Freight Network (SFN), Passenger Journey Improvement Fund (PJIF), High Speed 2, Innovation Fund

Funding allowances

Research and development matched funding, Depots and Stabling, ETCS in-cab fitment and infrastructure

Non-periodic review funds

New Stations Fund, CP4 Station Commercial Project Facility (SCPF)

Cross route projects

Crossrail, Reading station area redevelopment, East West Rail, Thameslink Programme, Northern Hub, Mobile maintenance system, Acton (Great Western Main Line) to Willesden (West Coast Main Line) electrification, Station security, FTN/GSM-R inclusion of freight-only branch lines

The Electric Spine

Midland Main Line electrification, Derby station area remodelling, Electric Spine Development Programme

Anglia

Ely North Junction capacity improvement, Anglia traction power supply upgrade, West Anglia main line capacity increase, Great Eastern Main Line capacity improvement (Bow Junction), Gospel Oak to Barking electrification

Kent

Kent traction power supply upgrade, Route 1 – power supply enhancements, East Kent resignalling phase 2:enhancements, New Cross Grid, Gravesend train lengthening

Sussex

Sussex traction power supply upgrade, Redhill additional platform, Uckfield line train lengthening, London Victoria station capacity improvements, Balcombe to Copyhold bi-directional signalling upgrade

Wessex

Waterloo, South London HV Grid (Wimbledon) upgrade, Reading, Ascot to London Waterloo train lengthening, Wessex traction power supply upgrade, 10-car south west suburban railway, Wessex ASDO, DC regeneration, Route 3 - power supply enhancements

Western

Great Western electrification, Intercity Express Programme: Western capability, Intercity Express Programme: specific GWML capacity schemes, Thames Valley branch lines electrification, Thames Valley electric multiple unit capability works, Western rail access to Heathrow, Oxford corridor capacity improvements, Dr Days Junction to Filton Abbey Wood capacity improvements, Bristol Temple Meads station capacity, West of England diesel multiple unit capability works, Swindon to Kemble redoubling (non-periodic review), Westerleigh Junction to Barnt Green linespeed increase

Wales

Welsh Valley Lines electrification, Barry – Cardiff Queen Street corridor

London North East

Northern Programme (Yorkshire), Intercity Express Programme: East Coast capability, Intercity Express Programme: East Coast power supply upgrade, LNE routes traction power supply upgrade, Stevenage and Gordon Hill turnbacks, Capacity relief to the ECML (GN/GE joint line), North Doncaster chord, Tram Train pilot

East Midlands

MML long distance high speed services train lengthening, St Pancras to Sheffield linespeed improvements

London North West

North West electrification, North Trans-Pennine electrification – West, Stafford area improvement scheme, West Coast power supply upgrade, Birmingham New Street Gateway project, Walsall to Rugeley Trent Valley electrification, Chiltern Main Line train lengthening, North West train lengthening, Bromsgrove electrification, Redditch branch enhancement

Scotland

Funds to deliver specific outcomes

Scottish Stations Fund, Scottish Strategic Rail Freight Investment Fund, Scottish Network Improvement Fund, Future Network Development Fund, Scotland Level Crossings Fund

Committed projects

EGIP Electrification of Springburn to Cumbernauld, EGIP – Initial Phase Key Output 1, EGIP – Initial Phase Key Outputs 2, 3 & 4, EGIP – Edinburgh Gateway (Gogar) intermodal transport interchange (advance works), EGIP – Haymarket station capacity project, Borders Railway

Other Scottish projects

2013 advance route clearance programme (other routes), Rolling programme of electrification, Aberdeen to Inverness improvements phase 1, Highland Main Line journey time improvements phase 2, Motherwell area stabling, Motherwell resignalling enhancements, ECML (North) – WCML (Carstairs) gauge enhancement, Rutherglen and Coatbridge (R&C) electrification

England and Wales CP5 Enhancements Programme - Funds

England and Wales ring-fenced funds

F001 Level Crossings Risk Reduction Fund

F002a Stations – National Stations Improvement Programme (NSIP)

F002b Stations – Access for All (AfA)

F003 East Coast Connectivity Fund

F004 CP6 Development Fund

F005 Network Rail Discretionary Fund (NRDF)

F006 Strategic Freight Network (SFN)

F007 Passenger Journey Improvement Fund (PJIF)

F008 High Speed 2

F009a Innovation

F009b Strategic Research and Development Fund

England and Wales funding allowances

F010 Depots and Stabling Fund (DSF)

F011 ERTMS – ETCS Cab Fitment Fund and ERTMS infrastructure milestones

England and Wales non-Periodic Review funds

F012 New Stations Fund

F013 CP4 Station Commercial Project Facility (SCPF)

Level Crossings Risk Reduction Fund

Details

Fund reference code: F001

Last updated: March 2014

Network Rail's obligations

To achieve the maximum possible reduction in risk of accidents at level crossings. The enabling fund will be termed the Level Crossings Risk Reduction Fund (LCRRF). Funding of £96m is available for this purpose.

Objective

The objective of the LCRRF is to meet the requirements set out in the Secretary of State's HLOS publication of July 2012 as follows: the Secretary of State specifically wishes the industry to reduce the risk of accidents at level crossings.

Governance

The Director of Maintenance and Operational Services (DMOS) is the fund holder for the LCRRF but the expenditure against this fund will be driven by and governed by the LCRRF which is a Network Rail body working under the strategic direction of the cross industry Level Crossings Strategy Group (LCSG).

Network Rail will establish the required delegated authorities for the LCRRF to fund risk reduction at level crossing activities in accordance with the Level Crossings Risk Reduction & Safety Enhancement Strategy for CP5. Priorities for investment will be set by our desire to close or bridge level crossings.

Progress reporting on the fund

Progress against this objective will be measured and presented to LCSG and Network Rail's main Board via investment panel, quarterly. These governance arrangements are identical to the CP4 governance authority for risk reduction at level crossings. Progress will also be reported quarterly to the ORR at the National Level Crossing Liaison Meeting.

Purpose

The purpose of the LCRRF is to reduce risk at level crossings through a programme approach of investment in safety enhancements that will include:

- closures;
- bridging;
- technical innovation;
- betterment of risk management; and
- sub-delegation of authority to encourage local initiatives.

Scope of the Level Crossings Risk Reduction Fund

We have identified approximately 70 sites at which Network Rail is proposing the installation of footbridges at existing level crossing sites in CP5. We continue to develop the schemes. Once investment approval to deliver the scheme is awarded, we will update our plan to reflect this.

Stations – National Stations Improvement Programme (NSIP)

Details

Fund reference code: F002a

Last updated: March 2014

Network Rail's obligations

To work with stakeholders to identify the best use of the NSIP funds (part of Stations Improvement Fund within HLOS) and deliver programmes of station works.

Objective

The objective of the Stations Board (SB) is to meet the requirements set out in the Secretary of State's HLOS publication of July 2012. The Secretary of State wishes the industry to improve the passenger experience at stations including better passenger information and to provide easier access for older or disabled passengers and passengers with small children.

To meet the requirements set out in the HLOS, £110m has been allocated to station infrastructure improvement (including passenger information where agreed). The SB is to act as 'trustee' to the Director, Maintenance and Operational Services (DMOS) for the station infrastructure investment element of the fund. Investment at stations will be proposed by a Local Delivery Group (LDG) and the NSIP board (reporting to the SB) will agree funding allocation to projects meeting the agreed criteria. The agreed criteria will satisfy the DMOS requirements regarding governance and risks associated with projects funded by NSIP.

This objective is underpinned by the NSIP programme, which sets out 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

Director, Maintenance and Operational Services (DMOS) is the fund holder for NSIP.

The NSIP board will report to the SB on a periodic basis, this will provide the SB with an overview of the delivery of the NSIP programme

NSIP is a cross-industry body consisting of train operating owning group representatives, Department for Transport, Office of Rail Regulation and Network Rail senior management. The SB will be co-chaired by a Network Rail and Train Operator representative. The Train Operator owning group representative will be determined by the relevant owning group. Secretariat for the SB and administration of the fund will fall to Network Rail.

The SB will additionally offer the industry strategic guidance on stations – for example, facilitation of related policy development and dissemination of best practice - in order to achieve improved passenger experience at stations.

If additional station investment funds become available in CP5, the SB via the NSIP board will be suitably placed to oversee the management of these funds to ensure efficiency and effectiveness of delivery.

Priorities for investment will be informed by the Secretary of State's desire to see an improvement in passenger satisfaction, alongside development of strategic priorities such as the construction of the electric spine, facilitation of commuter travel in urban areas and increased capacity.

The Secretary of State seeks an improvement in passenger satisfaction, as measured by Passenger Focus's National Passenger Survey (NPS). Whilst he is not setting a target in this area, the Secretary of State believes that better information, particularly during disruption, is an effective and low cost way of achieving passenger satisfaction improvements.

Although no specific target has been set, NPS data will be utilised where practicable to assess the benefit of investment on a 'before and after' basis at specific stations undergoing enhancement. Progress against satisfaction will be measured and presented to the NSIP board; this information will be collated by the LDGs responsible for implementing station improvement projects.

Progress reporting on the fund

- Enhancements Delivery Plan update – revised quarterly, update subject to the change control process, where appropriate.
- Network Rail's main board via Investment Panel – DMOS will provide quarterly update.
- Network Operations Executive Board: DMOS will provide periodic update on scheme performance.
- Stations Board – periodic reporting of progress to industry partners.

Scope of the Stations Improvement Fund

At this stage, all stations are in scope. One of the NSIP board's first activities in CP5 will be to review and define scope.

Stations – Access for All (AfA)

Details

Fund reference code: F002b

Last updated: March 2014

Network Rail's obligations

Our obligation is to deliver efficiently the schemes that are authorised by DfT to draw down from the Access for All Fund.

Objective

The DfT Access for All Programme Consultation (Spring 2005) targeted a five per cent (125 stations) increase in accessible stations across the network by March 2015. As of September 2012 Network Rail's projected output suggests six per cent (153 stations) of the network will be made accessible as a result of the Programme.

The CP5 Programme from 2015 - 2019 is an extension to this.

Governance

Director, Maintenance and Operational Services (DMOS) is the fund holder for AfA.

To meet the requirements set out in the HLOS Statement, £132m has been allocated for 'Access for All' (AfA) measures.

AfA measures will be proposed by Local Delivery Groups (LDG) and in Scotland by Transport Scotland in conjunction with Network Rail, based on existing award allocation criteria and the Transport Minister will provide final approval for the schemes to be taken forward. There may be instances where the Transport Minister is required to specify AfA measures.

The AfA Programme Board will report to the Stations Board (SB) on a periodic basis, this will provide the SB with an overview of the delivery of the AfA programme.

The programme has aligned with other station investment programmes, such as renewals and NSIP, which will wherever possible deliver efficient project management and contracting resource required to deliver the scheme(s).

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 is 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 DfT's "Accessible Train Station Design for Disabled People: A Code of Practice". 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.

The objective of the SB is to meet the requirements set out in the Secretary of State's HLOS publication of July 2012. The Secretary of State wishes the industry to improve the passenger experience at stations including better passenger information and to provide easier access for older or disabled passengers and passengers with small children.

In the autumn of 2013 the DfT asked the LDGs to nominate stations for the CP5 programme. The criteria for the successful nomination is the same as the CP4 programme along with the Minister approving the final list for the programme. The list of successful stations will be announced by the Minister in April 2014.

Progress reporting on the fund

- Enhancements Delivery Plan update – revised quarterly, update subject to the change control process, where appropriate.
- Network Rail's main board via Investment Panel – DMOS will provide a quarterly update.
- Network Operations Executive Board: DMOS will provide periodic updates on scheme performance.
- Stations Board – periodic reporting of progress to industry partners.

AfA Main Programme- completion April 2014 – March 2015 (funded from CP4)**England and Wales**

Abergavenny	Fleet	New Cross
Berkhamstead	Finsbury Park	New Cross Gate
Brockenhurst	Grove Park	New Eltham
Brentwood	Hemel Hempstead	New Malden
Brockley	Hereford	Putney
Billericay	Hitchin	Severn Tunnel Junction
Burnham	Honor Oak Park	St Erth
Chippenham	Leighton Buzzard	Strood
Elstree & Borehamwood	Letchworth Garden City	Worcester Shrub Hill

Scotland additional schemes completion September 2014

Dunblane

AfA Mid-Tier schemes - completion April 2014 – March 2015**Schemes planned for delivery by March 2015**

Acocks Green	Edmonton Green	Radyr
Bearstead	Kensal Rise	South Tottenham
Bexleyheath	Keynsham	St Austell
Birchwood	Llandaf	Stratford upon Avon
Blackhorse Road (only to design stage)	Machynlleth	Theale (only to design stage)
Chirk	Paddock Wood	Ystrad Mynach

East Coast Connectivity Fund

Details

Fund reference code: F003

Last updated: March 2014

Network Rail's obligations

To work with the industry to develop plans to deliver works within a maximum CP5 expenditure of £247m on the East Coast Main Line (ECML) to improve capacity and reduce journey times.

Objective

Improvement in capacity and reduction in journey times on the East Coast Main Line, including suitable efficient capacity for the crossing flows of passenger and freight traffic at Peterborough.

Governance

The Strategy and Planning Director [North] is the fund holder for the East Coast Connectivity fund. Authorisation of draw down and spend is as set out in Network Rail's Investment Regulations but schemes are also required to have been supported by the East Coast Programmes Board. This is a cross-industry group consisting of representatives from DfT, Transport Scotland, Freight Operating Companies, Train Operating Companies, Network Rail, ATOC, PTEs and the ORR (as observers).

The East Coast Programme Board will oversee the prioritisation of schemes and allocation of funding for scheme development and delivery.

Scope of works

Building on the Route Utilisation Strategies for the ECML (from London to Edinburgh), GRIP 1 and 2 development work has identified the key capacity constraints on the route, including:

- lack of capacity between Huntingdon and Peterborough;
- conflicting moves in the Peterborough area;
- lack of platform capacity and conflicting moves at Doncaster and York station; and
- conflicts on the 2 track sections between Doncaster and York, Northallerton and Newcastle.

The East Coast Programmes Board has so far identified the following candidate schemes:

- Peterborough – grade separated access to the GN/GE line;
- Peterborough – upgrade the Down slow line between Fletton to Peterborough;
- Peterborough – station layout enhancements;
- Doncaster – east side enhancements;
- Doncaster – additional platform;
- York – station north throat enhancements; and
- Northallerton to Newcastle – additional freight loops.

It is expected that the candidate schemes when combined with new rolling stock will enable a restructuring of the timetable which is anticipated to result in material reductions in journey time between London and key ECML cities. In addition, development work will be progressed to identify any potential value for money speed improvement opportunities.

The programme will ultimately comprise a prioritised list of infrastructure enhancements. Stakeholder consultation, timetable modelling and economic appraisal will be used to determine which interventions represent the best value for money.

Development and implementation of infrastructure enhancements between King's Cross and Doncaster will be developed in conjunction with the ECML ERTMS programme.

Key assumptions

- Standard regulatory consents (Network Change and Station Change), planning permissions and particular consents (e.g. TWA / IPC) are likely to be required for some schemes.
- Economic appraisal will confirm the business case for the proposed intervention.
- The introduction of new timetables is not within the scope of this programme.

CP6 Development Fund

Details

Fund reference code: F004

Last updated: March 2014

Network Rail's obligation

Our obligation is to deliver the development of schemes that are authorised to draw down from this fund. As part of the process of updating the CP5 Delivery Plan we will routinely provide a list of schemes authorised to draw down from the fund as we progress through the control period. Funding of £57m is available for this purpose.

Objective

The fund will be used to:

- support the Long Term Planning Process (LTPP) in developing an evidence base for an industry submission for infrastructure investment in Control Period 6; and
- further develop schemes that are likely to be required for delivery primarily during CP6.

Governance

The Head of Long Term Planning and Funding is the fund holder for the CP6 Development Fund and will approve the use of funds, authorisation will be made at the appropriate investment panel as set out in Network Rail's Investment Regulations.

Approval and authority for works to support the development of the LTPP is likely to be required for a study rather than for individual schemes.

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, as well as assessing efficient delivery.

Rail Industry Planning Group (RIPG) will be used to hold the fund holder to account for the use of funds.

Eligibility rules

Schemes should be considered likely to be required and funded for delivery during CP6 as part of the next periodic review.

Schemes must not be otherwise funded in CP5 through the PR13 settlement.

Funding should only generally cover early stage development costs and separate funding would generally be required for detailed design work and other significant costs such as Planning Consents processes.

The costs of the option development work stream required for the Route Studies and other strategies as part of the LTPP are eligible for funding from the CP6 Development Fund. These costs will mainly be for Infrastructure Projects (management, estimating, risk, engineering feasibility) and Asset Management (engineering feasibility). Note that funding for these studies will still be subject to the governance arrangements explained above.

Appraisal

The fund will be used to authorise development funding for proposals where funding is required to estimate costs before the appraisal can be completed. This is true of funding for option development to support the LTPP. In this case, the proposal must be reasonably likely to demonstrate a value for money case for investment.

Funds will be made available to progress schemes through to the next GRIP stage(s) that are shown to be feasible candidates for funding through the CP6 periodic review process. In this case, the proposal must be subject to a value for money (VfM) assessment including an economic case.

The Economic Analysis team in Group Strategy will support the development of the economic case for investment through the LTPP where appropriate. Each route has an assigned Economic Planner, and alternatively the Economic Analysis Manager can be contacted.

Progress reporting on the fund

Progress reporting will be transparent and available to interested parties in the industry.

- Enhancement Delivery Plan update – revised quarterly, update subject to the change control process.
- Rail Industry Planning Group - quarterly reporting giving overview on the use of funds.
- Network Rail's main Board via Investment Panel – the Head of Long Term Planning and Funding will provide quarterly updates.

Network Rail Discretionary Fund (NRDF)

Details

Fund reference code: F005

Last updated: March 2014

Network Rail's obligation

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. There is £103m available for this purpose.

Objective

The fund is a mechanism for funding small schemes for which funding is not available elsewhere and that 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.

Governance

The Head of Long Term Planning and Funding is the fund holder for NRDF and will approve the use of funds. Authorisation will be made at the appropriate investment panel as set out in Network Rail's Investment Regulations.

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).

Rail Industry Planning Group (RIPG) will hold the fund holder to account for the use of funds.

Eligibility rules

Expenditure must be classifiable as capex, as set out in IR01.

The fund can be used for initiatives that demonstrate at least a medium value for money economic case. The sponsor will be required to demonstrate the following:

- the funds will not be used to deliver outputs already funded to deliver regulated performance targets through the CP5 periodic review;
- the scheme is not eligible for funding from elsewhere;
- the funds will not be used to deliver outputs already funded through the franchise agreement between the DfT and an incumbent operator; and
- a better value for money operational solution has not been identified that delivers the same or similar outputs.

The net cost of the scheme (i.e. the amount that will be drawn down from the NRDF) must not exceed £5m without the prior agreement of DfT; schemes with a total cost in excess of £5m are eligible where additional funding is provided by Network Rail or others to ensure the draw down on the NRDF is within this limit.

Funding will not be available for investments where the benefits to individual stakeholders are sufficient to warrant them funding the scheme directly. For example, where the benefits of a scheme:

- will accrue primarily to a third party and that party would see a reasonable financial return, it would generally be funded as a third party scheme; or
- will accrue primarily to Network Rail and Network Rail would see a reasonable financial return, it would generally be funded by Network Rail.

It is expected that eligible schemes will exploit opportunities incremental to asset renewals or other works.

Appraisal

All schemes taken forward for implementation are subject to a value for money (VfM) assessment including the economic case.

The Economic Analysis team will support the sponsor in developing a VfM assessment that is compliant with the DfT's WEBTAG guidance and will include the other four cases required by the guidance (strategic, commercial, financial and management).

The Economic Analysis team in Group Strategy will support the development of the economic case for investment. Each route has an assigned Economic Planner, supported by an Economic Analysis Manager, who can be contacted.

Progress reporting on the fund

Progress reporting will be transparent and available to interested parties in the industry.

- Enhancement Delivery Plan update – revised quarterly, update subject to the change control process.
- Rail Industry Planning Group - quarterly reporting giving funds, although the use of funds and delivery of projects will be driven through local engagement.
- Network Rail's main Board via Investment Panel – the Head of Long Term Planning and Funding will provide quarterly updates.

Strategic Freight Network (SFN)

Details

Fund reference code: F006

Last updated: March 2014

Network Rail's obligations

The continuation of the SFN fund was announced in the DfT's High Level Output Specification (HLOS) in July 2012. This fund will deliver improvements identified by the industry to continue rail freight expansion in England and Wales whilst stimulating wider economic growth and environmental benefits. There is £246m available for this purpose.

Network Rail is working with stakeholders to identify the best use of available funds and to deliver schemes that are funded by the SFN programme.

Objective

The objective is to enhance the network used by freight trains to facilitate growth of the freight market; deliver significant environmental, operational and economic efficiencies including reduction of delays to freight trains and to reduce conflict between freight and passenger traffic.

Governance

The Head of Long Term Planning and Funding 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 also required to have been supported by the Strategic Freight Network Steering Group (SFNSG). This is a cross-industry group that meets quarterly and oversees the development of the SFN and currently consists of representatives from DfT, the Welsh Government, Transport Scotland, Freightliner, DB Schenker, GB Railfreight, Network Rail, DRS, Colas Rail, the Freight Transport Association, Rail Freight Group, ATOC, Transport for London, the PTE Group and the ORR (as observers).

The role of SFNSG is to:

- have strategic oversight of development of the SFN network including projects that are not directly funded through the SFN fund;
- identify schemes which meet one or more of the nine core objectives of the SFN;
- determine prioritisation of schemes, having regard to the above objectives and to the DfT's five case approach to business cases, which includes the economic case and value for money considerations;
- determine prioritisation of schemes where a change on any given project within the SFN programme significantly affects other projects in the SFN Programme (e.g. cost increase affecting affordability of other schemes); and
- monitor scheme progress in respect of planned timescales, scope and budget; and, where necessary, recommend corrective measures.

Funding is to be allocated for the delivery of schemes to enhance the SFN and can take the form of development funding (for potential future schemes fitting the criteria), research and development activities, as well as capital investment. The schemes prioritised are assessed against the nine objectives of the Strategic Freight Network, as described in the document "Britain's Transport Infrastructure – Strategic Freight Network: The Longer Term Vision" and support one or more of these objectives. They are:

- longer and heavier trains;
- efficient operating characteristics;
- 7-day and 24-hour capability;
- W12 loading gauge;
- UIC GB+ (or 'European') gauge freight link;
- new freight capacity;
- electrification of freight routes;
- strategic rail freight interchanges and terminals; and
- strategic freight capacity initiative.

The allocation of funding should be for schemes which potentially benefit more than one operator and have a good economic case. The fund is not intended to support investments where the benefits to individual stakeholders are sufficient to warrant them funding the scheme directly.

Scope of works

During CP5 a number of schemes that commenced in CP4 will be completed. These include Southampton to West Coast Main Line train lengthening programme, Peak Forest and Ipswich Yard works (as part of the Felixstowe to Nuneaton enhancement programme).

The purpose of the Southampton to West Coast Main Line train lengthening programme is to allow 775m train lengths for intermodal services from the Port of Southampton to the West Midlands and West Coast Main Line. The remaining scope to be delivered in CP5 comprises:

Location	Scope to deliver the output
Southampton Western Docks	Extend Up / Down docks branch
Southampton Maritime - Redbridge	Extend depot reception sidings
Eastleigh	Provide 775m Up Loop
Fenny Compton	Increase speed of entry / exit to 40mph
Hatton	Increase of loop entry
Milverton	Resite signal

The output of the Peak Forest to London train lengthening project will be to deliver the capacity for 775m length trains on the route and allow aggregate and cement trains of increased length to travel from the Peak Forest and Hope Valley terminals into London via Dore Junctions and the Midland Main Line. The remaining scope to be delivered in CP5 comprises:

- Sundon Up loop – A new 2.2km Up loop between Bedford and Luton that can be used to regulate freight services between Slow Line passenger services.

The purpose of the Felixstowe to Nuneaton (F2N) via London (Ipswich Yard) project is to support the F2N capacity enhancement by enabling Ipswich Yard to handle longer freight trains. The scope of the project includes:

- extending each of reception sidings 1, 2 and 3 to a minimum of 662 metres length (longer if practicable within the footprint available);
- all extended sidings having access to the London and Felixstowe directions;
- a minimum of one of reception sidings 1, 2 and 3 having connectivity to / from the Stowmarket direction;
- all works to accommodate W10 and W12 gauge;
- converting the existing No 2 Up Goods line to become Reception Road 4, and connect into the revised track layout on the country side of London Road overbridge; and
- all sidings extensions and altered connections to be electrified.

Activities and milestones

Activity	GRIP 6 completion (infrastructure ready for use)
Peak Forest	May 2014
Ipswich Yard	August 2014
Southampton to West Coast Main Line train lengthening	January 2016

In addition, a number of projects are currently being developed as candidates for funding in CP5.

Capacity and performance projects

The objective is to enhance the network used by freight trains and reduce conflict between freight and passenger traffic on a number of routes including:

- Felixstowe to Nuneaton route enhancements (Phase 2). The potential scope includes junction, linespeed and headway improvements at a number of locations on the corridor;
- access to Felixstowe and Immingham Ports. Provision of additional track capacity to support future expected growth in demand to these ports; and
- Southampton to West Coast Main Line capacity schemes. The potential scope includes a loop facility at Bordesley, Birmingham, diversionary capability and enhancement in the Basingstoke area. These schemes will be considered as part of the Electric Spine Development Programme.

Gauge enhancement projects

The following locations are currently being considered for further development of gauge enhancement schemes in CP5:

- Great Western Main Line gauge enhancement (W10 and W12 to Bristol);
- West Anglia gauge enhancement scheme; and
- East Coast Main Line north and Yorkshire diversionary routes.

Once projects have been developed to a point where they can be appraised, confirmation will be requested from the SFN Steering Group that further development to GRIP 3 shall be instigated. At this point the Enhancements Delivery Plan will be updated with appropriate milestones.

Passenger Journey Improvement Fund (PJIF)

Details

Fund reference code: F007

Last updated: March 2014

Network Rail's obligation

Our obligation is to work with the industry to develop and deliver works to improve passenger journey experience. There is £206m available over CP5 for this purpose.

Objective

The Secretary of State wishes to see improvements in passengers' journey experiences. It is anticipated that this fund will be used to deliver a step change improvement in journey times on key corridors in conjunction with other major capacity and capability improvements with the intent of delivering significant enhanced franchise value.

Governance

The Head of Long Term Planning and Funding is the fund holder for PJIF and will approve the use of funds, authorisation will be made at the appropriate investment panel as set out in Network Rail's Investment Regulations.

The fund holder will agree the allocation of funds with the DfT. In determining the use of the fund the expected impact on franchise value will be a key factor in the allocation process.

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).

Rail Industry Planning Group (RIPG) will hold the fund holder to account on the use of funds.

Eligibility rules

Expenditure is classifiable as capex, as set out in IR01.

Funding will not be available for 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 primarily to a third party and that party would see a reasonable financial return, it would generally be funded as a third party scheme; or

- will accrue primarily to Network Rail and Network Rail would see a reasonable financial return, it would generally be funded by Network Rail.

Where a scheme has been developed in collaboration with industry partners; evidence of formal recognition of industry support will be required from the Route Investment Review Group (RIRG).

The fund will be used for schemes where the primary benefits are related to passenger journey time improvements or improvements in passenger train service reliability. In the case where the primary benefit is passenger train service reliability, the sponsor will be required to demonstrate the following:

- the funds will not be used to deliver outputs already funded to deliver regulated performance targets through the CP5 periodic review;
- the funds will not be used to deliver outputs already funded through the franchise agreement between the DfT and an incumbent operator; and
- a better value for money operational solution has not been identified that delivers the same or similar outputs.

Appraisal

All schemes taken forward for implementation are subject to a value for money (VfM) assessment including the economic case.

The Economic Analysis team will support the sponsor in developing a VfM assessment that is compliant with the DfT's WEBTAG guidance and will include the other four cases required by the guidance (strategic, commercial, financial and management).

The Economic Analysis team in Group Strategy will support the development of the economic case for investment. Each route has an assigned Economic Planner, supported by an Economic Analysis Manager, who can be contacted.

Progress reporting on the fund

Progress reporting will be transparent and available to interested parties in the industry.

- Enhancement Delivery Plan update – revised quarterly, update subject to the change control process.
- Rail Industry Planning Group - quarterly reporting giving overview on the use of Journey Improvement funds, although the use of funds and delivery of projects will be driven through local engagement.
- Network Rail's main Board via Investment Panel – the Head of Long Term Planning and Funding will provide quarterly updates.

High Speed 2

Details

Fund reference code: F008

Last updated: December 2013

The High Speed Two (HS2) project is of national importance and will affect travel patterns in both England and Scotland. The client is DfT who has established HS2 Limited to develop the project. Network Rail's project leader is the Head of High Speed Rail Development, who is the fund holder for this fund.

Network Rail's goals are to support and influence the development of HS2 to maximise the opportunities and benefits that arise from the new line, and as well as protecting its business interests, to protect the wider interests of users of the national rail network.

Activities in support of these goals include technical, administrative and interface support for the design, delivery, integration and operation of HS2. There is £36m available for this purpose.

Output driver

The prime output objectives for HS2 are:

- increased capacity on the national railway network to relieve forecast constraints, most immediately on the West Coast Main Line;
- better connectivity for the cities of the North and the Midlands; and
- delivery of the associated economic benefits.

Through its involvement in the project, Network Rail is seeking to support delivery of the above objectives whilst also ensuring the continuing safe and efficient operation of the railway, not just by physical asset protection, but also by coordinating plans for delivery through the effective integration of operations, both TOC and FOC related, on the classic rail network such that Network Rail can be in a position to give its support to the hybrid Bills for both phases of the project.

Scope of works

HS2 Limited scope of work

Phase 1 – London West Midlands (LWM) – London Euston, Old Oak Common, Northwest to Handsacre with a spur along the Water Orton corridor to Birmingham Centre. The proposed HS2 works have been consulted by HS2 Ltd and are now the subject of a hybrid Bill.

Design development is also ongoing. Enhancements which could be needed on the WCML north to support the future timetable once HS2 opens are also under consideration through a cross industry process.

Phase 2 – extends Phase 1 to connect to Manchester and Leeds and cities in the Midlands – details are now available as part of the Phase 2 route consultation.

Network Rail scope of work

In order to support best HS2 Ltd and the DfT in the development of the project, particularly at the interfaces and the integration of HS2 with the classic network, a project team has been established as part of Network Rail's High Speed Rail Development Team. Network Rail's CP5 fund for HS2 covers the following work streams:

- engagement with DfT and HS2 Ltd and other stakeholders to help develop HS2 as a part of the national network, focussing particularly on integration of the new line both from transport management and operations/control perspectives, seeking to maximise the opportunities and benefits which the new line brings;
- supporting HS2 Ltd with project development at the interfaces of the new line with the existing network, including making recommendations for improvements and taking forward development of the on-network works where appropriate;
- advising DfT, and engagement with stakeholders, on the development of the future timetable and with regard to works that may be necessary to the classic network in order to support the future timetable;
- feedback on proposed detailed design, construction and operational activities through review of designs and hybrid Bill documents;
- protection of existing assets and input to asset management/maintenance considerations for the new assets; and
- facilitation of access by HS2 Ltd and their consultants to the existing network for survey and design purposes.

Innovation Fund

Details

Fund reference code: F009a

Last updated: March 2014

This section is a draft, subject to final agreement with ORR.

Network Rail's obligations

To support industry to develop, demonstrate and introduce new technologies and innovation including technical, business model, operational, process and supply chain innovation to improve the performance and economic value of the railway and railway industry. There is £52m available for this purpose.

Objective

The objective of the Innovation Fund is to support delivery of the Rail Technical Strategy (RTS), to the extent that the projects selected meet the criteria agreed with ORR in a separate governance note. The RTS sets out the rail industry's vision for the future railway. The Innovation Fund is complementary to the Strategic Research and Development (R&D) Fund and will be governed through the same industry and Network Rail groups to achieve an efficient integrated R&D programme that will deliver co-ordinated improvements to the whole railway system. The Innovation Fund explicitly includes wide reaching goals for innovation to enable economic growth and increase rail's share of freight and passenger transport.

Governance

The Group Asset Management Director is the fund holder for the Innovation Fund. Network Rail is accountable for expenditure on the fund. Expenditure against this fund will be driven by and governed by the Technical Strategy Leadership Group (TSLG), which is a cross industry body working under the strategic direction of the Rail Delivery Group (RDG) and facilitated by RSSB.

TSLG will produce an overall plan for activity and expenditure, and annually a plan for each year of the control period. When these plans are endorsed by both the Network Rail Technology and Innovation Board and the RDG (T&O) Steering Group, Network Rail will transfer sufficient funds to RSSB to enable the efficient functioning of the Future Railway Team and the entering into of commitments for innovation activity to deliver the plan.

To ensure the plans are complementary, the TSLG plan will be endorsed by the T&I board, and the Network Rail plan for the Strategic R&D Fund will be endorsed by TSLG. The combined plans for these programmes will be endorsed by the RDG T&O Steering group.

Management and delivery of the TSLG plan will be overseen by the Core Group of TSLG which is established and set up under governance arrangements approved by the RSSB Board and RDG.

RSSB (Future Railway Team) will be responsible for managing delivery in accordance with the delegated authorities for this activity and will report – through the Core Group and TSLG to Network Rail and RDG both expenditure and progress with the delivery of the plan.

TSLG will agree any material changes to the plan with the fund holder. Further details of these arrangements are set out in an investment governance note.

Purpose of the Innovation Fund

- Support delivery of the RTS, to the extent that the projects selected meet the criteria agreed with ORR in the separate governance note, optimising the performance and efficiency of the whole railway including reduced costs and increased revenues through better exploitation of the railway system.
- Increase the commercial attractiveness and competitiveness of the rail market to encourage an increasing level of innovation, and increasing level of investment in innovation, by all parts of the rail industry and other connected industry sectors.
- Enhance capacity of the GB rail network and increase the modal share of freight and passengers using rail.
- Boost GDP and economic growth through enhancing the capability of the transport system and supporting UK companies where appropriate.
- Develop the capability to use innovation to sustain and improve performance, efficiency and economic value over the longer term, delivering against industry objectives.
- Address market failure.
- Enable the industry to reach a self-funding position for innovation development in the long term.
- Enable and accelerate the introduction of innovation.

Scope of the Innovation Fund

- Innovation that could benefit the GB railway system and industry.
- Innovation that supports delivery of the RTS, to the extent that the projects selected meet the criteria agreed with ORR in the separate governance note.
- The full employment and secondment costs of the Future Railway Team
- Supports short, medium and long term innovations to include technical, business model, operational, process and supply chain innovation.
- Accessible to all parts of industry and open to proposals from any organisation/consortium.
- Policy implications will be considered when identifying projects for funding.
- Projects will typically be co-funded with the extent and nature of co-funding appropriate for the risks and maturity of individual projects.
- The Innovation fund will not fund projects that would ordinarily be funded by individual industry organisations.

CP5 Enhancements Delivery Plan

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

Governance of the plan is subject to ongoing discussions with RSSB, ORR, DfT and other stakeholders.

Strategic Research and Development Fund

Details

Fund reference code: F009b

Last updated: March 2014

This section is draft, subject to final agreement with ORR.

Network Rail's obligations

To support the research, development, demonstration and introduction of new technologies and innovation, working closely with industry, to improve the performance and economic value of the railway. There is £50m available for this purpose.

Objective

The objective of the Strategic Research and Development (R&D) fund is to support delivery of the Network Rail Technical Strategy (NRTS) which sets out Network Rail's contribution to realising the industry's Rail Technical Strategy. The Strategic R&D Fund is complementary to the Innovation Fund and will be governed through the same Network Rail and industry groups to achieve an efficient integrated R&D programme that will deliver co-ordinated improvements to the whole railway system.

Governance

The Group Asset Management Director is the fund holder for the Strategic R&D fund. Internal governance and direction for the fund will be achieved through a Technology and Innovation Board within Network Rail. Financial authorisation for R&D Fund projects will be via a Network Rail Investment Panel. Industry will review proposed investments through the Technical Strategy Leadership Group (TSLG), a cross industry body working under the strategic direction of the RDG and facilitated by RSSB. The accountability for individual projects will fall to Network Rail or industry governance boards on a case by case basis with appropriate reporting and accountability to funders.

Portfolio management will be applied to the treatment of risk and to return on investment and to achieve a balanced delivery of Network Rail and industry outcomes. Co-funding for the portfolio will at least match the level of investment from the Strategic R&D fund. The co-funding of individual projects will be considered on a case by case basis as part of the process for investment scrutiny and approval.

Further details of these arrangements are set out in an investment governance note.

Purpose of the Strategic R&D fund

- Support delivery of the NRTS and RTS, optimising the performance and efficiency of the whole railway including safety, cost, enhanced capacity, customer experience and sustainability.
- Develop the capability to use innovation to sustain and improve performance and efficiency over the longer term, delivering against Network Rail business and industry objectives.
- Address market failure in innovation.
- Increase the commercial attractiveness and competitiveness of the rail market to encourage an increasing level of innovation, and increasing level of investment in innovation, by third parties.
- Enable and accelerate the introduction of technology and innovation

Scope of the Strategic R&D fund

- Innovation that supports delivery of the NRTS and RTS.
- The Strategic R&D fund supports short, medium and long term research and development and innovation with the primary focus on technology-based innovation.
- For the avoidance of doubt, the Strategic R&D fund is additional to, and does not replace, funding for projects that would ordinarily receive contributions from Network Rail or other individual industry organisations. This is typically likely to arise as either:
 - sufficient benefits are not available within CP5 to create a business case;
 - the business case delivers whole industry benefits rather than benefit Network Rail's business independently; or
 - the project involves a level of risk of not leading to an implementable solution that would mean the project would not be undertaken as business as usual.

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

Depots and Stabling Fund (DSF)

Details

Fund reference code: F010

Last updated: March 2014

Network Rail's obligations

The Final Determination includes a fund for depots, stabling and ancillary works in England and Wales. Network Rail is required to put governance in place to ensure that the funds are efficiently allocated. The projects will be funded on an efficient emerging cost basis and delivered by either Network Rail or a third party (such as a ROSCO or TOC) if it is efficient to do so. There is £312m available for this purpose.

Objective

The objective of the fund is for ancillary works to meet outcomes of committed projects. The fund's prime objective is to enhance depots and stabling facilities for HLOS capacity metric schemes, the CP5 electrification programme and for associated gauge, platform and electric compatibility works.

Governance

The Head of Long Term Planning and Funding is the fund holder for DSF. Authorisation of draw down and spend is as set out in Network Rail's Investment Regulations. Schemes are selected through agreement with DfT.

The governance arrangements reflect the ORR's determination that Network Rail should not be wholly accountable for the delivery of depots given that depot location, scope and specification of works are all dependent on decisions made by the funders, TOCs and ROSCOs.

Rail Industry Planning Group (RIPG) will be used to inform wider stakeholders on the use of the fund.

Schemes may be developed and delivered by Network Rail or third parties.

Appraisal

The candidate schemes will be assessed against the objectives of the DSF and will be expected to include one or more of the following:

- enhancement of depots and stabling for CP5 capacity metric schemes;
- enhancement of depots and stabling for the CP5 electrification programme; and
- ancillary works such as gauge, platform and electric compatibility works associated with the above.

The allocation of funding should be for schemes which have a good economic case, either on a free-standing basis or as an enabler to operation of a committed investment in CP5. The fund is not intended to support investments where the benefits to individual stakeholders are sufficient to warrant them funding the scheme directly. Priority will be given to schemes with the strongest business case and which unlock the benefits of committed infrastructure schemes.

The governance will be developed further with the funder and industry.

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

European Train Control System (ETCS) Cab Fitment Fund

Details

Fund reference code: F011

Last updated: March 2014

Network Rail's obligation

Our obligation is to work with all train operators to ensure there are appropriate plans in place for them to introduce ETCS on-board equipment to their fleets so that there are no barriers or interruption to operating services on ETCS equipped infrastructure. There is £194m available for this purpose.

Objective

Our objectives are:

- to facilitate the inclusion of migration to ETCS operation as a requirement in new franchises through funding and supporting the development of First-in-Class design solutions;
- to engage with Freight Operators and Open Access passenger operators to fund and co-ordinate the retro-fitment of ETCS onboard equipment to their fleets and the consequential changes to their business to support operation with ETCS; and
- to ensure sufficient ETCS-equipped engineering vehicles and on-track machines are available to assure the continued maintenance of the routes equipped with ETCS.

Governance

The Client Manager, National Operating Strategy is the fund holder for the ETCS Cab Fitment Fund.

A Programme Board (PB) oversees the ERTMS programme activities including the ETCS cab fitment projects and consists of representatives from DfT, Freight Operating Companies, Train Operating Companies, RSSB, ATOC, Network Rail, and the ORR (as observers). The remit of the PB will be amended to include the overseeing of the prioritisation of schemes and allocation of funding for scheme development and delivery.

Draw down from the fund

Authorisation of draw down and spend is as set out in Network Rail's Investment Regulations.

Projects will be prioritised by Network Rail following discussion with operators and with stakeholders agreement at PB.

Progress reporting on the fund

Progress will be reported at the ERTMS Programme Board.

Scope of works

Freight programme

Network Rail is working with FOCs to establish national procurement programme for the design and installation of ETCS to freight locomotives. The scope of the Freight ETCS programme covers all classes of freight locomotive currently in service. The current baseline is:

Scope of the Freight ETCS programme			
Class 20	Class 57	Class 67	Class 90
Class 31	Class 58	Class 68	Class 92
Class 37	Class 59	Class 70	Class 325
Class 47	Class 60	Class 73	
Class 56	Class 66	Class 86	

Network Rail will enter into templated funding and installation agreements with each FOC. The final scope of the freight fleet fitments will be established through this process; however our working assumption is that up to 250 locomotives will require fitment in CP5 (out of approximately 950 in service on the network) to operate on ECML and to prepare for subsequent route deployments. Network Rail will work with Freight Operators to minimise the fitment requirements where practicable and to smooth the fitment volume profile.

The scope of each fleet fitment project will include;

- specification development (interface requirements, technical work-scopes, outline designs);
- procurement on a cross operator, by-class basis;
- design, testing and acceptance (by all operators) of the ETCS on-board application on a First-in-Class locomotive;
- supply/installation to fleets;
- logistics planning;
- provision of cover vehicles;
- recruitment of driver 'float' to cover drivers whilst being trained;
- operation preparedness (bringing into service, driver training materials, trainer training, driver training, maintenance training, maintenance equipment, changes to the operators' Safety Management System (SMS));
- acceptance into service through the operator's SMS; and
- procurement of a whole life support plan.

Passenger trains – First-in-Class Project

Network Rail has agreed to fund a joint ROSCO initiative to undertake design and procurement works to achieve a position where there are fleet-specific ETCS cab designs and implementation contracts available for use by bidders in the DfT's New Franchising Plan. Implementing ETCS will be a core franchise requirement and will be funded as part of the overall franchise contract.

The scope of the Passenger ETCS programme covers all classes of passenger fleets that are likely to incur ETCS operation prior to 2025. The current baseline is:

Scope of the Passenger ETCS programme			
Class 43	Class 158	Class 222	Class 323
Class 82	Class 165	Class 313	Class 334
Class 91	Class 166	Class 314	Class 350
Class 150	Class 170	Class 317	Class 360
Class 153	Class 175	Class 318	Class 365
Class 155	Class 180	Class 320	Class 380
Class 156	Class 185	Class 321	Class 390

As time progresses, some First-in-Class projects are expected to be re-timed or terminated as franchises are awarded and fleet cascades established.

The scope of each fleet First-in-Class project will include:

- specification development (interface requirements, technical work-scopes, outline designs);
- procurement on a cross operator, by-class basis;
- design, testing and acceptance of the ETCS on-board application on a First-in-Class locomotive; and
- acceptance into service through the operator's SMS.

Passenger trains – retro-fitment projects

Network Rail will engage with passenger operators to facilitate fleet fitment in limited circumstances, as set out below:

- **Open Access Operators**

Network Rail will engage with the Open Access Operators who operate on ECML to facilitate and fund ETCS retro-fitment to their vehicles and to support business change processes.

- **Existing/Extended Franchise Operators**

We do not believe that ETCS retro-fitment projects are needed in the timescales of current passenger services franchises. Some ETCS retro-fitment will be required in extended

franchises. We continue on the basis that the DfT will instigate and fund these through the franchise extension process and hence are not included in the Enhancements Delivery Plan.

- **New Franchises**

We continue on the basis that all ETCS retro-fitment projects required in new franchises will be funded and managed through the DfT and TS's franchise processes and hence are excluded from the Enhancements Delivery Plan.

NDS engineering vehicles and On Track Machines (OTM)

Our current plan for NDS's fleet has been based on the principle of installing ETCS in the majority of vehicles in time for the removal of lineside signals from ECML in 2018. The plan is likely to change as the results of feasibility studies confirm whether it is practicable to install ETCS to the various types of vehicle and the plan is smoothed.

The scope of the OTM project is for sufficient vehicles (Network Rail and third-party owned) to be made available for the continued maintenance and monitoring of the ECML, as well as preparing for subsequent infrastructure deployments, and includes:

- stoneblowers;
- MPVs;
- rail grinders;
- tampers;
- track surveyors;
- ballast regulators;
- locomotives; and
- track recording units and measurement trains.

Third party OTMs

We have not made a provision for 3rd party-owned OTMs for CP5 at this point whilst we work with our suppliers to establish the most efficient means of contracting their services with ETCS enabled vehicles.

West Coast Railways Class 37s

We have included provision for the ETCS retro-fitment of two locos belonging to West Coast Railways intended for use as charter services on the Cambrian line.

Heritage

We continue to exclude Heritage vehicles from the plan (these include historic steam, diesel and electric locomotives that are used by charter operators as well as third-party older vehicles that are used for spot hire to any operator). We propose to revisit this provision on conclusion of our new Heritage/Charter work stream which will develop technical and commercial options for consideration by funders and stakeholders.

Driver training facilities and driver recruitment

We have made a provision of £26m for creating ETCS overlay facilities on the infrastructure to enable drivers to be trained in driving with ETCS and their competence to be assessed. This provision is currently funding the ECML Hertford overlay development project, and is also intended to fund the upgrading Melton and Tuxford Rail Innovation & Development Centres for train testing and driver training purposes.

Key assumptions

- DfT will direct and fund train retro-fitment for all passenger trains (i.e. through the new franchising plan).
- There will be no changes to the new franchising plan.
- There are no changes to the infrastructure implementation plan.
- Retro-fitment to freight will be managed through bi-lateral commercial agreements (rather than the Network Code) on terms agreeable to the FOCs, Network Rail and the regulator.
- There is sufficient capacity in the supply chain to serve all of the ETCS on-board projects.
- There is sufficient capacity at our test centres to test all of the ETCS on-board projects.

Milestones**Freight First-in-Class and Fleet Fitment**

Activity	Milestone
Freight on-board ETCS invitation to tender (ITT) issued	Q4 2014
Freight on-board ETCS contract awards	Q3 2015
First First-in-Class complete	Q3 2016
Fleet fitment commences	Q4 2016
All First-in-Class projects complete	Q3 2019
All freight fleet retro-fitments complete	2023

Passenger First-in-Class

Activity	Milestone
First First-in-Class (Class 43) on-board ETCS ITT issued	September 2013
Tranche 2 on-board ETCS ITT issued	January 2014
Tranche 1 on-board ETCS contract award	June 2014
First First-in-Class returned to service	September 2015
Second First-in-Class returned to service	November 2015
Project Complete	2019

NDS Engineering Vehicles and OTM

Activity	Milestone
Start First-in-Class designs	Q3 2014
Start First-in-Class fitment	Q3 2015
Fleetwide install starts	Q2 2015
Fleetwide install finishes	Q1 2020

ERTMS Infrastructure

Network Rail's obligation

Our obligation is to work with all stakeholders to co-ordinate and synchronise projects in order to commission Level 2 ETCS train control systems on the East Coast Main Line (ECML) and Western Main Line (WML) whilst ensuring the optimum industry efficiency and benefit is achieved.

Output

ETCS level 2 systems will:

- reduce the cost of signalling renewals (when installed with no lineside signals);
- reduce the cost of signalling maintenance (when installed with no lineside signals);
- improve safety through continuous automatic train protection;
- provide the opportunity for enhanced operational capability and increased capacity (when installed with no lineside signals); and
- afford regulatory compliance to Railway Interoperability Regulations (2011).

Scope

ERTMS Level 2 (without signals) will be deployed on the ECML as part of its re-signalling and enhancement programme. Implementation is planned to be undertaken in following phases:

- Kings Cross remodelling and relock - retaining signals (Phase 1, Stage 1);
- Kings Cross to Wood Green overlay with signals and Moorgate to Drayton Park L2 no signals (Phase 1, Stage 2);
- Kings Cross to South Peterborough L2 no signals inclusive of Hertford Loop, Hitchin to Royston (Phase 1, Stage 3); and
- South Peterborough to Doncaster South (Decoy) (Phase 2).

On the WML, Paddington-Heathrow, ERTMS will be provided initially as an overlay on the existing signalling system for the planned start of dynamic testing of Crossrail trains from 30 April 2017.

It is also planned to implement ERTMS as an overlay on the remainder of the WML, Paddington-Bristol South including spurs to Oxford and Newbury by July 2019. The line-side signals will remain operational until all trains on the route have been fitted with ETCS. It is currently planned to remove lineside signals by December 2025.

Note that the deployment on the Thameslink core is managed by the Thameslink Programme.

Key assumptions

- All training will be completed and all staff operating the interface to the ERTMS system are assessed to be at the correct competency level.

- Network Rail is able to deliver the driver confidence training facility needs of the affected operators.
- Network Rail will be granted the necessary access to the network to install and commission the system along with King's Cross layout remodelling.
- Affected operators will work collaboratively with Network Rail in the system testing of train on board equipment, GSM-R air gap and lineside equipment.
- Train fitment programme (new rolling stock & retro fitment) remains on plan.
- The supply chain is able to deliver the specified system to plan.

Key interfaces

Western Main Line

- IEP Programme.
- Crossrail Programme.
- Electrification Programme.
- ETCS Trains Programme.
- Great Western Franchise.

East Coast Main Line

- IEP Programme.
- ETCS Trains Programme.
- Inter City East Coast Franchise.
- ECML remodelling projects.
- TSGN franchise.
- Kings Cross S&C remodelling.
- Thameslink Programme.

Milestones

Great West Main Line

Activity	Milestone
Paddington - Heathrow ETCS Level 2 Overlay commissioning completed	April 2017
Paddington - Bristol South ETCS Level 2 commissioning completed	July 2019

East Coast Main Line

Activity	Milestone
King's Cross to Wood Green overlay commissioned (including King's Cross remodelling)	December 2018
King's Cross to South Peterborough commissioning	August 2020
Peterborough – South Doncaster commissioning	December 2020

Appropriate indicator milestones will be added in as they are identified.

New Stations Fund

Details

Fund reference code: F012

Last updated: March 2014

Network Rail's obligation

Our obligation is to administer the New Stations Fund and monitor the delivery of those schemes that are authorised to draw down from this fund. As part of the process of updating the CP5 Delivery Plan we will regularly 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 enable a funding contribution to be made to the provision of new stations promoted by third parties in England and Wales. This funding has been distributed through a competition to ensure that all promoters of New Stations which meet the conditions have had an equal opportunity of securing a funding contribution.

Governance

The Head of Long Term Planning and Funding is the fund holder for the New Stations Fund. Authorisation of draw down and spend is as set out in Network Rail's Investment Regulations. Schemes were selected by the New Stations Fund Awards Panel which comprised Network Rail, the Department for Transport, ATOC and the Campaign for Better Transport. Qualifying schemes met conditions set out in the New Stations Fund guidance. The Head of Long Term Planning and Funding is responsible for maintaining a forward programme for disbursement of the fund to provide clarity on the use of the fund throughout CP5. We propose to use RIPG to provide an oversight on the use of the New Stations Fund.

Eligibility rules

The New Stations Fund has provided funding for the construction of brand new or reopened stations that are promoted by third parties. This excludes improvements or refurbishments at existing stations. Third party contributions of 25 per cent or more of the New Stations Fund project costs will be provided. Projects must be aligned with overall strategies for the route including Route Utilisation Strategies.

Appraisal

New Stations Fund schemes will be subject to the value for money test appropriate to the type of scheme under consideration.

Schemes to be developed in CP5

A list of schemes authorised to draw down from the fund is shown below. The schemes will have a stage gate review before they are authorised to construct and deliver the station (GRIP 6 to 8).

Project	Applicant
Ilkeston	Derbyshire County Council
Newcourt	Devon County Council
Lea Bridge	London Borough of Waltham Forest
Pye Corner	Welsh Government
Kenilworth	Warwickshire County Council

CP4 Station Commercial Project Facility (SCPF)

Details

Fund reference code: F013

Last updated: March 2014

Network Rail's obligation

SCPF is a DfT initiative funded through the RAB outside the periodic review process. The programme aims to deliver £100 million worth of commercially focussed station improvements in CP4 and CP5. Our obligation is to administer and programme manage this facility.

Where Network Rail are delivering the schemes or are in partnership, it is responsible for the delivery to scope, programme and budget and is responsible for demonstrating to ORR acceptance that scheme costs are efficient.

Objective

The aim is to generate a financial return to DfT and deliver passenger benefits by investing in commercial schemes, primarily at stations. As a result of investing in assets that generate increased income, the DfT are able to achieve a higher value for the franchise when it is let. Additionally, financial benefits are realised through the creation of a new revenue stream that reduces the level of subsidy or a possible revenue share arrangement.

Governance

The fund holder is the Director, Maintenance and Operational Services (DMOS). The fund operates in accordance with Network Rail Investment Regulations.

Scope of works

The fund will support projects by Network Rail, train operators or third parties in England and Wales and is awarded on a competitive basis. It would also be available for projects in Scotland where a return would accrue to DfT.

There is no cap on the value of projects and there are no restrictions on station categories. A project using this facility must demonstrate a direct or indirect financial benefit to DfT. This increased value may come in various forms including:

- increased value of a franchise at point of refranchising;
- creation of new revenue streams from station trading or development;
- increased income to franchisee or Network Rail as a result of increased car parks;
- increased income from reduced fare evasion through ticket gating at stations;
- projects that reduce the costs of operating the railway; and
- new innovative approaches.

Schemes delivered from the fund

Project	Delivery agent
Driver only operation: Strood to Gillingham	Network Rail
King's Cross accelerated gate line renewals	Network Rail
Wakefield Westgate	East Coast
Bath Spa ticket gates	First Great Western
Car park scheme at Langley station	First Great Western
Extension of car park at Charlbury	First Great Western
Extension of car park at Radley station	First Great Western
Hanborough car park extension	First Great Western
Pangbourne station car park	First Great Western
Huddersfield automatic ticket gates	First TransPennine Express
Northallerton car park enhancements	First TransPennine Express
Southend East ATG	Greater Anglia
Car Parks at 6 Northern Stations	Northern Rail
New Pudsey Car Park	Northern Rail
Dore & Topley car park enhancement	South Yorkshire PTE
Denmark Hill ticket gating	Southeastern
Dover Priory automatic ticket gates	Southeastern
Rochester Station new ticket office and gating	Southeastern
Waterloo East balcony ticket gating	Southeastern
Brighton Station development	Southern
Three Bridges retail development	Southern
Horwich car park	Transport for Greater Manchester

Schemes still to be implemented in CP4 and CP5

Project	Delivery agent
Crewe car park enhancement	Cheshire East Council
Banbury East MSCP	Chiltern Railways
Ferne Park depot enhancement	East Coast
Wakefield Westgate station enhancement	East Coast
Newcastle Central station retail enhancements	East Coast
Hatfield MSCP and station enhancements	First Capital Connect
Bristol Parkway MSCP	First Great Western
Cheltenham Spa car park extension	First Great Western
Tottenham Hale ATG	Greater Anglia
Wakefield Kirkgate station enhancement	Groundwork Wakefield
New Pudsey car park extensions	Northern Rail
Dover Priory MSCP & retail	Network Rail
Neville Hill depot enhancements	Network Rail
Manchester Victoria station re-development	Network Rail
Harpenden car park enhancements	Network Rail
Tonbridge car park enhancement	Southeastern
Orpington car park enhancement	Southeastern
Folkestone West car park expansion	Southeastern
ITSO smartcard installation at 91 Southern stations	Southern Railways
Farnborough car park extension	South-West Trains
Fleet car park extension	South-West Trains
Winchester car park extensions	South-West Trains
Stockport MSCP	Stockport Metropolitan Borough Council
Horwich car park	Transport for Greater Manchester

England and Wales Projects: Cross Route

England and Wales – cross route projects
CR001 Crossrail
CR002 Reading station area redevelopment
CR003 East West Rail
CR004 Thameslink Programme
CR005 Northern Hub
CR006 Mobile maintenance system
CR007 Acton (Great Western Main Line) to Willesden (West Coast Main Line) electrification
CR008 Station security
CR009 FTN/GSM-R on freight-only branch lines

Crossrail

Details

Project reference code: CR001

HLOS driver: Committed projects

Operating routes: Anglia, Kent and Western

Last updated: December 2013

Output driver

The Crossrail project will deliver a new integrated railway route through central London from Maidenhead and Heathrow in the west to Shenfield in the north east and Abbey Wood in the south east.

The joint sponsors of the Crossrail project, the Department for Transport (DfT) and Transport for London (TfL), have set-up a company called Crossrail Limited (CRL) to act as the delivery agent. Network Rail is one of CRL's delivery partners.

The Crossrail project benefits are as follows:

- new Crossrail train services will provide direct links from Maidenhead and Heathrow to Paddington in the west to Shenfield and Abbey Wood in the east. With up to 24 Crossrail trains an hour running through the central section in each direction (at peak times) a total of 10% will be added to London's rail-based transport capacity; and
- 28 existing surface stations will be upgraded with many of these stations also receiving platform extensions.

The responsibility for the design and construction of the works outside of the central tunnel section - known as the 'On Network Works' (ONW) - was transferred to Network Rail when Royal Assent was granted to the Crossrail project in July 2008.

The Protocol, which was established between Network Rail, Crossrail Limited (CRL) and the Department for Transport (DfT) on 27 November 2009 and subsequently amended in version 6.0 on 16 November 2011, and version 7.0 on 9 May 2012, details in full Network Rail's obligation to deliver the ONW. It authorised the completion of design development for the ONW to the end of GRIP 4 and provided a process for agreeing an Overall Target Price (OTP) for GRIP 5 to 8, to be Regulatory Asset Base (RAB) funded.

On 01 December 2011 Network Rail submitted its Key Date 1A (KD1A) submission to CRL. This was followed by an amended Overall Target Price (OTP) which was submitted to CRL in March 2012. The joint sponsors for the Crossrail project (DfT and TfL) accepted CRL's recommendation of that OTP, and CRL confirmed this acceptance on 29 April 2012.

The route CP5 maintenance submissions will contain an allowance to facilitate future maintenance regimes once the Crossrail services start to operate.

Scope of works

The scope of works Network Rail is responsible for is listed below.

Track

- Layout changes and turnback capability at Maidenhead, Slough, West Drayton, West Ealing, Hayes and Harlington, Ilford, Chadwell Heath, Gidea Park and Shenfield.
- Two new tracks from Plumstead to Abbey Wood to support the Crossrail train service.
- Remodelling at the interfaces between the Crossrail Central Tunnel section and the existing Network Rail infrastructure at Pudding Mill Lane, Plumstead, Royal Oak and on the approaches to Paddington.
- Remodelling at Old Oak Common depot to facilitate the Crossrail rolling stock depot.
- Track lowering beneath a number of bridges between Stockley and Maidenhead.

Structures

- A major new elevated junction at Stockley and a new dive-under at Acton.
- Reconstruction of a number of bridges between Stockley and Maidenhead and between Plumstead and Abbey Wood.
- New bay platforms at Maidenhead, Slough and Shenfield.

Signalling

- Re-signalling of the Great Western Main Line between Paddington and Reading.
- Modification to the signalling of the Great Eastern Main Line between Stratford and Shenfield.
- Design and provision of a new control centre facility at Romford.

Electrification

- All four tracks of the Great Western Main Line will be electrified between Stockley and Maidenhead and new OLE structures will be fitted to the listed Maidenhead Railway Bridge.

Telecoms

- Station and lineside telecoms systems will be provided in order to meet Crossrail requirements.

Stations

- A new station will be constructed at Abbey Wood. Stations at Ealing Broadway, Ilford, Romford, Slough and Maidenhead will be refurbished.
- New modular station buildings at Acton Main Line, West Ealing, Southall and Hayes and Harlington.
- Platforms will be lengthened and step-free access will be provided at a number of stations.

Traction Power

- Upgrade of the traction power supply system.

Other works (not part of the ONW) cash funded by CRL

- Advanced works and asset protection works at Paddington Station, Ilford Depot and the tunnel interfaces at Royal Oak, Plumstead and Pudding Mill Lane.
- Resignalling of Heathrow Spur.

Significant interfaces

There are multiple interfaces within Network Rail with:

- other projects (Reading Station Area Redevelopment (RSAR), Thameslink Programme, Intercity Express Programme (IEP), Great Western Electrification, High Speed 2 (HS2), ERTMS, FTN and GSM-R);
- routes (Western, Anglia, Kent);
- enhancements (such as the Kent train lengthening programme);
- CP4 & CP5 renewals (such as the Great Eastern rewiring);
- maintenance;
- tunnel spoil removal; and
- outside party works.

Key assumptions

The following key assumptions have been identified:

- the systems installed by CRL in the Central Tunnel Section will be compatible with the surface railway infrastructure;
- the delivery and integration of the whole Crossrail system, management of interfaces and achievement of the required 95% Public Performance Measure (PPM) remains the responsibility of CRL; and
- interfacing projects are funded and delivered on time by other parties.

Activities and milestones

Activity	Output	Date
Main works GRIP 6 start	Start on site	Work Packages phased to start from September 2012
Main works GRIP 6 complete	Assets commissioned	Completion of most work packages by July 2018
Start of full Crossrail service		December 2019

www.networkrail.co.uk/aspx/6308.aspx

Reading Station Area Redevelopment

Details

Project reference code: CR002
 HLOS driver: Committed projects
 Operating route: Western
 Last updated: December 2013

CP5 output driver

Located at the crossroads between the west and London and between the north and south, Reading station is the major bottleneck on the Great Western Main Line (GWML) restricting capacity and constraining performance. Funded through the CP4 and CP5 periodic reviews, the programme of work delivers a major capacity, capability and performance enhancement across the Reading station area and its approaches.

Scope of works

The constituent parts of the project are:

- a new Thames Valley signalling centre replacing the existing Reading signal box (completed and operational);
- four new platforms on the north side of the station and a new transfer deck (completed and operational);
- the new transfer deck drives the need to widen Platform 7;
- a new south side platform and platform extensions for Waterloo line services (completed and operational);
- 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 (completed, and operational);
- a 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 trains and modern equivalent depot facilities (completed and operational);
- grade separation by provision of elevated main lines to the west of the station facilitating improvements to Cow Lane Bridge by January 2015;
- provision of a new grade-separated feeder line from Oxford Road Junction to the north side of the station by April 2015;
- grade separation of the Reading West Curve from Oxford Road Junction – Reading West Junction;
- extensive track layout reconfiguration and re-signalling throughout the area;
- passive provision for a possible future extension of Crossrail; and
- a Transport and Works Order Act, which was successfully enacted on 28 October 2009, thereby securing the lands needed to undertake the project.

Significant interfaces

- Asset renewals and enhancements programmes for signalling, telecoms and track.
- GWML route enhancement projects.
- Crossrail.
- Great Western Main Line electrification.
- Intercity Express programme.
- Thames Valley EMU capability works.

Key assumptions

Any additional requirements are made clear in sufficient time to enable delivery of the facilities without negative impact on the programme.

Activities and milestones

Activity	Output	Date
Non key output 1 deliverables: Station upgrade works	Platform 11 works Completion of Platforms 1-3 and 7-10 (including platform 7 widening) External station works	June 2014
Key output 3: Reading West Junction grade separation	Reading Main Lines grade separation Westbury Line junction remodelling and connection of main & festival lines to station New mainline civils work (elevated railway) West Country grade separation (feeder line)	January 2015
Key output 4: West Country grade separation	Construction of final depot connections West Country grade separation (east chord north)	April 2015
Non Key output 4 Deliverables: Recoveries & speed restriction removals	Track & signalling recoveries, removal of PSRs and re-instatement of final line speed signage.	September 2015

Milestones above are regulated outputs.

<http://networkrail.co.uk.aspx/6339.aspx>

East West Rail

Details

Project reference code: CR003

HLOS driver: Committed projects

Operating routes: East Midlands, LNW and Western

Last updated: March 2014

CP5 output driver

The objective of this project is to support economic growth along the line of route, particularly around Milton Keynes and North Buckinghamshire, by providing the capacity for direct rail services between Oxford / Aylesbury and Milton Keynes / Bedford. The new services are also intended to encourage residential and commercial growth in the area.

Scope of works

In order to secure efficiencies and economies by combining the incremental outputs required for East West Rail between Oxford and Bicester with the works planned under Chiltern Railway's "Evergreen 3 Phase 2" project, it is proposed to deliver East West Rail in two phases. The works in each phase include the following.

Phase 1

- A second running line between Bicester Town and Water Eaton, with consequential enhancements at Islip station.
- New and enhanced overline structures to be constructed to W10 or W12 + electrification loading gauge, subject to gauging strategy and physical constraints.
- Capacity enhancement works between Wolvercote Tunnel, Oxford North Junction and Oxford station, the scope of which is currently under development.

Phase 2

- Upgrading the existing Bicester Town to Bletchley freight line as a double-track 100mph multi-functional railway capable of accommodating three passenger services each way per hour and two additional paths per hour for freight and inter-regional services.
- Upgrading the existing Aylesbury to Claydon Junction freight line as a single-track 100mph passenger railway capable of accommodating one passenger service and one freight service each way per hour.
- Minor upgrading of the existing Bletchley – Bedford passenger railway to accommodate one additional fast passenger service each way per hour.
- New station at Winslow.
- New high-level platforms and track remodelling at Bletchley.
- New and enhanced overline structures to be constructed to W10 or W12 + electrification loading gauge.

- Installation of a new running loop between Aylesbury and Princes Risborough, if required, to accommodate extension of the proposed East West Rail Milton Keynes – Aylesbury service to Marylebone.

The Department for Transport (DfT) has identified the East West Route as having potential to deliver further enhancements to network capacity and flexibility, as well as opportunities to exploit new passenger and freight markets. In addition, the route forms part of the Electric Spine proposal (ES003) to create an electrified strategic freight and passenger network between the South Coast and the East and West Midlands. In order to deliver these aspirations, significant expansion of the scope would be required, which will be subject to the necessary industry consultation and change control processes.

Significant interfaces

- Project Evergreen 3 Phase 2 (Bicester – Oxford): originally promoted and developed by Chiltern Railways to allow the introduction of a new London (Marylebone) to Oxford via High Wycombe service. The outputs to achieve this objective will now be delivered by Network Rail as an integral part of East West Rail Phase 1.
- Thames Valley resignalling: control of the Oxford area to be transferred to the new Thames Valley Signalling Control Centre in 2016.
- Oxford corridor capacity improvements: includes additional capacity between Didcot and Wolvercote Junction (north of Oxford) to accommodate growth in freight traffic.
- Electric Spine: proposal by DfT to create an electrified network between the South Coast and the East and West Midlands, primarily to accommodate forecast freight growth but also providing opportunities for new passenger services. The Oxford – Bicester – Bletchley - Bedford route forms an integral part of the Electric Spine plan.
- Thameslink: capacity enhancements planned on the Thameslink network are likely to have a major impact on the Bedford station area.
- High Speed 2: this crosses the East West line of route at Steeple Claydon, where an infrastructure maintenance depot is planned. This is planned to be rail-served via the East West route both during construction of HS2 and subsequently after opening of the high speed line. The HS2 alignment also crosses the Aylesbury – Princes Risborough branch near Little Kimble.
- DfT rolling stock strategy: both new electric stock procurement and planned diesel fleet cascade policies are likely to impact on East West Rail scope and programme decisions.

Key assumptions

- In order to secure efficiencies, the incremental works required to provide additional capacity in order to accommodate the later introduction of East West Rail services between Oxford and Bicester will be delivered concurrently with Project Evergreen 3 Phase 2 as "East West Rail Phase 1".
- There will be opportunities to close sections of the East West route for extended periods to allow construction.

- The proposed additional trains (2 each way per hour) between Bletchley and Milton Keynes can be accommodated on the existing infrastructure, and no works are needed to increase capacity over this section.

Activities and milestones

As stated above, it is proposed to deliver East West Rail in two phases:

Phase 1, between Bicester and Oxford, will deliver both the infrastructure required for Chiltern's Evergreen services to London and the incremental works required for the later introduction of East West Rail services.

Works between Wolvercote and Bicester will be delivered during extended blockades of the route between April 2014 and February 2016. Works at Oxford will be delivered as part of the wider works programmed under the Thames Valley resignalling and the Oxford Corridor capacity improvements projects, and funded by the East West Rail Phase 1 project.

Phase 2, which is at a much earlier stage of development, will deliver the East West Rail works east of Bicester to Bletchley and Bedford, including the Aylesbury – Claydon Junction line, by the end of CP5. It is intended that early development work to validate the feasibility reports issued on behalf of the East West Rail Consortium in 2009, and undertake survey work, will commence before the start of CP5.

East West Rail Phase 1

Milestone	Description	Date	Status
Oxford GRIP 3 completion	Single option selection	September 2014	Indicator
GRIP 4 completion*	Single option scope defined	December 2013	Indicator
Oxford GRIP 4 completion	Single option scope defined	January 2015	Indicator
GRIP 6 start*	Start on site	May 2013	Indicator
Oxford GRIP 6 start	Start on site	September 2015	Indicator
GRIP 6 completion*	Infrastructure ready for use	March 2016	Regulated Output
Oxford GRIP 6 completion	Infrastructure ready for use	March 2016	Regulated Output

* Excludes Oxford

East West Rail Phase 2

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	June 2014	Indicator
GRIP 3 completion	Option selection	November 2015	Regulated Output
GRIP 4 completion	Single option scope defined	June 2016	Indicative
GRIP 6 start	Start on site	August 2017*	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2019	Indicative

*Subject to statutory powers and consents. Some preliminary construction may be undertaken before this date.

It is noted that the East West Rail Consortium and DfT have a target date for the core East West Rail train service to operate from December 2017. However, the project is at an early stage of development, and the outputs and scope are therefore unconfirmed. Further work will be required to develop scope and programme options as the project progresses through GRIP 2 and 3.

Thameslink Programme

Details

Project reference code: CR004

HLOS driver: Committed projects

Operating routes: Anglia, East Midlands, Kent, LNE, and Sussex

Last updated: December 2013

CP5 output driver

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

Scope of works

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 was completed in March 2009. It allows 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. The work required to facilitate this was completed in April 2012. In December 2011 the infrastructure works to allow 12 car train length operation between Bedford and Brighton were completed.

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 2018. This phase also provides the necessary infrastructure to allow a considerable number of these services to be operated through the London Bridge corridor (facilitating the implementation of a long standing service aspiration) and the radical improvement of passenger facilities at London Bridge station.

Significant interfaces

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

- Crossrail;
- Intercity Express programme - East Coast infrastructure capability and ECML power supply upgrade;
- London Underground upgrades;
- Alexandra Palace to Finsbury Park capacity improvements;
- DC power supply enhancement programme; and
- London & South East enhancements including platform extensions.

Other interfaces include:

- Network Rail routes Kent, Sussex, East Midlands, LNE and Anglia, which will all be affected by maintenance, network operations and performance of the Thameslink Programme; and
- DfT re-franchising programme for the new Thameslink franchise that combines all services currently operated by First Capital Connect, some South Eastern services and all Southern services.

Key assumptions

- The DfT managed Thameslink rolling stock project delivers rolling stock on schedule that is in compliance with the Train Infrastructure Interface Specification.
- Until such point as the specification and associated timetable for Thameslink services through the core under Key Output 2 is concluded, it is not possible for Network Rail to confirm the quantum of other services, for example to/ through London Bridge that will be operable by the end of CP5.

Activities and milestones

Infrastructure capability that enables operation of the new terminating platforms at London Bridge – January 2015.

Three Bridges and Hornsey depot connection, power supply and distribution scheme for completion in July 2015 and July 2016 respectively.

Key output 2 conventional infrastructure capability – January 2018.

Key output 2 to give 24 train paths per hour between St Pancras International (low level) and Blackfriars stations by **December 2018 (Regulated Output)**.

Northern Hub

Details

Project reference code: CR005
 HLOS driver: Committed projects
 Operating routes: LNE and LNW
 Last updated: March 2014

CP5 output driver

The outputs from the Northern Hub are designed to facilitate the economic growth of the North of England through value for money improvements to rail services. The key rail service improvements that would support economic growth were identified in the Northern Way Conditional Output Statement (April 2009) with Network Rail's strategy for delivering these improvements published in the Manchester Hub Rail Study Report (January 2010). This report identified a series of improvements that delivered a BCR (including wider economic benefits) of 4.0 and later work by GMPTE identified an annual contribution to the Northern economy of £2bn gross value added.

The specific outputs of the Northern Hub are designed to enhance the capability of the rail network across the North of England beyond that delivered in Control Period 4 to provide:

- capacity for forecast passenger growth;
- faster and more frequent inter-regional services with increased direct links between Northern cities;
- improved services on key commuter corridors to support the sustainable development of the cities;
- direct journeys from a wider range of towns/cities to Manchester Airport; and
- freight capacity required to 2030.

Some of the proposed works for the Northern Hub were announced in advance of the HLOS in statements by the Chancellor in March 2011 and March 2012, whilst the remainder were included within the HLOS in July 2012.

The Northern Hub is a constituent programme within the North of England Programmes and delivery of its interventions is being integrated with the other schemes such that the infrastructure required to be available at planned timetable change dates is identified, tracked and delivered. These delivery milestones are known as Configuration States and the Northern Hub elements to be delivered by each one are detailed in the appropriate section below. The commitment associated with the Northern Hub programme is to deliver the interventions as listed in the following scope of works section.

Scope of Works

The Northern Hub programme consists of the following interventions.

Intervention	Description
Ordsall Chord	New railway line in west Manchester providing a direct route between Manchester Victoria and Manchester Piccadilly
Manchester Victoria	Contribution towards the Manchester Victoria redevelopment project to address increased passenger numbers
Huyton and Roby capacity	Four tracking at this location to increase capacity and provide an overtaking facility on the Chat Moss route
Chat Moss capacity	Headway improvements to provide additional capacity between Liverpool to Manchester via Newton-le-Willows
Preston JTI	Infrastructure improvements between Salford Crescent and Euxton Junction via Bolton to provide journey time savings
Calder Valley JTI	Infrastructure improvements between Manchester and Bradford to provide journey time savings
Manchester Airport station	Additional platform to accommodate extra services from Manchester city centre in CP5
Manchester Victoria capacity	Layout alterations either side of the station to provide capacity and flexibility
Rochdale capacity	Provision of a turnback facility towards Manchester
Core Manchester performance	Castlefield corridor and Ordsall Lane Junction capacity and performance improvements
Chinley capacity	Provision of overtaking and turnback facilities
Dore & Grindleford capacity	Doubling of the single line between Dore West and Dore Station Junction and provision of freight recessing facilities
Hope Valley JTI	Infrastructure improvements between Dore and Stockport to provide journey time savings
Manchester Oxford Road station	Remodelling to provide capacity to accommodate longer, more frequent trains
Manchester Piccadilly station	Provision of two additional through platforms (15 & 16)
Manchester Victoria to Stalybridge JTI	Infrastructure improvements between Victoria and Stalybridge to provide journey time savings

Significant interfaces

- North West electrification programme.
- North Trans Pennine electrification.
- North West platform lengthening.
- East of Leeds capacity scheme.
- Huddersfield capacity scheme.
- West Coast power supply upgrade phase 3B.
- Manchester Victoria redevelopment.
- Strategic Freight Network.
- Manchester rail operating centre.
- Leeds to Liverpool JTI.
- DfT rolling stock strategy.
- CP5 renewals plans.
- HS2.

Key assumptions

- Delivery of Manchester Victoria station redevelopment is achieved during 2014.
- The timeline for obtaining consents allows delivery in CP5.
- Required consents (TWAO and Listed Building Consent) are granted.
- No funding for depot and stabling works has been included in any of the Northern Hub projects.
- There is sufficient supply chain capacity to undertake the volume of works.
- Sufficient engineering access is made available and timing of works on adjacent routes allows delivery of the Northern Hub interventions.

Activities and milestones

GRIP 3 has been completed for all interventions except those in central Manchester which will conclude by March 2014.

Northern Hub Inner Schemes	GRIP 3 complete	GRIP 6 start	GRIP 6 complete	Configuration state
Core Manchester Performance Stage 2 (Castlefield Junction)	March 2014	April 2016	December 2018	Interventions to be completed prior to Configuration State 7 and be available for the December 2018 timetable change
Manchester Oxford Road	March 2014	April 2016	December 2018	
Manchester Piccadilly	March 2014	Apr 2016	December 2018	

GRIP 3 has been completed for all interventions except those in central Manchester which will conclude by March 2014.

Northern Hub Inner Schemes	GRIP 3 complete	GRIP 6 start	GRIP 6 complete	Configuration state
Ordsall Chord	Complete	November 2014	December 2016	
Manchester Victoria Capacity East	Complete	November 2014	December 2016	Interventions to be completed prior to Configuration State 5 and be available for the December 2016 timetable change
Manchester Victoria Capacity West	Complete	November 2014	December 2016	
Core Manchester Performance Stage 1 (Ordsall Lane Junction)	Complete	November 2014	December 2016	
Manchester Airport	Complete	January 2014	March 2015	
Manchester Victoria to Stalybridge JTI	September 2014	June 2015	December 2016	

Northern Hub Outer Schemes

Northern Hub Outer Schemes	GRIP 6 start	GRIP 6 complete	Configuration state
Huyton and Roby Stage 1 (including the remaining Liverpool – Manchester JTI deferred from CP4 between DSE 3m -6m 440yds UP and 6m 1320yds DN)	Complete	August 2014	Configuration State 3 Available for December 2014 timetable change
Chat Moss Capacity	Complete	August 2014	
Huyton and Roby Stage 2	November 2014	February 2016	Configuration State 5 Available for December 2016 timetable change
Rochdale	January 2016	August 2016	
Calder Valley JTI	January 2016	August 2016	
Preston JTI	December 2014	December 2016	
Hope Valley Capacity [Dore/Grindelford & Chinley]	May 2016	August 2018	Configuration State 7 Available for December 2018 timetable change
Hope Valley JTI	May 2016	August 2018	

Our regulated commitment is to develop these schemes to GRIP 3; GRIP 6 dates are currently indicative.

Mobile Maintenance System

Details

Project reference code: CR006
 HLOS driver: Network availability
 Operating routes: Anglia, Kent, LNE, Sussex and Wessex
 Last updated: December 2013

CP5 output driver

Delivering bespoke maintenance trains that support a new way of working for maintenance personnel enabling delivery of core maintenance and campaign works in a more efficient manner leading to improved utilisation of track access.

This system has the potential to deliver significant efficiencies, capability and quality benefits. The unit provides a platform from which greater work quantities can be delivered without increasing track access times.

Scope of works

The project will deliver eight mobile maintenance systems (MMS) across LNE, Anglia, Kent, Sussex and Wessex.

The project includes:

- design, build and delivery of the trains to the routes;
- system certification; and
- compatibility testing and acceptance.

The project also includes organisation change and consultation to put in place the teams to manage and work on the system.

Additional work streams will deliver various enabling activities including:

- safe systems of work;
- stabling and materials handling facilities;
- system maintenance and operational servicing arrangements;
- train drivers; and
- developing system specific planning process and procedures.

Significant interfaces

- OTM protection zone work stream.

Key assumptions

- That the MMS is able to operate under signal protection to maximise the efficiencies, enabling more train paths and to realise the all potential benefits.
- A vehicle isolation solution when working in 3rd rail areas will be developed as part of the project.
- System manufacture lead-time for first system is 18 months from order placement.

Activities and milestones

Milestone	Description	Date	Status
GRIP 6 start	Start on site	November 2013	Indicator
GRIP 6 completion	Infrastructure ready for use	September 2016	Regulated Output

Acton (Great Western Main Line) to Willesden (West Coast Main Line) Electrification

Details

Project reference code: CR007
 HLOS driver: Other electrification projects
 Operating routes: Anglia, LNW and Western
 Last updated: December 2013

CP5 output driver

Following approval for the electrification of the Great Western Main Line (GWML), the provision of a link between this newly electrified route and the West Coast Main Line at Willesden is a significant benefit to support the ability of freight operators to use electric traction and for operational flexibility of all rail services. The completion of such infill electrification linked with electrification of the GWML would enable cost savings to be achieved on some routes for freight operators with existing electric locomotives. The Network RUS: Electrification (2009) identified this route as an option to facilitate the efficient operation of freight services.

The project provides capability for electric passenger and freight train operation between the Great Western Main Line and the West Coast Main Line for timetabled and diverted services.

Scope of works

The core works will involve electrifying overhead at 25kV AC from Acton West to Acton Wells, Acton Canal Wharf Junction (for WCML) and the West London Line.

This project does not include associated ancillary works necessary to enable the introduction and operation of electric trains and other electric traction (e.g. rolling stock clearance, depots / stabling works or platform lengthening as a result of the operation of electric trains).

Significant interfaces

- The GWML electrification programme.
- The Crossrail programme.
- The Western/Thames Valley EMU programme.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	December 2014	Regulated Output
GRIP 4 completion	Single option scope defined	To be determined	Indicative
GRIP 6 start	Start on site	To be determined	Indicative
GRIP 6 completion	Infrastructure ready for use	To be determined	Indicative

It should be noted that an efficient profiling workstream is considering all electrification projects and the outcome of this workstream may result in reprofiling the delivery dates of some electrification projects.

Station Security

Details

Project reference code: CR008

HLOS driver: CP4 completion

Operating routes: Various

Last updated: March 2014

CP5 output driver

Our obligation was to deliver this project in CP4 but due to third party developments taking place at some stations it would not have been sensible for our works to be delivered independently. Therefore some stations within the overall project will be carried over to the early years of CP5.

The project will improve security at a number of 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.

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.

Agreement has been sought with all relevant third party deliverers that they will deliver our security measures within their scheme.

Significant interfaces

The 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;
- TOC and Network Rail projects and maintenance; and
- local authorities.

Activities and milestones

Project details are agreed through liaison with the DfT Project Board.

FTN/GSM-R inclusion of freight-only branch lines

Details
Project reference code: CR009
HLOS driver: CP4 completion - GSM-R system coverage and operation
Operating route(s): Freight branches nationally (nominally all routes)
Last updated: March 2014

CP5 output driver

To improve safety and performance through the completion of the national implementation of GSM-R.

Scope of works

The project accommodates all remaining (i.e. as yet without GSM-R system coverage) single-ended freight-only branch lines (i.e. those that lie north of a line drawn between the Severn Estuary and the Wash) that are operational and within Network Rail controlled infrastructure boundaries (NRCI) into the FTN/GSM-R Programme scope.

The operational license for the National Radio Network (NRN) north of the line drawn between the Severn Estuary and the Wash expires in December 2015. Trackside GSM-R base transceiver equipment is being 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.

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.
- Planning approval is required for all GSM-R sites under the ‘Permitted Development Rights’ process.
- The delivery rate of the substantive FTN/GSM-R programme shall be maintained.
- The scope assumes 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.
- 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

Note: the main FTN/GSM-R Programme is substantially complete, with the only significant element remaining being the construction of the GSM-R coverage solution in the Mersey tunnels. The Freight Branches Project (this project) is also substantially complete with only a small number of line-side GSM-R sites requiring completion of construction and commissioning. The majority of lines are therefore already at a point of infrastructure readiness and either have been submitted, or will shortly be submitted, to the ORR for authorisation to bring GSM-R into operational service over them.

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	May 2014	Regulated Output

England and Wales Projects: Electric Spine

England and Wales – Electric Spine

ES001 Midland Main Line electrification

ES002 Derby station area remodelling

ES003 Electric Spine Development Programme

Midland Main Line Electrification

Details

Project reference code: ES001

HLOS driver: Electric Spine

Operating routes: East Midlands and LNE

Last updated: December 2013

CP5 output driver

To reduce railway industry costs and cut carbon emissions through the creation of an electrified route north of Bedford to link the core centres of population and economic activity in the East Midlands and South Yorkshire.

This project will extend the electrification north of Bedford (Corby, Nottingham and Sheffield) to the programme laid out below.

Scope of works

The core scheme will involve provision of Overhead Line Electrification (OLE) at 25kV AC for the following sections of the route:

- Bedford to Kettering and Corby;
- Kettering to Nottingham;
- Trent Junction to Derby; and
- Derby to Sheffield.

This will include route clearance works for different types of rolling stock, installation of OLE and provision of connections to the National Grid and other associated works. The connections to the National Grid will also facilitate further electrification proposals in CP6.

Significant interfaces

There are significant CP5 signalling and track renewals linked to this project. Other interfacing schemes are:

- line speed increases between London and Sheffield;
- Syston to Stoke gauge enhancement;
- Derby station area resignalling/remodelling;
- Electric Spine development programme: Leicester area capacity enhancement;
- Midland mainline long distance high speed services train lengthening;
- Sheffield station area remodelling (a CP6 concept);
- Dore Junction doubling – part of Northern Hub;
- East West Rail (Bedford area);
- North Trans-Pennine electrification (National Grid power supply requirements north of Sheffield); and

- Electric Spine development programme: Midland Main Line (MML) capacity (Bedford-Sharnbrook-Kettering-Corby).

Key assumptions

For the purposes of power supply and OLE design, the type of rolling stock has been assumed to use multiple pantographs operating at the line speed profile to be delivered by the end of CP4. Further development works may be required once the eventual rolling stock types have been confirmed.

This project does not include associated ancillary works necessary to enable the introduction and operation of electric trains and other electric traction (e.g. rolling stock clearance, depots / stabling works, platform lengthening and associated facilities or route availability for rolling stock above RA5). Improvements to the existing OLE between London and Bedford are also excluded from the scope of this project.

Complimentary routes excluded from this project, which maybe funded separately, include:

- Trent Junction to Clay Cross South Junction (Erewash valley line);
- Matlock branch;
- Sheffield to Doncaster and South Kirby Junction;
- Up and Down Hendon lines from Silkstream Junction to Watling Street Junction; and
- Corby-Manton-Syston.

Activities and milestones

An outline programme for Midland Main Line electrification has been developed which is particularly dependant on the significant interfaces with East Midlands re-signalling works, capacity works between Syston and Wigston (Leicester Capacity) and other Midland Main Line capacity schemes.

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	June 2014	Regulated Output
GRIP 4 completion	Single option scope defined	September 2017	Indicative
GRIP 6 start	Start on site	May 2013	Indicative
GRIP 6 completion	Infrastructure ready for use		
	Bedford to Kettering and Corby	December 2017	Indicative
	Kettering to Nottingham	December 2019	Indicative
	Trent Junction to Derby	December 2019	Indicative
	Derby to Sheffield	December 2020	Indicative

It should be noted that an efficient profiling workstream is considering all electrification projects and the outcome of this workstream may result in reprofiling the delivery dates of some electrification projects.

Derby Station Area Remodelling

Details

Project reference code: ES002

HLOS driver: Electric Spine

Operating route: East Midlands

Last updated: March 2014

CP5 output driver

To deliver reduced journey times, improved performance and operational flexibility through the segregation of services through Derby Station. The project will provide a remodelled track and signalling layout that will segregate services approaching Derby from the north from those services approaching Derby from the south and west, and thus remove the current bottleneck situation at Derby Station.

This once in life time opportunity is aligned to planned signalling and track renewals in the area. In addition to the benefits listed above the project will:

- support delivery of journey time improvements as part of the Electric Spine on the MML; and
- maintain declared infrastructure capability regarding rolling stock gauge.

Scope of works

- Signalling renewal and remodelling in station area.
- Track renewal and remodelling in station area.
- Construction of a new station platform and appropriate station facilities.
- Incremental enhancement to track and signalling layout to segregate flows.
- Possibility of alterations to existing station platforms in order to facilitate track layout.

Significant interfaces

There are significant CP5 signalling and track renewals linked to this project. Other interfacing schemes are:

- Derby interlocking renewal and re-control;
- linespeed increases between London and Sheffield;
- Syston to Stoke gauge enhancement;
- Midland Main Line electrification;
- Midland Main Line long distance high speed services train lengthening;
- Sheffield station area remodelling (a CP6 concept);

- Dore Junction doubling – part of Northern Hub;
- East West Rail (Bedford area);
- North Trans-Pennine electrification (National Grid power supply requirements north of Sheffield);
- Electric Spine: Midland Main Line (MML) capacity (Bedford-Sharnbrook-Kettering-Corby); and
- station renewal works.

Key assumptions

- The current capacity of the infrastructure shall not be reduced by the options proposed.
- The currently declared infrastructure capability regarding rolling stock gauge shall be maintained.
- The current capacity of each platform may be reduced, however each shall be required to accommodate a 10 car (10 x 26m) train and at least one platform available from all routes will accommodate charter services.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	February 2015	Regulated Output
GRIP 4 completion	Single option scope defined	August 2015	Indicative
GRIP 6 start	Start on site	January 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	December 2017	Indicative

Electric Spine Development Programme

Details

Project reference code: ES003

HLOS driver: Electric Spine

Operating routes: East Midlands, LNE, LNW, Wessex and Western

Last updated: December 2013

CP5 output driver

The High Level Output Specification (HLOS) for CP5 requests the development of a major north-south rail electrification and capacity enhancement referred to as the 'Electric Spine'. The concept of the 'Electric Spine' has since been developed further by the Department for Transport (DfT).

The DfT's key driver for the programme is to improve regional and national connectivity and links to ports and airports for both passengers and freight to support economic development. A key element of this is increasing the amount of the network to be electrified to create a 'critical mass' that facilitates the operation of electric, rather than diesel trains.

To this end, the DfT have said that they would like to create an electrified network over two Control Periods which:

- improves rail industry efficiency and value for money;
- improves connectivity by reducing journey times, increasing train carrying capacity and creating new through journey opportunities;
- improves connectivity to the ports thereby making rail freight more competitive; and
- reduces the environmental footprint of rail.

The Electric Spine will be a new 25kV electrified passenger and freight network from the Solent, Thames Valley linking to the West and East Midlands to South Yorkshire.

In addition to electrification, the programme also includes a number of strategic capacity enhancement schemes. The programme of works is expected to be implemented in a phased approach, starting in CP5 but continuing into CP6 and potentially beyond.

Scope of works

The development programme will establish a scope for, and programme for implementation of, schemes to meet the Government's objectives.

Network Rail will work closely with Government and stakeholders on the Development Programme. Options will be developed for wider rail enhancements to meet these objectives. These include gauge clearance for large containers, electrified links to adjacent electrified routes, depots and freight facilities, journey time enhancements, freight capacity, diversionary capability and the case for conversion of a section of the existing Southern

'third rail' (750V DC) electrification system to 'overhead' 25kV AC system between Southampton and Basingstoke.

The programme will deliver the provision of 25kV AC overhead electrification and associated power supplies / distribution for the route sections identified, including running lines and crossovers. Other core works will include signalling immunisation, track lowering and bridge reconstructions. This programme does not provide gauge clearance on existing electrified routes.

The design and development work of the programme will be taken forward to define the best value outputs taking into account rolling stock availability, schedule risks and efficient delivery in the context of the wider electrification programme for CP5.

Funder's priorities for development

The DfT has identified that the following are priority schemes that will be prioritised for early development to GRIP3.

Midland Main Line capacity (Bedford – Sharnbrook - Kettering – Corby)

This project seeks to deliver enhanced track capacity for additional services on the Midland Main Line in the future. The scope of works for this scheme may include; doubling the track from Kettering to Corby, new track and linespeed increases between Bedford and Kettering and improvements in the Bedford area. The delivery timescale of these schemes will be determined by the Midland Main Line electrification programme and the East Midlands re-signalling works.

Leicester area capacity enhancement (Syston to Wigston)

This scope of this project could include provision of additional tracks between Wigston Junction and Syston Junction on the east side. These would become the up and down slow lines with the existing main lines becoming fast lines. Other options could include works to reduce conflict between East West and core Midland Mainline services which would require grade separation in the Wigston Junction or Syston Junction areas. This project will seek to maximise efficient delivery in conjunction with MML Electrification.

Electrification (25kV AC overhead) of the route between Oxford and Bletchley

This scheme provides electrification of this section of the upgraded and reopened railway from Oxford to Bedford. Electrification of the route between Oxford and Bletchley will be undertaken in conjunction with the East West Rail project.

Leamington Spa to Coventry capacity upgrade and electrification

This scheme will seek to increase capacity between Coventry and Leamington Spa to support increased 'Cross Country' passenger and freight services expected on the route. The scope of works is expected to include sections of track doubling. This enhancement will also consider other expected growth on the corridor including an hourly local passenger train service between Coventry and Kenilworth supporting a new third party funded station at Kenilworth. The project will then provide 25kv AC overhead electrification and associated power supplies / distribution for the route.

Electrification (25kv AC overhead) of the route between Sheffield and the East Coast Main Line

This provides electrification of the route from Sheffield to Doncaster and South Kirkby enabling a more efficient operation of passenger services on the route through electric traction.

Electrification (25kv AC overhead) of the route between Reading (Southcote Junction) and Basingstoke

This provides electrification of the route from Southcote Junction near Reading to Basingstoke enabling more efficient operation of passenger services on the route through electric traction. It is also an important step towards enabling 'Cross Country' passenger services and freight operating electrically in the future.

Other schemes for development

The following schemes are also being considered for development as part of the Electric Spine Development Programme.

Electrification (25kv AC overhead) of the route between Bletchley and Bedford

This scheme provides an extension of electrification of this corridor from Bletchley to Bedford completing the electrified route between Oxford, the West Coast and Midland Main Lines. This scheme enables the conversion of passenger services on the route to Bedford to electric and provides the opportunity for future electrified freight and passenger services to access the Midland Main Line from this corridor.

Electrification (25kv AC overhead) of the route between Nuneaton and Coventry and Leamington Spa to Oxford

This provides electrification of the route from Nuneaton and Coventry and Leamington Spa to Oxford enabling a more efficient operation of passenger services on the route through electric traction. It is also an important step towards enabling 'Cross Country' and local passenger and freight services operating electrically in the future.

DC to AC conversion Southampton to Basingstoke

The project will identify the optimal value for money solution to meet the funders' requirements for this section of the Electric Spine. It will consider the case for conversion of the third rail DC electrification to a modern overhead AC system.

As part of this work, Network Rail will also consider the wider high level policy for replacement of DC equipment with an AC system.

The Development Programme will also consider further electrification and capacity enhancements that could be candidates for longer term development and maximise the benefit of the above schemes. These schemes will be agreed with DfT and be developed subject to additional funding.

Significant interfaces

- Midland Main Line electrification.
- Derby station area remodelling.
- High Speed 2.
- Great Western electrification programme.
- East West Rail project.
- OARS (Oxford Area Renewal of Signalling).
- South Coast – West Midlands freight capacity enhancements.
- Oxford Station area capacity and station enlargement.
- Bletchley resignalling.
- Reading Station Area Redevelopment Project.
- Strategic Freight Network Southampton to West Coast Main Line freight train lengthening and capacity projects.
- Wessex, Sussex and Kent DC-AC conversion project.
- Thames Valley EMU capability works.
- Wessex W12 gauging project via Andover.
- Strategic Freight Network Syston to Stoke gauge enhancement.
- Train lengthening and associated platform extensions on the MML.
- Banbury North and South resignalling.
- Sheffield station area remodelling.
- Dore Junction doubling – part of Northern Hub.
- New station at Kenilworth (third party funded).
- National SCADA programme.

Activities and milestones

The development programme will undertake development work on the range of schemes outlined over the next two years, as follows.

MML Capacity (Kettering- Corby)

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	September 2014	Regulated Output
GRIP 5 completion	Detailed design	February 2016	Indicative
GRIP 6 start	Start on site	August 2014	Indicative
GRIP 6 completion	Infrastructure ready for use	September 2016	Indicative

MML Capacity (Bedford-Kettering)

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	March 2014	Indicator
GRIP 3 completion	Single option selection	March 2015	Regulated Output
GRIP 5 completion	Detailed design	March 2017	Indicative
GRIP 6 start	Start on site	September 2015	Indicative
GRIP 6 completion	Infrastructure ready for use	January 2018	Indicative

Oxford-Bletchley Electrification

Dates shown match the dates for East-West Rail Phase 2.

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	June 2014	Indicator
GRIP 3 completion	Single option selection	November 2015	Regulated Output
GRIP 4 completion	Single option scope defined	June 2016	Indicative
GRIP 6 start	Start on site	August 2017*	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2019	Indicative

*Subject to statutory powers & consents. Some preliminary construction may be undertaken before this date.

Leicester Capacity (Kilby Bridge to Glen Parva)

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	September 2014	Indicator
GRIP 3 completion	Single option selection	September 2015	Regulated Output

The programme allows for TWA process for Wigston Junction assuming a flyover option is selected

Leicester Capacity (Leicester station area)

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	August 2015	Indicator
GRIP 3 completion	Single option selection	March 2016	Regulated Output

Sheffield to ECML Electrification

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	January 2015	Indicator
GRIP 3 completion	Single option selection	May 2016	Regulated Output
GRIP 4 completion	Single option scope defined	July 2017	Indicative
GRIP 6 start	Start on site	May 2018	Indicative
GRIP 6 completion	Infrastructure ready for use	June 2021	Indicative

Milestones for these additional projects will be confirmed following further development:

- Leamington Spa to Coventry capacity upgrade and electrification;
- Leicester area capacity enhancement (Syston area); and
- Reading (Southcote Junction) to Basingstoke electrification.

It should be noted that an efficient profiling workstream is considering all electrification projects and the outcome of this workstream may result in reprofiling the delivery dates of some electrification projects.

England and Wales Projects: Anglia

England and Wales – Anglia

A001 Ely North Junction capacity improvement

A002 Anglia traction power supply upgrade

A003 West Anglia Main Line capacity increase

A004 Great Eastern Main Line capacity improvement (Bow Junction)

A005 Gospel Oak to Barking electrification (non Periodic Review)

Ely North Junction Capacity Improvement

Details

Project reference code: A001

HLOS driver: Airport and port access

Operating route: Anglia

Last updated: March 2014

CP5 output driver

The single leads at Ely North Junction have been identified as a constraint to increasing passenger services in the Ely area. This project is to develop a scheme which improves capacity in the area by developing an operationally flexible junction that can deliver multiple train moves simultaneously. The specification for passenger services is yet to be agreed.

Scope of works

- The project is to provide appropriate infrastructure improvements at Ely North Junction to allow for an increase in train capacity at that location (passenger and freight using the single leads).
- The area covered by this project is just north of Kiln Lane level crossing and just south of the Queen Adelaide crossings.

Significant interfaces

- Ely West curve project (West curve to Kings Lynn and West curve to Norwich moves).
- Strategic Freight Network proposals Felixstowe to Nuneaton Phases 1 and 2 (including Ely area). This is a key interface as the Felixstowe to Nuneaton project is considering when growth will require interventions to address the headway issues between Ely station and Ely North Junction.
- Level Crossing Changes in the region - including assessments relating to any traffic increases and any resulting work.

Key assumptions

- The Ely West curve project will be completed during CP4 to provide bi-directional working round the curve.
- Within the life of any new infrastructure required as a result of this project it is expected that ETN will become electrified. Therefore passive provision should be made to allow for this in the design and build.
- Line speeds through Ely North Junction will not be reduced as a result of this project.
- The delivery strategy of a 3 week blockade will be accepted by TOCs and FOCs for the GRIP 6 completion date of May 2017.
- Closure of Ely North level crossing.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	December 2014	Regulated Output
GRIP 4 completion	Single option scope defined	July 2015	Indicative
GRIP 6 start	Start on site	April 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	May 2017	Indicative

Anglia Traction Power Supply Upgrade

Details

Project reference code: A002

HLOS driver: Capacity enabler

Operating route: Anglia

Last updated: December 2013

CP5 output driver

The aim of the project is to provide enhancements to the existing traction power infrastructure required to support the forecast increase in electrically operated rolling stock for CP5. The project will develop the requirements for electric traction power to provide additional power to support the capacity increases into London Liverpool Street. It will also consider the implications associated with future service increases and rolling stock changes in CP6 (funding outside PR13).

This project will provide the required power capability to accommodate the service increases indicated in A003 and A004, along with incremental train lengthening on some services that are currently 'short formed'.

Scope of works

The scope of works required to support the above alterations to train services is being developed as part of the Route Asset Strategy process.

Significant interfaces

This project has key interfaces with the following programmes of work:

- Crossrail and Thameslink (services to Cambridge);
- Great Eastern main line capacity improvement;
- West Anglia main line capacity improvement; and
- ECML power supply upgrade Phase 1.

Key assumptions

- Train lengthening programmes absorb all other costs associated with track / signalling / structures / stations and other railway systems.
- Crossrail provides full AT capability between Pudding Mill Lane and Shenfield.

- Traction power and other infrastructure upgrades required as a result of the possible introduction of new rolling stock between Liverpool Street and Norwich will be funded and delivered by other projects.
- The Distribution Network Operators (DNO) or the National Grid (Supergrid) supply will be available in the required timescales.
- No works or upgrade required to depot facilities (including power supplies).
- AT feeding between Springfield and Colchester will not be required for the CP5 timetable specification.

Activities and milestones

Brimsdown traction power feed

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	July 2014	Regulated Output
GRIP 4 completion	Single option scope defined	January 2015	Indicative
GRIP 6 start	Start on site	December 2015	Indicative
GRIP 6 completion	Infrastructure ready for use	September 2016	Indicative

West Anglia traction power upgrade

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	April 2015	Regulated Output
GRIP 4 completion	Single option scope defined	May 2016	Indicative
GRIP 6 start	Start on site	October 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	May 2018	Indicative

GE bulk supply point & AT

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	December 2014	Regulated Output
GRIP 4 completion	Single option scope defined	May 2016	Indicative
GRIP 6 start	Start on site	October 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2019	Indicative

West Anglia Main Line Capacity Increase

Details

Project reference code: A003

HLOS driver: City capacity - London Liverpool Street (terminating)

Operating route: Anglia

Last updated: March 2014

CP5 output driver

To relieve overcrowding and absorb additional forecast growth on the West Anglia Main Line the project shall aim to implement the southern part of recommendation C2b included within the July 2011 London and South East RUS: 4 trains per hour (tph) Lea Valley to Stratford service (detailed on LSE RUS page 117). It will develop a scheme targeted at increasing the frequency of Lea Valley line services to Stratford. The current strategic plan is to increase capacity on the West Anglia route by providing an additional pair of tracks from Coppermill Junction northwards towards Broxbourne. This scheme will implement the first part of this, and is intended to address the medium-term demand arising from industrial and residential developments in the vicinity of Lea Bridge, Tottenham Hale, Northumberland Park and Angel Road stations with a view to achieving a standard 4 tph service between Stratford and Angel Road Stations.

This project will provide the infrastructure to support an additional 2tph from the Lea Valley to Stratford.

Scope of works

- Undertake timetabling, rolling stock utilisation and performance study to explore options for providing 2 additional peak services from the Upper Lea Valley to Stratford.
- Provide additional infrastructure required to achieve the above service provision at an acceptable level of performance; additional track at Coppermill Junction and north thereof, with associated signalling and OLE modifications. New platforms will be provided at Tottenham Hale, Northumberland Park and Angel Road Stations.

Significant interfaces

- Anglia traction power supply upgrade (A002) including provision of a new trackside feeder station at Brimsdown and decommissioning of the existing trackside Northumberland Park feeder station.
- Gospel Oak to Barking electrification project (A005).
- Emerging proposals for Crossrail 2 (which suggest the northern part of the route may be via the Lea Valley).
- Access for All footbridge proposals at Tottenham Hale.
- Transport for London proposals for station enhancements at Tottenham Hale.
- Re-opening of Lea Bridge station.

- Station improvements at Angel Road station.
- Proposals for station capacity improvements at Stratford station to protect longer term requirements.
- CP5 enhancements in the Anglia Route area.

Key assumptions

- Power supply modelling is being undertaken under a separate CP5 Traction Power scheme to make sure that supplies are sufficient. Any alterations to the power supply necessary to operate the additional services for which this project is intended will be provided by project A002. The decommissioning of Northumberland Park trackside feeder station is part of A002 and is essential to West Anglia Main Line Capacity Increase project success.
- There will be sufficient rolling stock available to operate additional services.
- That no additional stabling facilities will be required for the rolling stock to operate the revised service.
- All works can be accommodated within the current operational rail boundary. There is a small risk that land not owned by Network Rail may be required for delivery of this scheme. Where this is the case a Transport and Works Act (TWA) will be necessary resulting in the project delivery timescales being delayed by approximately 12 months.
- That the level crossing at Northumberland Park can be closed to vehicular traffic.
- Sufficient engineering possessions or blockades will be granted for construction of this project and that no enabling works will need to be completed to diversionary routes.
- The funding for the base option for this project (southern section of the scheme) will deliver a third track between Coppermill Junction and Tottenham Hale. The incremental funding for the extension of the third track section from Tottenham Hale to Angel Road (northern section of the scheme) will be provided by external stakeholders. A funding agreement shall be put in place between Network Rail and funders with regards to the funding of this additional scope.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	December 2015	Regulated Output
GRIP 4 completion	Single option scope defined	April 2016	Indicative
GRIP 6 start	Start on site	December 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2018	Indicative

Based upon the GRIP 6 completion date and assumptions listed, a timetable change could be implemented in December 2017, with the potential for existing services to start calling at Angel Road from that point, and the additional services facilitated by this infrastructure project operating when the infrastructure is complete in early 2018.

Supplementary information

A significant assumption, based upon presently available information, is that the land required for this project is owned by Network Rail and the deviations from the Railways Act for this section of land would be sufficient for intended railway purposes. The assumption that the Level Crossing can be closed at Northumberland Park as part of the northern section of the scheme is reliant upon a Highway Closure order being granted and there being sufficient land within the Network Rail boundary to provide step-free access at this location to allow persons with reduced mobility to cross the railway. Where sufficient land is not available this would require a TWA to be sought. Where a TWA is required the GRIP 6 commencement date will be delayed affecting Network Rail's ability to meet the forecast completion date of March 2018.

There is a large amount of enhancement works planned within the Anglia route area during CP5 and as a result access and resource levels are constrained. To allow for diversionary routes to be made available it is not possible to undertake major engineering access on two routes at the same time (e.g. the Gospel Oak to Barking line cannot be closed at the same time as the West Anglia Main Line). The forecast GRIP 6 completion date shown above assumes that the required access and resources are available at the planned times.

Work is underway to investigate opportunities to reduce timescales for this project and to establish ways that we can work with stakeholders in addressing issues regarding land ownership and, consents and access constraints.

Great Eastern Main Line Capacity Improvement (Bow Junction)

Details

Project reference code: A004

HLOS driver: City capacity - London Liverpool Street (terminating)

Operating route: Anglia

Last updated: December 2013

CP5 output driver

The project is to provide optimum use of capacity released on the Electric Lines into Liverpool Street Station following diversion of most peak suburban services through the Crossrail tunnel (due to open in 2019).

This project will provide the infrastructure to support an additional 2tph operating from Southend Victoria to utilise the capacity 'freed up' by Crossrail removing services from Liverpool Street high level station.

Scope of works

- Undertake timetabling, rolling stock utilisation and performance study to validate the preliminary assessment that between 1 and 3 additional morning peak services can be accommodated with acceptable PPM. To also identify inter-peak stabling requirements.
- Reconstruction of Bow Junction to optimise the layout allowing more up direction trains to access the Up Electric line on the London side of the new Crossrail tunnel portal. Works to include associated signalling and OLE modifications.
- Provision of turnback facilities, potentially in the Chelmsford and Wickford areas.

Significant interfaces

- Crossrail Project.
- Beaulieu Park new town/station development (Chelmsford).

Key assumptions

- That no additional traction power reinforcement will be required west of Shenfield.
- That additional power modelling is being undertaken under a separate CP5 traction power scheme to confirm that supplies are sufficient east of Shenfield.
- That a site for stabling will be available along the Lea Bridge corridor or that the timetable can accommodate more remote alternatives.
- All other work can be accommodated within the current operational rail boundary and be undertaken using Network Rail's Permitted Development Rights.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	August 2015	Regulated Output
GRIP 4 completion	Single option scope defined	June 2016	Indicative
GRIP 6 start	Start on site	February 2017	Indicative
GRIP 6 completion	Infrastructure ready for use	January 2019	Indicative

Gospel Oak to Barking Electrification

Details

Project reference code: A005

HLOS driver: Investment Framework

Operating route: Anglia

Last updated: March 2014

CP5 output driver

The Network RUS Electrification Strategy recommended a core strategy of rail infill electrification schemes in England and Wales, which included the Gospel Oak to Barking line.

As stated in the RUS, this scheme will enable the more efficient operation of passenger services on the route, replacing diesel traction with electric (typically a 4 car new or refurbished electric multiple unit). It will also enable freight operators to use electric traction (typically Class 86 or 92) on flows emanating from the North Thameside area, so avoiding the need for electric traction to cross the Great Eastern Main Line at grade at Forest Gate Junction in order to access the North London Line.

The main objective of the scheme is to deliver infrastructure capable of supporting electric passenger and freight services between Gospel Oak and Barking, a total of 24 single track miles.

Scope of works

The core scheme will electrify the following sections of network:

- Gospel Oak Junction to South Tottenham West Junction;
- Gospel Oak platform 3 (bay platform);
- Carlton Road Junction to Junction Road Junction;
- Upper Holloway Reception Line;
- Harringay Park Junction to Harringay Junction;
- South Tottenham East Junction to Woodgrange Park Junction;
- Barking Station Junction to Barking Platform 1 buffer stops; and
- all crossovers between Gospel Oak Junction / Carlton Road Junction and Barking Station Junction.

The following freight routes are also part of the scope (subject to the assumption below):

- connection to London Gateway Port (Thameshaven Junction – Network Rail / port boundary); and
- connection to the Port of Tilbury (Tilbury Railport Junction – Network Rail / port boundary).

The route forms part of the Strategic Freight Network (SFN), and is already cleared to accommodate W10 gauge traffic (except Carlton Road Junction to Junction Road Junction, which will be cleared to W10 throughout). The scope of works also includes clearance of rebuilt or altered structures to W12 gauge.

Significant interfaces

This project has key interfaces with the following programmes of work:

- Thameslink Programme; and
- signalling re-control to Romford ROC.

There are also significant interfaces with the overall Anglia Route CP5 Business Plan programme. In particular, schemes which require significant disruptive access have been planned around this project so as to reduce disruption to operators and maximise efficiencies. These schemes include:

- Ely North Junction doubling;
- Ely to Soham doubling;
- Great Eastern Main Line ballast and track renewals;
- West Anglia capacity enhancements; and
- Crossrail.

Key assumptions

- Asset condition is not worse than expected.
- Traction power will be sufficient for this scheme (the Anglia traction power projects are remitted to provide the necessary outputs).
- Current advice on reduced wire heights below structures will continue to be applicable, or if derogations become necessary, that they are granted.
- The proposed access strategy, involving initial weekend possessions for enabling works followed by a blockade between Gospel Oak and Woodgrange Park, is accepted by the industry.
- If requested, London Underground Limited consent to the removal of the engineering connection between the NR and LUL networks at Barking.
- Industry consents (e.g. Network Change) are forthcoming.
- External consents (e.g. council noise approvals) are forthcoming.
- Electrification to London Gateway and / or Tilbury ports is dependent on the ports' own internal rail networks being electrified to connect, or a decision being taken to electrify only to the boundary.

- The co-funders enter into the necessary commercial agreements with Network Rail to fund and progress the project to completion.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	November 2014	Indicative
GRIP 4 completion	Single option scope defined	October 2015	Indicative
GRIP 6 start	Start on site	December 2015	Indicative
GRIP 6 completion Gospel Oak to Barking and Harringay Park Junction to Harringay Junction	Infrastructure ready for use	June 2017	Indicative
GRIP 6 completion Carlton Road Junction to Junction Road Junction; London Gateway Port and Port of Tilbury	Infrastructure ready for use	December 2018	Indicative

Supplementary Information

This project is intended to be co-funded by the Department of Transport and Transport for London.

England and Wales Projects: Kent

England and Wales – Kent

K001 Kent traction power supply upgrade

K002 Route 1 – power supply enhancements

K003 East Kent resignalling phase 2 – enhancements

K004 New Cross Grid

K005 Package 4 – Gravesend train lengthening

Kent Traction Power Supply Upgrade

Details

Project reference code: K001
 HLOS driver: Capacity enabler
 Operating route: Kent
 Last updated: March 2014

CP5 output driver

The main output driver for this scheme is the operational support of the CP5 (December 2018) train service on the Kent routes. The project will provide the power to facilitate 12 car operation on remaining routes, as per the operating plan, and consistent with the post 2018 timetable specification.

The overall aim is to enable operation of the full post-Thameslink Key Output 2 timetable with trains running at maximum length. This increases train lengths on most routes in Kent, either (1) directly by new Thameslink KO2 stock for Thameslink services or (2) indirectly through cascaded stock for non-Thameslink services.

Scope of works

The incremental scope of work required to support this train service is being developed as part of the Route Asset Strategy process. At present the identified works are in the following packages:

- Gravesend to Gillingham: traction power supply upgrade to 12 car 465/466 operation;
- outer Kent resilience: Grove Hill and High Brooms substation upgrades (conversion to 33kV); and
- outer Kent resilience: Canterbury and Thanet area resilience for 12 car services.

Significant interfaces

This project has key interfaces with the following CP5 programmes of work:

- DfT's procurement programme for new and cascaded rolling stock;
- the completed CP4 platform lengthening programme;
- the CP4 traction power upgrades on the Kent routes;
- Thameslink Key Output 2 infrastructure;
- development work on the December 2018 timetable;
- the journey time reduction programme; and
- East Kent resignalling.

Key assumptions

- Train lengthening programmes will absorb all other costs associated with track / signalling / structures / stations and other railways systems, except those identified by the GRIP 3 Feasibility Study.
- The Thameslink scheme will progress according to its December 2010 timelines and provide the identified capability for any additional cascaded rolling stock.
- The CP4 delivery plan interventions that cater for the 12 car Class 465 operation on all three routes to Dartford are completed. This includes the extension to Gravesend. This scheme will also cover works required for this operation on the Hayes branch and on the route to Orpington via Chislehurst.
- There will be sufficient EPDG resource to produce designs and sufficient market resource to deliver to set milestones.
- FOCs power supply interference issues can be resolved permitting the approval of related Network Change.

Activities and milestones

Gravesend – Gillingham 12 car

Milestone	Description	Date	Status
GRIP 4 completion	Single option scope defined	April 2014	Indicator
GRIP 6 start	Start on site	September 2014	Indicator
GRIP 6 completion	Infrastructure ready for use	December 2015	Regulated Output

Outer Kent resilience

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	September 2015	Regulated Output
GRIP 4 completion	Single option scope defined	June 2016	Indicative
GRIP 6 start	Start on site	February 2017	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2019	Indicative

Route 1 – Power Supply Enhancements

Details
Project reference code: K002
HLOS driver: CP4 completion - capacity enabler
Operating routes: Kent
Last updated: March 2014

Output driver

This project is required in order to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver the CP4 HLOS capacity metrics. 12 car formation of existing Class 465 units are to be operated on the following routes between London Charing Cross, Cannon Street, London Bridge and:

- Dartford via Greenwich, Bexleyheath and Sidcup (3 routes);
- Hayes (in Kent);
- Sevenoaks (via Grove Park); and
- Gravesend via Dartford.

This route scope excludes the traction power supply enhancements required for Class 465 12 car operations to Gillingham from Gravesend. The enhancements to support this are described in K001, with completion required to align with the Phase 3 scope.

Scope of works

Three phases of scope changes are proposed for E&P distribution – Dartford loop, Hayes branch, Dartford to Gravesend, Kent main line to Sevenoaks.

Phase 1

Limited 12 car operations in CP4 of up to a maximum of the 6 x 12 car Class 465 diagrams in the morning peak period. This is the assumed operational plan as provided by Southeastern to Network Rail on 16 September 2011. This equates to circa 25 x 12 car trains in both directions in the morning weekday peak period from 07:00 to 09:59.

Traction power modelling and design analysis has been completed for the Phase 1 enhanced train service. This has highlighted constraints in the existing network. The scope of works proposed to address forecast infrastructure deficiencies are noted in the table below:

Phase 1	Outline description of scope
DC switchgear changes	22 changes to existing DC circuit breakers and new switchgear including route settings changes to enable the operation of 12 car formations of existing Class 465 trains on these routes
Track paralleling huts (TPH) / substation changes	2 new track paralleling huts and 1 conversion of track paralleling hut to sub-stations.
Electric track equipment (ETE)	Additional strengthening to circa 50 electrical sections on all routes including selected track feeder changes

Phase 2

Flexibility is required prior to the commencement of the Thameslink London Bridge high level construction works to enable timetable and train lengthening during which no extra vehicles will be available. The high level principles of the timetable are known, but as at April 2012 the operational plan is under development. The scope table will be updated when the requirements for Phase 2 have been confirmed.

Phase 2	Outline description of scope
DC switchgear changes	Phase 2 scope as identified by desk top studies which enables the phase 2 obligation to provide the flexibility required prior to the commencement of the Thameslink London Bridge high level construction works to enable timetable and train lengthening during which no extra vehicles will be available.
TPH / substation changes	
ETE	

Phase 3

Enabling 12 car operations when the Kent and Sussex timetable is recast when Thameslink is implemented. This is the operational plan which relates to the CP4 HLOS capacity metric. The requirements are defined in the 2018 Development Timetable 2011 (DTT2011 of 09.11.11) for the morning weekday peak period.

Phase 3	Outline description of scope
DC switchgear changes	1-3 locations changed
TPH / substation changes	6-9 track paralleling huts converted to substations
HV feeders	3-4 HV feeder sizes enlarged
ETE	Additional strengthening to 24-30 electrical sections on all routes including selected track feeder changes

Significant interfaces

- Thameslink Programme (Key Output 2).
- New Cross Grid enhancement.
- Crossrail interface at Abbey Wood.
- DC energy efficiency project.
- National SCADA project.
- Train lengthening projects.
- Traction power supply renewals.

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 new Thameslink rolling stock will operate on the following routes in the Phase 3 morning peak period timetable:
 - 2 trains per hour in 12 car formation on the Bexleyheath route to Dartford; and
 - 2 trains per hour in 12 car formation on the Orpington route via Grove Park.
- No specific requirement to reduce journey times or improve rolling stock performance.
- The 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.
- 12 Class 465 rolling stock traction power requirements consist of 3 x existing 4 car Class 465 units.
- Class 395 rolling stock dc maximum current draw for 12 car formation is 4kA.
- No special requirements for depots (new or old) or stabling of trains, including both temporary and permanent have been included as the information is not currently available and is also subject to separate funding to be agreed with the DfT.
- This project will be required to modify and/or enhance elements of the SCADA system.
- Current Rules of the Route (Engineering Access Statement) will remain unchanged.

Activities and milestones

Activity	Output	Date	Status
Phase 2: flexibility to operate timetable during London Bridge high level construction work – project completion	Infrastructure ready for use	December 2014	Regulated Output
Phase 3: Enable 2018 timetable recast	Infrastructure ready for use	June 2016	Regulated Output

East Kent Resignalling Phase 2: Enhancements

Details

Project reference code: K003

HLOS driver: City capacity – London Bridge (Kent routes)

Operating route: Kent

Last updated: December 2013

CP5 output driver

The key driver for the enhancements is the provision of capability and capacity to facilitate the future time table (December 2018) through the Medway towns, operational cost reduction and improved integration of the railway with other forms of public transport. The outputs, which will be delivered by December 2015, include:

- increase in capacity by 2tph between Rochester and Gillingham;
- provision of 12 car platforms for Class 465 stock;
- new station at Rochester;
- headway improvement to 2 minute planning headway;
- journey time reduction;
- reduced maintenance/operation and schedule 4/8 costs.

There may be increased power supply requirements arising from the 12-car operation, reduced headways and increased frequency following the implementation of the proposed enhancements in this scheme. A separate power supply upgrade project, Kent Power Supply upgrade enhancements will address the traction power requirement.

Scope of works

- Two additional signal sections to reduce headways between Rochester Bridge Junction and Gillingham.
- Speed improvements between Longfield and Sittingbourne.
- Enhance Peeble Lane user worked crossing to an EBI-Gate crossing.
- Platform extensions to accommodate 12 car Class 465s at the following stations:
 - Strood; and
 - Rochester (delivered as part of new three platform station).
- Turnback facilities at Rainham including a new 12 car bay platform and associated station infrastructure changes.
- Control Track Switches (CTS) and lockout devices between Rochester and Gillingham.
- Provision of lighting, cameras and monitoring equipment for Driver Only Operation (DOO) capability for 12 car services at Strood, Rochester, Chatham, and CD/RA at Gillingham.
- Relocate Rochester station to Corporation Street; scope includes a new three platform station and new infrastructure including subway, track and signals.

Significant interfaces

The enhancements will be delivered as part of the East Kent re-signalling Phase 2 renewal scope of works. The relocation of the Rochester Station is aligned with Medway Councils objectives and interface with their regeneration programme for the Medway towns.

The implementation is programmed around Thameslink KO2 and Crossrail programmes. It also interfaces with the Gravesend remodelling project.

Key assumptions

- The scope of works currently identified will be sufficient to deliver the required output, primarily the delivery of the December 2018 timetable and achieve the required business case benchmark.
- Land can be procured for the planned works at Strood.
- Land for the new station at Rochester will be leased at a peppercorn rate to Network Rail by Medway Council.
- Medway council will allow the use and future decking of their car park at Rainham to be used as a substitute for the spaces that will be lost as part of the provision of turnback at the station when required.
- RSSB will provide derogation for the platform curvature at Strood (note that similar derogation for platform curvature at Rochester was granted to the project during GRIP 3 – certificate 12/097/DGN).
- The enhancements will be delivered as part of the renewals project and that there will be funds available in CP4 to support the cost profile required to meet the Easter 2015 commissioning.
- No depot works and funding have been allowed for.
- Scope excludes any traction power supply upgrade.
- Any requirement to replace pre-1976 rail in the line speed improvement area to be funded by track renewals.

Activities and milestones

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	February 2016	Indicative

Subject to completion of ECAM in April 2014, this milestone will become a regulated output.

New Cross Grid

Details

Project reference code: K004

HLOS driver: Capacity enabler

Operating route: Kent

Last updated: December 2013

CP5 output driver

As stated in the CP4 delivery plan, this project will provide enhanced traction supply capacity to support the train lengthening and frequency requirements of train services in CP4 and beyond. This project sees the completion of the first phase of the major supply point reinforcement in the South East.

Scope of works

These works form part of an eight year programme spanning two control periods and scheduled to be completed 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.

Significant interfaces

- Thameslink programme.
- Regenerative braking project.
- National SCADA project.
- Platform extension projects.
- Traction power supply renewals.
- Separation of LUL power supply system.

Key assumptions

- The current practice of freight services not using all contracted paths will continue and there will be no significant shift from diesel to electric hauled freight.
- DC services will remain limited to 5.1MW per train in high current areas and 3.4MW per train in other areas.
- No specific requirement to improve journey times or rolling stock performance.

Activities and milestones

Activity	Output	Date	Status
Completion of National Grid works	Works by others, required before Network Rail works	December 2014	-
Commission into service new traction supplies from New Cross Grid	End of main project delivery phase	September 2015	Regulated Output
Completion of 66kV decommissioning	Removal of redundant infrastructure	September 2016	Indicator

Package 4: Gravesend Train Lengthening

Details

Project reference code: K005

HLOS driver: CP4 completion - capacity

Operating route: Kent

Last updated: December 2013

Output driver

To facilitate the operational plan assumed with train operators to deliver the CP4 HLOS capacity metric by supporting 12 car operations on specific services between Gillingham and Gravesend.

Scope of works

Platform lengthening of Gravesend platforms 1, 2 and new platform 3, to support 12 car Class 465 operations.

Significant interfaces

- Construction works for Key Output 2 of the Thameslink Programme. These will potentially reduce capacity through London Bridge for much or 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.
- Depots and stabling schemes.
- Kent power supply schemes.
- 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.
- 12 car Class 465 trains will be able to be accommodated at London Charing Cross with infrastructure works to platforms 1, 2 and 3. 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.

- 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.
- Derogations from standards will be required to deliver certain items in the above listed scope; we assume that stakeholder support will be forthcoming where necessary.
- Thameslink KO2: interface with Thameslink project as KO2 currently envisages some services on the Sydenham slow line routes become Thameslink operated from 2018.

Activities and milestones

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	May 2014	Regulated Output

* 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.

England and Wales Projects: Sussex

England and Wales – Sussex

S001 Sussex traction power supply upgrade

S002 Redhill additional platform

S003 Uckfield train lengthening

S004 London Victoria Station capacity improvements

S005 Balcombe to Copyhold bi-directional signalling upgrade

Sussex Traction Power Supply Upgrade

Details

Project reference code: S001
 HLOS driver: Capacity enabler
 Operating route: Sussex
 Last updated: March 2014

CP5 output driver

The main output driver for this scheme is the operational support for the changes to train services on the Sussex routes facilitated by S002 and the Tattenham / Caterham train lengthening project completed in CP4.

Scope of works

- The scope of work required to support the CP5 train service alterations is being developed as part of the Route Asset Strategy process.
- The full power asset will be analysed against the future timetable so that the Direct Current (DC), Electrical Track Equipment (ETE) and High Voltage (HV) network are understood.
- The locations of specific interventions are subject to completion of detailed system modelling in GRIP 2.

Significant interfaces

This project has key interfaces with the following CP5 programmes of work:

- the DfT's procurement programme for new and cascaded rolling stock;
- the completed CP4 platform lengthening programme;
- the completion of the CP4 traction power enhancements;
- Thameslink Key Output 2 infrastructure (traction power);
- Thameslink rolling stock procurement;
- Wessex, Kent and South London CP5 power schemes;
- development work on the December 2018 timetable; and
- any journey time reduction programmes.

Key assumptions

- Train lengthening programmes will absorb all other costs associated with track / signalling / structures / stations and other railway systems.
- The Thameslink scheme will progress according to its December 2018 timelines and provide the identified capability for any additional cascaded rolling stock.

Activities and milestones

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	May 2014	Indicator
GRIP 3 completion	Single option selection	March 2015	Regulated Output
GRIP 4 completion	Single option scope defined	January 2016	Indicative
GRIP 6 start	Start on site	February 2017	Indicative
GRIP 6 completion	Infrastructure ready for use	June 2018	Indicative

Redhill Additional Platform

Details

Project reference code: S002

HLOS driver: City capacity – London Victoria (Southern)

Operating route: Sussex

Last updated: March 2014

CP5 output driver

This project will provide the infrastructure to support additional operational resilience and platform capacity at Redhill via joining / splitting up to 12 car. It also facilitates an additional 1tph from Reading to Gatwick as previously specified in the First Great Western (FGW) franchise.

This key output shall allow for full operation of the proposed post KO2 timetable (December 2018). In addition to Thameslink services via Blackfriars, this includes additional Victoria services splitting/joining up to 12 car length at Redhill and extension of some Reading to Redhill services through to Gatwick.

Network Rail recognises the service benefits of earlier delivery and will explore whether this is possible.

Scope of works

- Provision of an additional 12 car 270m platform scheme at Redhill.
- Provision of canopy (90m), waiting shelter, stairs / lift connection to the existing subway and ticket hall.
- Alterations to track and signalling infrastructure required for parallel move functionality – some elements of this item are subject to value for money.

Significant interfaces

- Redhill Station car park redevelopment scheme by Solum Regeneration.
- Southern proposal for access improvements between ticket office and subway.
- It is understood that the capability provided by this project is a key assumption of the Thameslink KO2 timetable. The KO2 timetable is currently under development and is planned for introduction in December 2018. The evolution of this timetable will need to continue to be monitored.

Key assumptions

- The project will provide passenger handling facilities associated with the new platform.
- The project will not provide any additional station staff accommodation, ticket office or gate line facilities.
- The existing Westpac Mk4A interlocking may not be successfully modified for the needs of this project and will be replaced with a new Computer Based Interlocking system (SSI).
- The works can be contained within the current property boundary and be undertaken using Network Rail's Permitted Development Rights.
- Freight run round capability will be retained through Platform 0 / London direction cess.
- It will be acceptable to introduce an 8 car restriction in the Down direction on Platform 1.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	June 2014	Regulated Output
GRIP 4 completion	Single option scope defined	February 2017	Indicative
GRIP 6 start	Start on site	To be determined	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2018	Indicative

Uckfield Line Train Lengthening

Details

Project reference code: S003

HLOS driver: City capacity – London Bridge (Sussex routes)

Operating route: Sussex

Last updated: March 2014

CP5 output driver

The key output is the provision of extra capacity between East Croydon and London Bridge, and on the Oxted Line by enabling 10-car trains to operate.

Scope of works

In the absence of a suitable location on the route to allow train joining, implement a scheme allowing 10 car Class 170/171 (23m) stock to serve up to eight station locations between Edenbridge and Uckfield including work to extend 12 platform faces and relocate two signals.

Route	Platforms to be lengthened
London Bridge to Uckfield	Edenbridge Town (platforms 1 & 2)
	Hever (platforms 1 & 2)
	Cowden (platform 1)
	Ashurst (platforms 1 & 2)
	Eridge (platforms 1 & 2)
	Crowborough (platforms 1 & 2)
	Buxted (platform 1)
	Uckfield (platforms 1)

Significant interfaces

The scheme should make passive provision (e.g. when moving signal infrastructure) for future electrification of the route served by 12 car x 20m vehicles.

Eridge Station has a footbridge replacement scheme earmarked for 2014/2015. implementation in the Buildings business plan and this may include lift installation.

Key assumptions

- Options reliant upon use of Selective Door Opening (SDO) are unlikely to be feasible at every station assuming reinforcement of the existing Class 170/171 fleet (comprising 4 car and 2 car units without corridor connection) as units could be assembled in any combination to make a 10 car train thus limiting the scope for savings that this functionality would otherwise enable. However this assumption should be revisited if the emerging rolling stock strategy identifies opportunities to utilise corridor connected units. It is also possible that at some stations, some work could be saved by SDO on 170/171. Network Rail will work closely with the winning bidder for the TSGN franchise to ensure the optimal combination of station works and rolling stock choice.
- Those 10 car trains will be not longer than 236m (e.g. Class 171 2x4 car and 1x2 car units); therefore platform length is a minimum of 237m (single direction) or 238m (bi-directional) including 1m allowance from stop boards to top of ramps. The terminating platform at Uckfield to be 243m.
- The project's primary aim is to provide additional train capacity to be utilised further towards London, it is therefore assumed the project will not result in large numbers of additional passengers using the Uckfield Line over and above established growth projections and provision of additional passenger facilities at these locations will not be required as part of this scheme.
- Land fenced into the railway at the London end of the Down platform at Hever can be transferred into Network Rail ownership and that works at all other locations can be contained within current property boundaries and ownership.
- The works can be undertaken using Network Rail's Permitted Development Rights.

Activities and milestones

Milestone	Description	Date	Status
Scope review	Confirm scope and delivery programme following TSGN franchise award	June 2014	Indicator
GRIP 3 completion	Single option selection	November 2014	Regulated Output
GRIP 4 completion	Single option scope defined	January 2015	Indicative
GRIP 6 start	Start on site	To be determined	Indicative
GRIP 6 completion	Infrastructure ready for use	To be determined	Indicative

*Network Rail is considering deliverability of the project by December 2016 in line with requirements emerging from the TSGN franchise. A change control to update the GRIP 6 Delivery milestone will be submitted in July 2014

London Victoria Station Capacity Improvements

Details

Project reference code: S004
 HLOS driver: City capacity – London Victoria (Southeastern and Southern)
 Operating route: Sussex
 Last updated: March 2014

CP5 output driver

The project will increase passenger capacity at London Victoria station.

Scope of works

- Remove retail units, and realign and extend gatelines to Kent (platforms 1-7) and Sussex (platforms 9-12) sides.
- Widen platform 8. This means we only plan to remove the access ramp up to the next level to allow the platform widening this specific location. We will also install a lift in replacement of the ramp.
- Reconstruct fire exits, provide new fire escape stairs and install a goods lift in the Left Luggage building.
- Remove retail units next to the escalators on Sussex concourse.
- Construct a Gatwick Express ticket office behind the escalators on the Sussex concourse.
- Relocate the gateline and CIS on the Sussex concourse (platforms 15-19).
- Relocate the switch room and spiral staircase access to CIS for platforms 1-7.
- Relocate platform 7 screen, vehicle gate and seating, and displace the adjacent retail units.

Significant interfaces

- Alignment of the congestion relief proposals, as far as possible, with the planned Property / Retail Masterplan.
- London Underground Victoria Station Upgrade (VSU) project.

Key assumptions

- A technical solution can be found that alleviates pedestrian congestion at the station.
- Train operators will support amendments to station change; including relocation / removal of retail units or additional gatelines etc.
- Options can be delivered within a Listed Building Environment.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	August 2014	Regulated Output
GRIP 4 completion	Single option scope defined	June 2015	Indicative
GRIP 6 start	Start on site	February 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2017	Indicative

Balcombe to Copyhold Bi-directional Signalling Upgrade

Details

Project reference code: S005

HLOS driver: Network availability

Operating route: Sussex

Last updated: December 2013

CP5 output driver

This project provides infrastructure to enable improved engineering access, and reduced disruption when access is taken, on the Brighton Mainline between Haywards Heath and Three Bridges through the provision of an improved bi-directional signalling functionality. This functionality will allow significantly enhanced flexibility for engineering access. In addition, the flexibility can be used during perturbation to improve service recovery.

Scope of works

The scheme is developed to GRIP4, and the following scope of works has been identified and agreed with key internal stakeholders:

- installation of all necessary signalling infrastructure to provide additional bi-directional signalling sections on the Balcombe Tunnel Junction to Copyhold Junction track section;
- upgrade of track circuits;
- installation of dual detection in the form of axle counters in Balcombe Tunnel; and
- new 650v signalling power supply.

Significant interfaces

- Thameslink Three Bridges depot works and signalling immunisation.
- Haywards Heath S&C renewals.
- Thameslink Gatwick Airport remodelling project (commissioning December 2013).
- ETE cables and rebated sleepers installation at Ouse Valley substation.
- Balcombe station embankment stabilisation work.
- Safer faster isolations CP5 rollout.

Key assumptions

- Contractor will commence work on site by end of November 2013.
- GRIP 4 deliverables will be completed prior to starting GRIP 5.
- All records are available from NRG and will be delivered within six weeks of GRIP 5-8 contract award.
- Disruptive access that has been agreed will remain available.
- Worksites for this scheme are compatible with those schemes listed in 'Significant Interfaces' section above.
- Network Change will be obtained within required timescales.

Activities and milestones

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	December 2014	Regulated Output

England and Wales Projects: Wessex

England and Wales – Wessex

WX001 Waterloo

WX002 South London HV Grid (Wimbledon) upgrade

WX003 Reading, Ascot to London Waterloo train lengthening

WX004 Wessex traction power supply upgrade

WX005 Package 7, 10 car south west suburban railway

WX006 Wessex ASDO

WX007 DC regeneration

WX008 Route 3 – power supply enhancements

Waterloo

Details

Project reference code: WX001
 HLOS driver: City capacity – London Waterloo
 Operating route: Wessex
 Last updated: March 2014

CP5 output driver

The primary drivers of this programme are to deliver CP5 HLOS capacity metrics, address the impacts of forecast growth into London Waterloo station on the wider South West route and facilitate continued growth expectations into future control periods.

In 2010/11 Waterloo station was the busiest London rail terminal. It has experienced significant growth in the last decade and further growth is forecast. A long-term view is being considered, which includes understanding options for providing capacity to meet forecasts beyond the London & South East RUS time horizon and considering both main line and suburban future capacity requirements. This CP5 enhancement at Waterloo station and its approaches will form a part of that overall strategy.

Scope of works

The agreed high level programme scope fully reopens Waterloo International Terminal and the approaches to platforms 20-24, with infrastructure works at Queenstown Road, additional turnback facilities, facilitating up to 20 trains per hour across the Windsor line service group. The scope also includes the extension of Waterloo platforms 1-4 to accommodate 10 car trains, station works at key locations across the route and a package of supporting mainline capacity improvement works.

Significant interfaces

- Reading, Ascot to London train lengthening.
- Crossrail 2.
- Feltham re-signalling.
- Waterloo throat track renewals.
- Rolling stock procurement programme.
- Commercial development of Waterloo International and other sites in the vicinity of the station.
- Depots and Stabling requirements.
- Introduction of a Connected Driver Advisory System to the mainline fleet.

Key assumptions

- The chosen CP5 solution can be delivered with an acceptable level of disruption to the train service.
- Any land that may be required can be acquired.
- Any impact of future demand growth on the onwards London transport network can be managed outside of this project.

Activities and milestones

Overall programme

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	June 2014	Indicator
GRIP 3 completion	Single option selection	June 2015	Regulated Output
GRIP 4 completion	Single option scope defined	December 2015	Indicative

Suburban 10 car railway (full reopening of Waterloo International and the extension of platforms 1-4)

Milestone	Description	Date	Status
GRIP 6 start	Start on site	July 2015	Indicative
GRIP 6 completion	Infrastructure ready for use	May 2017	Indicative

Windsor line additional peak hour services (additional turnback works)

Milestone	Description	Date	Status
GRIP 6 start	Start on site	January 2017	Indicative
GRIP 6 completion	Infrastructure ready for use	December 2018	Indicative

Mainline capacity enabling works (Woking area)

Milestone	Description	Date	Status
GRIP 6 start	Start on site	April 2018	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2019	Indicative

South London HV Grid (Wimbledon) Upgrade

Details

Project reference code: WX002
 HLOS driver: Capacity enabler
 Operating route: Wessex
 Last updated: March 2014

CP5 output driver

The key aim is to expand the capability of the traction power system to facilitate the reliable operation of future enhanced train timetables and increased train lengths in the inner area of the Wessex, Sussex and Kent Routes. The Wimbledon supply point, along with the New Cross supply point, provides electric traction and signalling supplies to the broad South London inner area.

The continued increase in draw from these supply points due to train service improvements required by the HLOS and, for example, also linked to major projects such as Thameslink, requires the strengthening of the main grid connections along with enhancements to improve resilience across the supply system.

This project continues the major supply point reinforcement programme that started with the New Cross Grid project in CP4/5.

Scope of works

The scope of work required to support this train service is outlined in the South London HV Strategy dated 08 October 2010. This identifies the requirement to strengthen the Wimbledon Grid site in line with National Grid's (NG) own enhancement proposals for the site. NG are proposing to link their New Cross Grid site to their Wimbledon Grid site, thereby enabling more efficient resilience measures to be provided should either grid site not be able to provide power.

Working in conjunction with National Grid offers the potential to provide a better solution for Network Rail overall. As National Grid will complete their scheme in 2021, a phased delivery approach will be adopted.

This project is looking at the long term future train service specifications to understand the power demands on Wimbledon Grid and its extended feeding arrangement.

Phase 1 will develop the scheme in CP5 and deliver a subset, enabling capability in CP5. The remaining scope will be delivered in CP6 in conjunction with National Grid.

Significant interfaces

This project has key interfaces with the following CP5 programmes of work:

- National Grid enhancement scheme;
- New Cross Grid upgrade;
- Long Term Planning Policy for trains, timetables and rolling stock in the inner areas of Wessex, Sussex and Kent; and
- Wessex power supply upgrade.

Key assumptions

- The Thameslink and other schemes will progress according to their December 2010 timelines and provide the identified capability for any additional cascaded rolling stock.
- New Cross Grid and HV feeder alterations will be complete by December 2015.
- Minor changes to the Reading Grid point are included as part of WX004 Wessex traction power supply upgrade.
- Byfleet Grid point will be developed in late CP5 (subject to service interventions noted for CP6 delivery). This has not been included in the funding request.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	December 2015	Regulated Output
GRIP 4 completion	Single option scope defined	February 2017	Indicative
GRIP 6 completion Phase 1	Infrastructure ready for use	December 2018	Indicative
GRIP 6 completion Phase 2	Infrastructure ready for use	2021 (plan to be developed further with National Grid)	Indicative

Reading, Ascot to London Waterloo Train Lengthening

Details

Project reference code: WX003
 HLOS driver: City capacity – London Waterloo
 Operating route: Wessex
 Last updated: March 2014

CP5 output driver

This project will provide the infrastructure to enable the operation of 10 car services on the Reading to London Waterloo route.

Scope of works

To develop a scheme allowing 10 car train services to operate between Reading, Ascot and London Waterloo. The project includes the route from Ascot to Ash Vale. The project includes a review of options to allow 10 car services to stop at Feltham, Egham and Chertsey. From GRIP 3 onwards, this project will be sponsored by the Wessex REM team.

Significant interfaces

The project interfaces with:

- Wessex traction power supply upgrade project;
- Feltham re-signalling and Wokingham re-control project;
- Waterloo major development;
- Reading Station Area Redevelopment project;
- 10-car south west suburban railway project;
- Wessex traction power supply upgrade in CP4; and
- Wessex ASDO.

Key assumptions

- At this stage of the projects development, it is anticipated that the project can be delivered within the identified project milestone.

- The study of traction power system reinforcement requirements is addressed by the CP5 Wessex traction power supply upgrade project.
- 10 car trains will be not longer than 204m (e.g. Class 458 strengthened with Class 460 vehicles or similar).
- Turnback facilities are maintained at Wokingham and Ascot but no additional allowance for splitting and joining is required.
- The Wessex Route recognises the delivery complexities of CP5 projects within the route and intends to manage an integrated plan by a Project Management Office.
- The Feltham Resignalling project will liaise with the Reading, Ascot to London Waterloo train lengthening project to ensure signalling takes account of the proposed platform lengths.
- Existing substandard signal standbacks, other than those contained within the scope of the Feltham Re-signalling project, are not to be addressed unless the signal is moved and the deficiency can be rectified at an affordable cost.
- The works can be contained within the current property boundary and be undertaken under permitted development.
- It is assumed possession access will be made available in order to deliver the works within the timescales specified.
- That at Ascot it is feasible and acceptable to abolish the existing London end DDA access barrow crossing by providing lifts on the recently constructed footbridge and provide an additional footbridge span onto platform 3.
- Whilst the impact on train berthing will be assessed, no depot funding will be required as part of this project.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	June 2015	Regulated Output
GRIP 4 completion	Single option scope defined	September 2015	Indicative
GRIP 6 start	Start on site	April 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	May 2017	Indicative

Wessex Traction Power Supply Upgrade

Details

Project reference code: WX004
 HLOS driver: Capacity enabler
 Operating route: Wessex
 Last updated: December 2013

CP5 output driver

The main output driver for this scheme is the operational support of the train service on the Wessex routes for 10 car train lengthening on the route from Reading to London Waterloo.

The key aims are the operation of 10 car trains between London Waterloo and Reading based upon specified substitutions within the December 2014 timetable specification.

Scope of works

The scope of works required to support this train service has been developed from existing modelling and desk top analysis. In addition to the main route between Reading and London, the scope includes required works to permit the operation of a limited number of 10 car trains between Ash Vale and Ascot.

Alternative rolling stock usage and modification of existing rolling stock has already been considered. The latter proposal is not endorsed by the TOC, South West Trains.

Significant interfaces

This project has key interfaces with the following CP5 programmes of work:

- the DfT's procurement programme for new and cascaded rolling stock;
- the completed CP4 platform lengthening programme and traction power supply enhancements;

- Waterloo to Reading platform extensions;
- Reading Station Area redevelopment programme;
- the journey time reduction programme;
- GWML electrification programme (Reading area);
- Feltham resignalling;
- South London HV (Wimbledon) Grid upgrade; and
- Wessex DC regeneration.

Key assumptions

- Train lengthening programmes absorb all other costs associated with track, track circuits, signalling, structures, stations, berthing, etc.
- The Reading and GW electrification schemes will progress according to their December 2010 timelines and provide the identified capability for any additional cascaded rolling stock.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	September 2014	Regulated Output
GRIP 4 completion	Single option scope defined	February 2015	Indicative
GRIP 6 start	Start on site	August 2015	Indicative
GRIP 6 completion	Infrastructure ready for use	May 2017	Indicative

Package 7, 10 Car South West Suburban Railway

Details

Project reference code: WX005
 HLOS driver: CP4 completion - capacity
 Operating route: Wessex
 Last updated: March 2014

CP5 output driver

To provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver the CP4 HLOS capacity metrics. This project allows 10 car operation on suburban services on the Wessex route into Waterloo.

Scope of works

The scope of works remaining in CP5 is:

Route	Platforms and sidings to be lengthened
Raynes Park to Dorking	Raynes Park
	Ewell West
Hampton Court Branch	Berrylands
Kingston Loop and Shepperton Branch ¹	Earlsfield (platforms 2 & 3)
	Kingston (platform 3)
	Strawberry Hill (platforms 1 & 2)
Guildford via Cobham ¹	Effingham Junction (platforms 1 & 2) and Effingham Junction sidings

Note 1: It is assumed that these routes will be operated by Class 455 / 456 stock, and that it will not be practicable to implement SDO functionality on this stock.

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
- fitment of Automatic Selective Door Opening (ASDO) to SSWT's Desiro (450 and 444) rolling stock.

Key assumptions

- Delivery dates assume no IPC applications are required.
- Power supply will be developed in line with the timescales outlined in this project in order that a 10 car service can be implemented by SSWT without any compromise to sectional running times, performance and timetable.

- Planning approvals will be forthcoming for the works required.
- Platform 10 at Clapham Junction is 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
- Platform lengthening will not be undertaken at the locations shown in the table below.

Route	Locations where works will not be undertaken
Hounslow Loop	Isleworth (platforms 1 & 2) existing use of SDO will continue
	Hounslow (platforms 1 & 2) SDO
	Syon Lane (platforms 1 & 2) SDO
Staines to Weybridge	Virginia Water (platform 3) SDO
	Chertsey (platforms 1 & 2) existing use of SDO will continue
	Egham (platforms 1 & 2) SDO
	Addlestone (platforms 1 & 2) SDO
Raynes Park to Dorking	Dorking (platforms 1, 2 & 3) already 12-car capable
Kingston Loop and Shepperton Branch	Clapham Junction (platform 10) already 10-car capable
	Wimbledon (platforms 5, 6, 7 & 8) already 10-car capable
	Kingston (platform 1 & 2)
Hampton Court Branch	Surbiton (platforms 1, 2, 3 & 4) already 12-car capable
Guildford via Woking	Esher (platforms 1 & 4) already 12-car capable
	Hersham (platforms 1 & 2) already 12-car capable
	Walton-on-Thames (platforms 1 & 2) already 12-car capable
	Weybridge (platforms 2 & 3) already 12-car capable
	Byfleet and New Haw (platforms 1 & 2) already 12-car capable
	West Byfleet (platforms 1, 2 & 3) already 12-car capable
	Woking (platforms 1, 2, 3, 4 & 5) already 12-car capable
	Woking (platform 6) not in scope
	Worplesdon (platforms 1 & 2) already 12-car capable
Guildford (platforms 3, 4, 5, 6, 7 & 8) already 10 or 12-car capable	

Activities and milestones

Route	Milestone	Date	Status
Raynes Park to Dorking (except Boxhill & Westhumble, Leatherhead and Ashtead)	GRIP 6 infrastructure ready for use	April 2014	Regulated Output
Kingston Loop and Shepperton Branch	GRIP 6 infrastructure ready for use	June 2014	Regulated Output
Hampton Court Branch	GRIP 6 infrastructure ready for use	April 2014	Regulated Output
Guildford via Cobham	GRIP 6 infrastructure ready for use	June 2014	Regulated Output

Wessex ASDO

Details
Project reference code: WX006
HLOS driver: CP4 completion - capacity
Operating route: Wessex
Last updated: March 2014

CP5 output driver

To provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver CP4 HLOS capacity metrics. The project will facilitate operation of 10 car suburban trains on the Wessex Windsor Line network.

Scope of works

There are some locations on the Windsor suburban routes where the cost of extending platforms to allow 10 car trains to call would be prohibitive or offer poor value for money. They include Feltham, Datchet, Sunnymeads, Isleworth, Addlestone, Chertsey, Hounslow, Egham, Syon Lane, Virginia Water (platform 3) and Wraysbury. Increasing the use of manual selective door opening (SDO) is discouraged and so, in agreement with Stagecoach South West Trains (SSWT), an automatic SDO system (ASDO) is to be introduced.

Operation of the system will require the installation of radio frequency identification tags (RFID) in each platform used by South West Trains at 168 stations across the Wessex route.

SSWT is responsible for the approval of the ASDO system, the fitment of train borne equipment and specification of trackside equipment (RFID).

Network Rail will procure, install and maintain the trackside equipment.

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

- procurement and installation of the trackside equipment (balises) for the approval of the ASDO system; and
- the fitment of train borne equipment and specification of trackside equipment (balises).

Significant interfaces

There are major interfaces with the following projects:

- Waterloo International integration;
- 10 car south west suburban railway; and
- Route 3 – power supply enhancements.

Activities and milestones

Activity	Date	Status
Delivery of Class 458/5 with ASDO operational	April 2013 – May 2014	SWT
Installation of trackside equipment (tags) complete at 168 stations and tags operational across network	April 2014	Regulated Output
Modification to Desiro fleet complete	May 2014	SWT

DC Regeneration

Details
Project reference code: WX007
HLOS driver: Committed project
Operating route: Wessex
Last updated: March 2014

CP5 output driver

To complete the scheme that enables DC regenerative braking to be introduced on all DC electrified routes in Wessex, Sussex and Kent. The project results in a reduction of electric current for traction (EC4T) consumption with consequent reductions in energy costs to TOCs and FOCs and therefore improvement in industry energy efficiency.

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

Scope of works

DC regenerative braking is now in use within Wessex, Sussex and Kent routes and no further work is required to meet this obligation.

Segregation of 660V DC traction supplies to the LUL Waterloo & City line from Network Rail Infrastructure will be completed to enable the increase of Network Rail system voltage without risk to LUL rolling stock and systems.

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. This will be completed in two parts:

- Phase 1 - all inner London traction supply outputs other than the areas surrounding the LUL District line interfaces at Richmond and Wimbledon will be completed by March 2014; and
- Phase 2 - the remaining inner London traction supply outputs will be increased once the LUL rolling stock change programme has completed in December 2016.

Significant interfaces

- LUL – agreement of commercial and technical arrangements, train interfaces, introduction of S Stock trains and removal of C&D 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.
- Power supply enhancements required for introduction of longer trains.
- Asset traction power renewals.
- Renewal of Waterloo substation equipment.

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. Works at Waterloo require some possession access and it is assumed that an agreement can be reached with SWT on the possession strategy and durations.

Activities and milestones

Milestone	Description	Date	Status
GRIP 6 completion – phase 1	Infrastructure ready for use	March 2014	Regulated Output
GRIP 6 start – phase 2	Start on site	February 2017	Indicator
GRIP 6 completion – phase 2	Infrastructure ready for use	August 2017	Regulated Output

Route 3 – Power Supply Enhancements

Details
Project reference code: WX008
HLOS driver: CP4 completion – capacity enabler
Operating route: Wessex
Last updated: March 2014

Output driver

To provide the necessary infrastructure to facilitate 10 car train operation on both the Wessex Main Suburban and Windsor Lines to deliver the CP4 HLOS capacity metrics.

Scope of works

Traction power modelling and design analysis has been completed. This has highlighted constraints in the existing network. The scope maintains the resilience of the traction power system, when the longer trains are operating and one key component of the adjacent traction power system is not available for use during planned or unplanned outages.

Changes defined in this project also support the operation of Southern’s 10 car trains. The traction power impact of Southern’s train lengthening is defined in section 16.03, Sussex Power Supply Enhancements, of the CP4 Delivery Plan 2013 Enhancements programme.

Description of work

E&P Distribution – Windsor & Eton Riverside Branch

HV cable upgrade	Connections of HV feeding upgraded at Wraybury in accordance with asset policy.
Equipment changes	Enlarge DC switchgear panel at Datchet and enlarge HV AC switchgear panel at Wraybury.
Electric Track Equipment	Changes as required to support modelled train operations. Where required the impedance bonds are also changed to Type 3 from Type 0 and 1.

Description of work

E&P Distribution – Hounslow loop

HV cable upgrade	Upgrade of 33kV feeders between Barnes, Chiswick and Brentford.
Equipment changes	2 changes. Track paralleling huts (TPH) converted to sub-stations at Chiswick and Isleworth.
Electric Track Equipment	Changes as required to support revised modelled train operations. Where required the impedance bonds are also changed to Type 3 from Type 0 and 1.

E&P Distribution – Hounslow to Staines

HV cable upgrade	Upgrade of 33kV feeders on parts of the route from Barnes to Twickenham including a parallel feeder between Earlsfield and Barnes.
Equipment changes	6 changes. Track paralleling huts (TPH) or switching station with TPH sites converted to sub-station at Ashford, Feltham and Twickenham; additional transformer at Richmond with consequential changes to HV AC switchgear panel and extension of HV AC switchgear at Earlsfield for the new feeder connection; new feeder connection at Barnes.
Electric Track Equipment	Changes as required to support revised modelled train operations. Where required the impedance bonds are also changed to Type 3 from Type 0 and 1.

E&P Distribution – Weybridge via Chertsey

HV cable upgrade	Upgrade of 33kV feeders on parts of the route from Byfleet grid to Woking, Weybridge and Virginia Water including additional parallel feeders where required to comply with asset policy.
Equipment changes	4 changes. Additional transformer at Weybridge; track paralleling hut converted to a sub-station at Addlestone, Virginia Water and new connections into Byfleet sub-station station.
Electric Track Equipment	Changes as required to support revised modelled train operations. Where required the impedance bonds are also changed to Type 3 from Type 0 and 1.

Description of work

E&P Distribution – Hampton Court Junction to Guildford via Cobham and main line routes

Equipment changes	11 changes. Switching station with TPHs converted to sub-station at Fulwell; Epsom switching station has additional transformer; Woking sub-station has additional transformer; track paralleling hut converted to sub-station at Kingston; enlarge DC switchgear panel at Chessington South, Hampton Court Junction, Upper Haliford, Tolworth and New Haw; additional transformer and consequential HV AC switchgear changes at Pirbright and Guildford.
Electric Track Equipment	Changes as required to support revised modelled train operations. Where required the impedance bonds are also changed to Type 3 from Type 0 and 1.

The project is being developed and delivered progressively. Several construction contracts deliver the scope

Significant interfaces

- Wessex train lengthening.
- New Cross Grid enhancement.
- West London Line.
- SCADA project.
- Traction power supply renewals.
- LUL S stock introduction.
- SWT diversionary routes.
- Farnham re-signalling.

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.
- Rolling stock configurations are as agreed and detailed in the Southern DC traction power supply Sponsor's remit.
- 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.
- 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.
- Current Rules of the Route will remain unchanged.

Activities and milestones

Activity	Output	Date	Status
GRIP 6	Infrastructure ready for use	July 2014	Regulated Output

The scope defined on the Windsor and Eton Riverside Branch was delivered for the December 2011 timetable change.

England and Wales Projects: Western

England and Wales – Western

W001a Great Western electrification

W001b South Wales main line electrification

W002a Intercity Express Programme: Western capability

W002b Intercity Express Programme: specific GWML capacity schemes

W003 Thames Valley branch lines electrification

W004 Thames Valley electric multiple unit capability works

W005 Western rail access to Heathrow

W006 Oxford Corridor capacity improvements

W007 Dr Days Junction to Filton Abbey Wood capacity improvements

W008 Bristol Temple Meads station capacity (incl. Midland Shed)

W009 West of England diesel multiple unit capability works

W010 Swindon to Kemble re-doubling (non-periodic review)

W011 Westerleigh Junction to Barnt Green linespeed improvement

As part of the Great Western Route Modernisation some of the existing delivery plan dates may need to be adjusted to take account of interfacing projects. This is generally only able to be done once GRIP3 option selection has been completed and the selected option is compared to interfacing projects to optimise the overall output.

Great Western Electrification

Details

Project reference code: W001a
 HLOS driver: Committed project
 Operating route: Western
 Last updated: March 2014

CP5 output driver

To extend the 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.

The electrification of the GWML facilitates the introduction of electric train operation delivering significant journey time improvements on key intercity routes and high seating capacity trains on suburban services contributing to the delivery of the HLOS capacity metric for London Paddington by 2019.

- 2tph to Bristol see DMU replace by EMU.
- 4tph IEP replaces HST into Bristol.
- 9tph IEP replaces HST into Paddington.

Scope of works

The scope required for this project includes the extension of electrification on the core route as noted below:

- Maidenhead to Wootton Bassett;
- Wootton Bassett to Patchway;
- Patchway to Severn Tunnel Junction;
- Severn Tunnel Junction to Cardiff;
- Reading to Newbury;
- Didcot to Oxford;
- Filton South Junction to Patchway;
- Wootton Bassett to Bristol Temple Meads via Bath;
- Stoke Gifford Junction to Bristol Temple Meads; and
- a new rolling stock maintenance depot at Reading.

The project is being executed by Network Rail in three steps – Maidenhead to Newbury, Oxford, Chippenham (inclusive) and Bristol Parkway; Chippenham (exclusive) to Bristol Temple Meads; and Bristol Temple Meads to Cardiff via Bristol Parkway.

Significant interfaces

- Crossrail.
- Intercity Express Programme (IEP).
- Reading Station Area Redevelopment.
- Western mainline signalling renewal.
- GW Mainline W10/12 gauge enhancement.
- Bristol Temple Meads passenger capacity (incl. passenger Midland shed).
- Dr Days Junction to Filton Abbey Wood capacity Improvements.
- Bristol East Junction remodelling.
- Oxford Corridor capacity improvements, including stabling requirements.
- Oxford to Bletchley electrification.
- South Wales mainline electrification (Cardiff to Bridgend and Swansea) (W001b).
- Welsh Valleys electrification.

Activities and milestones

The DfT target is for electrification to be completed for electric train operation Oxford, Newbury, Chippenham (inclusive) and Bristol Parkway to deliver the December 2016 timetable; from Chippenham (exclusive) to Bristol Temple Meads; and Bristol Temple Meads to Cardiff via Bristol Parkway to deliver the December 2017 timetable.

Maidenhead to Newbury, Oxford, Chippenham (incl.) and Bristol Parkway

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	May 2014	Regulated Output
GRIP 4 completion	Single option scope defined	August 2015	Indicative
GRIP 6 completion	Infrastructure ready for use	December 2016	Indicative

Chippenham (excl) to Bristol Temple Meads

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	May 2014	Regulated Output
GRIP 4 completion	Single option scope defined	August 2015	Indicative
GRIP 6 completion	Infrastructure ready for use	May 2017	Indicative

Bristol Temple Meads and Bristol Parkway to Cardiff

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	October 2014	Regulated Output
GRIP 4 completion	Single option scope defined	October 2015	Indicative
GRIP 6 start	Start on site	May 2015	Indicative
GRIP 6 completion	Infrastructure ready for use	December 2017	Indicative

It should be noted that an efficient profiling workstream is considering all electrification projects and the outcome of this workstream may result in reprofiling the delivery dates of some electrification projects.

South Wales Main Line Electrification

Details

Project reference code: W001b
 HLOS driver: Other electrification projects
 Operating route: Wales
 Last updated: March 2014

CP5 output driver

To extend the electrification of the Great Western Main Line (GWML) from Cardiff (the furthest extent of the Great Western Electrification project) to Swansea and to deliver the scope of works described below.

Scope of works

The scope required for this project includes the extension of electrification on the core route as noted below:

- Cardiff (excl.) to Bridgend (incl.) (funded separately) (ELR: SWM2 170m 49ch to 190m 68ch); and
- Bridgend (excl.) to Swansea (ELR: SWM2 190m 68ch to 216m 07ch).

The project is being delivered by the Great Western Electrification programme team (GWEp).

Significant interfaces

- Great Western Electrification (W001a).
- Welsh Valleys Electrification (WL001).
- The Intercity Express Programme (IEP).
- Cardiff Area Signalling Renewal (CASR).
- Port Talbot West signalling renewal.
- GW Mainline W10/12 gauge enhancement.

Activities and milestones

The DfT target is for electrification to be completed for electric train operation Cardiff to Swansea for May 2018 timetable.

Cardiff (excl.) to Swansea

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	December 2014	Regulated Output
GRIP 4 completion	Single option scope defined	December 2015	Indicative
GRIP 6 start	Start on site	June 2015	Indicative
GRIP 6 completion	Infrastructure ready for use	May 2018	Indicative

It should be noted that an efficient profiling workstream is considering all electrification projects and the outcome of this workstream may result in reprofiling the delivery dates of some electrification projects.

Intercity Express Programme: Western Capability

Details

Project reference code: W002a

HLOS driver: Committed projects

Operating routes: Wales and Western

Last updated: March 2014

CP5 output driver

To provide infrastructure capability enhancements to enable the operation of the Hitachi Super Express trains, designated Class 800 and Class 801, according to the remit "Infrastructure Output Specification" (IOS4) defined by the client (DfT). This will support improved journey times and seating capacity across the Western route with significant environmental benefits (see Great Western Electrification).

Scope of works

The constituent parts of the infrastructure capability works are as follows:

- gauge clearance for the new Class 800 and Class 801 trains on specific routes across GWML;
- a review of station operations at all stations where Class 800 and Class 801 trains are due to stop; this may result in the following changes:
 - platform extensions;
 - selective door opening;
 - revisions to permissive working (attaching/detaching/platform sharing) arrangements; and
 - alterations to signal controls and signal locations to deal with changes to train operations;
- enhancements to overhead line equipment between Paddington and Heathrow Airport Junction;
- interface between the emerging Class 800 and Class 801 train design and the Network Rail infrastructure:
 - bridge resonance;
 - acceleration curve;
 - platform stepping distances; and
 - traction power changes; and
- assisting Hitachi Rail Europe Ltd in the Train/Infrastructure Compatibility process through the provision of testing routes.

The Class 800 and Class 801 trains are proposed to operate over the following parts of the Great Western Mainline.

Core routes

- London to Cardiff/Swansea/Carmarthen.
- London to Bristol/Weston Super Mare/Taunton.
- London to Gloucester/Cheltenham.
- London to Oxford/Worcester/Hereford.
- London to Newbury/Westbury/Exeter/Paignton.

Diversions routes

- Westbury to Bath Spa.
- Gloucester to Severn Tunnel Junction.
- Cardiff to Bridgend via Barry.
- Castle Cary to Exeter via Yeovil.
- Reading to Waterloo.

Deliverables related to IEP capacity schemes are shown on W002b.

Significant interfaces

- Reading Station Area Redevelopment (RSAR) - the Reading station project has been separately specified by the DfT to include provision for Class 800 bi-mode and Class 801 electric train formations, the majority of the works will be completed before the new trains arrive on the Great Western Main Line.
- Crossrail (including new OLE 12m – 24m) - the IEP project has developed effective interfaces with the Network Rail Crossrail project which will lead to an integrated programme of works being developed to enable both projects to deliver in line with current commitments.
- Great Western electrification – the Class 800 bi-mode and Class 801 electric trains will make use of the electrification of the Great Western Main Line between Maidenhead, Oxford, Newbury, Bristol and Swansea.
- Hitachi Train Care facilities - the IEP project will work with the Train Service Provider to develop the proposed Class 800 bi-mode and Class 801 electric train care facilities across the Western route.
- 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.
- Other CP4 enhancement schemes (i.e. Swindon – Kemble redoubling).
- Other CP5 schemes (Greater Bristol Programme, SFN schemes and Oxford Corridor capacity improvements).
- Thames Valley EMU capability works – development of capability works to allow EMUs to operate in the Thames Valley (London to Oxford and Newbury). Some stations and gauging works are common to IEP and will be developed as a common project.

- West of England DMU capability works - development of capability works to allow cascaded DMUs from the Thames Valley to operate on the FGW “West” routes. Some stations and gauging works are common to IEP and will be developed as a common project.

Key assumptions

- The rolling stock procured by DfT will be compatible with the characteristics of the Network Rail infrastructure defined in the Train Infrastructure Interface Specification (TIIS) and will meet the requirements of the Train Technical Specification (TTS).
- All depot and depot access works are not part of this submission; these are funded by Hitachi Rail Europe Ltd as part of Train Service Provider contract requirements.
- Any train alterations required to meet station operation requirements (e.g. SDO) are not part of this submission (part of Train Service Provider contract requirements).
- Great Western Mainline IEP works specifically exclude works covering traction power:
 - GWML electrification provides power and OLE between Maidenhead and Newbury, Oxford, Bristol, Cardiff and Swansea;
 - Network Rail Crossrail provides OLE between Stockley Bridge Junction and Maidenhead; and
 - Crossrail Ltd provides power between Paddington and Maidenhead.
- Pantograph design for the for the Class 800 bi-mode and Class 801 electric trains will allow 2-pantograph operation at 125 mph without any modification to OLE infrastructure.
- Pantographs can be raised and lowered at linespeed without any modification to OLE infrastructure. Discussions continue between Network Rail, DfT, Hitachi and the TOCs to confirm this.
- Any required capacity works for IEP are developed as separate schemes

Activities and milestones

Route wide capability works

Milestone	Description	Date	Status
GRIP 3 complete – gauge capability works non core routes	Single option selection (excluding AiP)	September 2014	Regulated Output
GRIP 4 complete – gauge capability works all routes	Complete AiP and single option development	June 2015	Indicative
GRIP 4 complete – stations capability works	Complete single option development	September 2014	Indicative
GRIP 6 complete – gauge capability works (Hitachi test routes)	Completion of gauge capability works on the London to Bristol Parkway route	March 2015	Indicative
GRIP 6 complete – provision of 125mph OLE Acton to Stockley	Completion of works necessary for reliable operation at 125mph	Spring 2017	Indicative
GRIP 6 complete – gauge capability works (mainline routes)	Completion of capability on the core main line routes (London to Bristol, Plymouth, Swansea, Worcester)	June 2016	Indicative
GRIP 6 complete – stations capability works (mainline routes)	Completion of works at stations to allow Hitachi train to call	December 2016	Indicative
GRIP 6 complete – capability works (remaining works)	Completion of remaining capability works on the GWML	June 2017	Indicative

Train infrastructure interface work streams

Milestone	Description	Date	Status
GRIP 3 complete – technical capability works	Single option selection	March 2014	Regulated Output
GRIP 6 complete	All interface works completed	December 2014	Indicative

Intercity Express Programme: Specific GWML Capacity Schemes

Details

Project reference code: W002b

HLOS driver: Committed projects

Operating routes: Wales and Western

Last updated: March 2014

CP5 output driver

To provide infrastructure capacity to enable the operation of the proposed enhanced timetable on the Great Western Main Line (GWML) from May/September 2018 onwards following the delivery of the new Class 800 and Class 801 trains. For further detail, see Great Western Electrification.

The proposed enhanced timetable is planned to operate over the following parts of the Western route:

- London to Oxford/Worcester/Hereford;
- London to Gloucester/Cheltenham;
- London to Bristol/Weston-super-Mare;
- London to Newbury/Westbury/Exeter/Paignton; and
- London to Cardiff/Swansea/Carmarthen.

Scope of works

The IEP capacity schemes comprise:

- at Paddington station: combining two short platforms (12 and 13) to provide a single platform to accommodate a 260m long Class 800 or Class 801 train or 12 x 20m car EMU; and extension of platform 14 to accommodate a 12 x 20m car EMU contributing to the delivery of the HLOS capacity metric for London Paddington.
- at Bristol Parkway station: an additional platform face, signalling and track works providing capacity for the additional fast 2tph each way services between Bristol Temple Meads and London Paddington operated by Class 800 or Class 801 trains, contributing to the delivery of the capacity metrics for both London Paddington and Bristol Temple Meads. The project will also improve access between Bristol Parkway and Bristol Temple Meads stations and improve capacity across the wider Bristol Parkway area benefitting CrossCountry and local services; and
- Worcester area capacity: an additional turn back facility at Henwick to deliver a clock-face London – Worcester Foregate Street service. The project will also benefit Birmingham – Worcester – Hereford services.

Significant interfaces

- Dr Days Junction to Filton Abbey Wood capacity improvements.
- Bristol Temple Meads station capacity (including Midland Shed).
- Bristol East junction remodelling.
- Great Western Electrification – the Class 800 bi-mode and Class 801 electric trains will make use of the electrification of the Great Western Main Line between Maidenhead, Oxford, Newbury, Bristol and Swansea.
- Hitachi train care facilities at Stoke Gifford.
- Western Mainline signalling renewal.
- Birmingham – Plymouth journey time improvements.

Key assumptions

The infrastructure changes will be in place to deliver the additional 2tph Bristol Temple Meads – Bristol Parkway - London Paddington and hourly Worcester Foregate Street – London Paddington services introduced in the December 2017 GWML IEP timetable. The latter also supports West Midlands – Worcester/Hereford service development.

Although both the enhancements were previously proposed for funding by NRDF for CP4 delivery, funding and delivery transferred to the InterCity Express Programme to support access to the Hitachi train care facility at Stoke Gifford and the Dr Days Junction to Filton Abbey Wood capacity improvements scheme contributing to the delivery of the Bristol and London Paddington capacity metrics.

Activities and milestones

Milestone	Description	Date	Status
Paddington station capacity works –GRIP 3 complete	Single option selection	August 2011	Regulated Output
Paddington station capacity works – GRIP 6 complete	Infrastructure ready for use	December 2016	Indicative
Bristol Parkway 4th platform - GRIP 3 complete	Single option selection	August 2014	Regulated Output
Bristol Parkway 4 th platform - GRIP 6 complete	Infrastructure ready for use	December 2017	Indicative
Henwick turnback facility – GRIP 3 complete	Single option selection	June 2014	Regulated Output
Henwick turnback facility – GRIP 6 complete	Infrastructure ready for use	December 2016	Indicative
Cascaded and new EMUs replacing Class 165/166 Turbo DMUs	Phased introduction of EMUs on Thames Valley suburban services	December 2016	n/a
GWML IEP timetable	Phased introduction of Class 800 and Class 801 trains on long distance high speed services	December 2018	n/a

Thames Valley Branch Lines Electrification

Details

Project reference code: W003

HLOS driver: Other electrification projects

Operating route: Western

Last updated: March 2014

CP5 output driver

Following approval for the electrification of the Great Western Main Line (GWML), there is an opportunity to also electrify the three Thames Valley branch lines (listed below) enabling a significant switch to electrified services for commuting from the Berkshire, Buckinghamshire and Oxfordshire catchments. This project is likely to increase the efficiency of services that currently make use of main line with direct access to London Paddington. It also gives greater operational flexibility and reduces inefficient use of diesel services 'under the wires' with the potential for increased capacity for services.

The project will facilitate the introduction of electric train operation on the Thames Valley branches, replacing diesel trains for cascade to the West, providing additional capacity for both the Thames Valley and the West of England.

- 4tph to Paddington see DMU replace by EMU.

Scope of works

The core works will involve 25kV AC electrification of the following branch lines as Phase 2 of GWML electrification:

- Twyford to Henley-on-Thames;
- Maidenhead to Bourne End and Marlow; and
- Slough to Windsor & Eton Central.

This project does not include associated ancillary works necessary to enable the introduction and operation of electric trains and other electric traction (e.g. rolling stock clearance, depots / stabling works or platform lengthening as a result of the operation of electric trains).

Significant interfaces

- GWML electrification (GWMLe)
- Western Mainline Signalling Renewal (WMSR)
- Western Route track and bridge renewals programme
- Thames Valley EMU capability works.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	December 2014	Regulated Output
GRIP 4 completion	Single option scope defined	December 2015	Indicative
GRIP 6 completion	Infrastructure ready for use	December 2017	Indicative

It should be noted that an efficient profiling workstream is considering all electrification projects and the outcome of this workstream may result in reprofiling the delivery dates of some electrification projects.

Thames Valley Electric Multiple Unit Capability Works

Details

Project reference code: W004

HLOS driver: Other electrification projects

Operating route: Western

Last updated: March 2014

CP5 output driver

To provide infrastructure capability enhancements to enable the operation of EMUs in the Thames Valley area – Paddington to Newbury, Oxford and associated branch lines. This will enable additional capacity and a cleaner environment. Capacity is as per Great Western Main Line and Thames Valley branch electrification.

Scope of works

Network Rail believes that the constituent parts of these infrastructure capability works are as follows:

- gauge clearance for the new or cascaded EMUs in the Thames Valley - it is expected that all gauging works will be covered under the IEP capability workstream as the kinetic envelope for a Class 319 is inside the new Class 800 and Class 801 trains and the Class 16x that it replaces; and
- a review of station operations at all stations where EMU trains are due to stop; this may result in changes such as: platform extensions; selective door opening; revisions to permissive working for attaching, detaching; platform sharing arrangements and alterations to signal controls and signal locations to deal with changes to train operations and alterations to DOO equipment (CCTV, lighting and mirrors).

DfT have indicated that the initial EMU operations will utilise class 319 units operating up to 12-car in length over the following core route sections:

Core routes

- Paddington to Oxford.
- Slough to Windsor and Eton Central.
- Maidenhead to Marlow.
- Twyford to Henley.
- Reading to Newbury.
- Reading to Basingstoke.

Diversionsary routes

- Acton East to North Pole junction.
- Reading West Curve.

Ancillary movements

- To and from Reading Train Care Depot.

Significant interfaces

- GWML electrification – for traction power and OLE systems.
- Intercity Express Programme – for gauging.
- Crossrail – for platform extensions and OLE between 12 and 24 miles.
- Oxford Corridor capacity improvements – station capability.
- Strategic Freight Network – gauging works.
- Electric Spine – Reading – Basingstoke electrification.

Key assumptions

- All depot and depot access works are not part of this submission; these are funded by the Greater Western Franchisee.
- Any train alterations required to meet station operation requirements (e.g. SDO) are not part of this submission.
- No infrastructure work is required to address stepping distances.
- Any required capacity works for any enhanced timetable operations are developed as separate schemes.
- Pantograph design for 8 and 12 car operation at up to 110 mph will be developed between the TOC/ROSCO and the Network Rail electrification project.
- Dates within CP5 are yet to be committed for the electrification of the following branch lines: Slough to Windsor and Eton Central, Maidenhead to Marlow and Twyford to Henley.
- The dates for the electrification between Reading to Basingstoke (Electric Spine) are yet to be agreed and may not be delivered in CP5.
- Should new build 110mph EMUs be procured for mainline operation then further gauge works may be necessary as determined by DfT.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	April 2015	Regulated Output
GRIP 4 completion	Single option scope defined	December 2015	Indicative
GRIP 6 start	Start on site (in phases)	October 2015	Indicative
GRIP 6 completion	Infrastructure ready for phased introduction of EMU operations	May 2016 – May 2017	Indicative

Western Rail Access to Heathrow

Details

Project reference code: W005

HLOS driver: Airport and port access

Operating route: Western

Last updated: March 2014

CP5 output driver

To improve access to Heathrow Airport for both travelling customers and airport workforce; and to improve rail connectivity to the airport from the immediate vicinity and the M4 corridor, which hosts high-value global industries dependent on the airport, the wider Thames valley, the West of England, the south west, south Wales and the West Midlands by providing interchange at Reading thereby avoiding the need to travel into London and back out. In the longer term provision for long distance services subject to business demand.

The project should provide a westerly rail route to achieve optimum journey times between Reading and London Heathrow Airport Terminal 5 (T5), calling at Slough and Maidenhead or Twyford, at a peak frequency of 4 trains per hour.

Scope of works

Following completion of the Network Rail funded GRIP 2 study in May 2012 the project was submitted to the Department for Transport (DfT) for funding consideration. Further development of the project was announced in both the DfT's Draft Aviation Policy Framework published 12 July 2012 and High Level Output Specification (HLOS), published 16 July 2012, as an "illustrative infrastructure enhancement requiring further business case work and conclusion of an agreement with the aviation industry".

Significant interfaces

- Western Main Line Signalling Renewal programme (WMSR).
- Western route track and bridge renewals programme (especially Bristol East Junction).
- Crossrail.
- Great Western Main Line electrification (GWMLe).
- Intercity Express Programme (IEP).
- Reading station area redevelopment (RSAR); and
- Western route European Train Control System (ETCS).

Key assumptions

Development work will deliver a final option to deliver the required outputs within the funding available to enable construction work to commence circa 2017 for completion in early CP6 (2019-24). Programme subject to successful Development Consent Order application (18 – 24 months).

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	November 2015	Regulated Output
GRIP 4 completion	Single option scope defined	May 2016	Indicative
GRIP 6 start	Start on site	April 2017	Indicative
GRIP 6 completion	Infrastructure ready for use	December 2021	Indicative

Non railway-disruptive construction (tunnelling between T5 and GWML and construction of a new Up Relief Line) could start circa 2018. Disruptive railway construction (connecting the new rail link tunnel and the new relief formation) could take place during the latter stages of CP5 (2019 – 2024).

To enable construction traffic access, including delivery of the tunnel boring machine, early enabling works to permit access through road widening will be required, potentially commencing mid 2016. The programme reflects this methodology with GRIP 3 for tunnel works over-lapping the GRIP 4 start for the highway alterations.

Oxford Corridor Capacity Improvements

Details

Project reference code: W006

HLOS driver: City capacity – London Marylebone

Operating route: Western

Last updated: March 2014

CP5 output driver

The objective of the scheme is to improve capacity and capability on the Oxford Corridor (Didcot North Junction - Aynho Junction). For detail, see Great Western electrification and Thames Valley branches electrification.

Scope of works

- Improvements to line speeds.
- Improved operational flexibility.
- Bi-directional signalling between Didcot North and Aynho Junction.
- Revised Oxford station platform arrangements.
- Enhancement to the Botley Road bridge.
- Track and signalling enhancement to improve capacity.

Significant interfaces

- Western Main Line Signalling Renewal programme (WMSR).
- Western route track and bridge renewals programme.
- Great Western Main Line electrification (GWMLe).
- Intercity Express Programme (IEP).
- Thames Valley Electric Multiple Unit capability works.
- East West Rail (Phases 1 and 2).
- Strategic Freight Network (capacity improvements between Didcot and Oxford).
- Oxford Station Masterplan.

Key assumptions

- This scheme is programmed to follow the re-signalling works at Oxford to achieve the maximum synergy and cost benefit.
- Initial electrification completed by 2016 for phased introduction of electric services.
- East West Rail phase 2 services from Milton Keynes to Reading commence December 2017.
- Enhanced electric timetable introduced from May 2018.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion (Phase 1)	Single option selection	October 2014	Regulated Output
GRIP 3 completion (Phase 2)	Single option selection	May 2016	Regulated Output
GRIP 4 completion (Phase 1)	Single option scope defined	April 2015	Indicative
GRIP 4 completion (Phase 2)	Single option scope defined	November 2016	Indicative
GRIP 6 start (Phase 1)	Start on site	September 2015	Indicative
GRIP 6 start (Phase 2)	Start on site	April 2017	Indicative
GRIP 6 completion (Phase 1)	Infrastructure ready for use	December 2016	Indicative
GRIP 6 completion (Phase 2)	Infrastructure ready for use	December 2018	Indicative

Note

Phase 1: enables Chiltern Rail services to commence from London Marylebone to Oxford from March 2016 as part of the East West Rail scheme, through existing bay platform enhancement. This will include some reconfiguration to the track layout and sidings to provide additional operational capacity, capability and flexibility through the station. This further complements the concurrent electrification of the railway south of Oxford by Great Western electrification.

Phase 2: provides additional through platform capacity and line speed improvements to enable an enhanced timetable to operate electric trains and provides additional East West Rail services from Milton Keynes or Bedford. This also supports Oxford City Council's aspirations to improve the highway through the Botley Road Bridge.

Dr Days Junction to Filton Abbey Wood Capacity Improvements

Details

Project reference code: W007

HLOS driver: City capacity - Bristol

Operating route: Western

Last updated: March 2014

CP5 output driver

The scheme provides the infrastructure to support up to four additional train paths an hour in each direction between the two major stations in Bristol. As well as contributing to reducing end to end journey times for cross-country and Bristol – London Paddington services and the HLOS capacity metrics for both Bristol and London Paddington, it will provide the capability to keep train services operational when engineering works and asset maintenance are planned.

Scope of works

The scope of work lies between Dr Day's Junction and Filton Abbey Wood and includes:

- embankment works to accommodate the additional two track beds (as the existing two-track railway has been slewed to the centre of the alignment);
- replacement of the derelict 3-span steel viaduct at Stapleton Road;
- provision of a new double junction at Horfield;
- enhanced signalling; and
- a new platform at Filton Abbey Wood station.

Significant interfaces

- Western Main Line Signalling Renewal programme (WMSR).
- Western route track and bridge renewals programme (especially Bristol East junction).
- Great Western Main Line electrification (GWMLe) including the new four-track railway.
- Intercity Express Programme (IEP).
- Bristol Temple Meads Station and platform capacity (incl. Midland Shed) schemes.
- West of England DMU capability works.

Key assumptions

- This scheme will align with the resignalling works.
- Four tracking is dependant on the BASRE commissioning to programme.
- The scheme will interface with the GWEP works to electrify the four-track railway, specifically bridge clearances.
- Bristol East layout is yet to be determined and there is a potential interface risk to the Bristol programme.

Activities and milestones

Milestone	Description	Date	Status
GRIP 4 completion	Single option scope defined	October 2014	Indicator
GRIP 6 start	Start on site	May 2015	Indicator
GRIP 6 completion	Infrastructure ready for use	August 2017	Regulated Output

Bristol Temple Meads Station Capacity (incl. Midland Shed)

Details

Project reference code: W008
 HLOS driver: City capacity – Bristol
 Operating route: Western
 Last updated: March 2014

CP5 output driver

The business objective for the Bristol Temple Meads station capacity review is to understand current and future capacity constraints. Demand is expected to increase following the introduction of the Intercity Express Programme (IEP) Class 800 and Class 801 operated services from 2017 when two new fast trains per hour are introduced from Bristol Temple Meads to London Paddington via Bristol Parkway. Increases in local service provision, as part of the MetroWest proposals, will also contribute to this growth. See IEP and Great Western electrification for additional outputs.

Scope of works

- Provision of additional access and circulation at Bristol Temple Meads.
- Reinstatement of platforms within the Midland Shed capable of accommodating a 260m long 10 car SET.

Significant interfaces

- Western Main Line Signalling Renewal programme (WMSR).
- Western route track and bridge renewals programme (especially Bristol East Junction).
- Great Western Main Line Electrification (GWMLe).
- Intercity Express Programme (IEP).
- Dr Day's Junction – Filton Abbey Wood capacity improvements.
- The West of England Local Enterprise Partnership's Temple Quarter Enterprise Zone places an increased strategic importance on the station area.
- Local transport network and "MetroWest".
- Bristol Station Masterplan.

Key assumptions

- Bristol Temple Meads is a combination of Grade 1 & 2 listed buildings; it is assumed the infrastructure changes required to meet the growth demand will be accepted by English Heritage, Local Conservation Officers and other key stakeholders following consultation.
- Wider development for the station is being undertaken with external stakeholders and developed through an area Master Plan.
- Removal of Bristol panel signal box as part of Bristol South signalling renewal.

Activities and milestones

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	April 2014	Indicator
GRIP 3 completion	Single option selection	June 2015	Regulated Output
GRIP 4 completion	Single option scope defined	March 2016	Indicative
GRIP 6 start	Start on site	September 2017	Indicative
GRIP 6 completion	Infrastructure ready for use	December 2018	Indicative

West of England Diesel Multiple Unit Capability Works

Details

Project reference code: W009

HLOS driver: City capacity – Bristol

Operating routes: Wales, Wessex and Western

Last updated: March 2014

CP5 output driver

To provide infrastructure capability enhancements to enable operation of cascaded DMUs from the Thames Valley to the West Country.

Scope of works

The constituent parts of the infrastructure capability works are as follows:

- gauge clearance for the cascaded Class 165 and 166 DMU fleet; and
- a review of station operations at all stations where cascaded DMU trains are due to stop; this may result in platform extensions; selective door opening; revisions to permissive working for attaching; detaching; platform sharing arrangements and alterations to signal controls and signal locations to deal with changes to train operations.

The project is in the early stage of scoping and DfT, Network Rail and FGW have determined that the phased cascade of Class 165 and 166 units will operate over the following routes:

Group 1 – Core routes (clearance required by December 2016)

- Bristol Temple Meads (BTM) to Cardiff Central.
- Avonmouth to Bristol Parkway plus the Filton chords.
- BTM to Portsmouth.
- BTM to Worcester (including Gloucester).
- Bristol TM to Weymouth.
- BTM to Severn Beach.
- BTM to Portishead (*noting MetroWest Phase 1 proposals).
- BTM to Exeter St Davids (including Weston–super-Mare).
- Routes to and from Bristol St Phillips Marsh depot.
- Swindon to Standish junction.
- Swindon to Salisbury.
- Brighton to Portsmouth.
- Southampton to Poole.

Group 2 – additional routes to Exeter (clearance required by mid-2017)

- Exeter St Davids to Plymouth.
- Exeter St Davids to Barnstaple.
- Exeter St Davids to Axminster.
- Newton Abbot to Paignton.
- Castle Cary to Cogload Junction.
- Frome Loop and Hawkeridge Curve – Westbury.
- Routes to and from Laira depot.

Group 3 – Plymouth to Penzance (clearance requirement to be determined)

- Main line routes only.
- Gunnislake branch.
- St Ives branch.

Significant interfaces

- Western Main Line Signalling Renewal programme (WMSR).
- Western route track and bridge renewals programme (especially Bristol East Junction).
- Great Western Main Line Electrification (GWMLe).
- Intercity Express Programme (IEP).
- Dr Day's Junction – Filton Abbey Wood capacity improvements.
- Local transport network and "MetroWest".

Key assumptions

- Train alterations required to meet station operation requirements (e.g. SDO) are not part of this submission.
- No infrastructure work is required to address stepping distances.
- Capacity works for enhanced timetable operations are developed as separate schemes.

Activities and milestones

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	September 2014	Indicator
GRIP 3 completion	Single option selection	October 2015	Regulated Output
GRIP 6 completion	Group 1 Gauge clearance works	June 2016	Indicative
GRIP 6 completion	Group 2 Gauge clearance works	June 2017	Indicative
GRIP 6 completion	Group 3 Gauge clearance works	June 2017	Indicative
GRIP 6 completion	Infrastructure ready for use	June 2017	Indicative

Swindon to Kemble Redoubling

Details

Project reference code: W010

HLOS driver: Investment Framework

Operating route: Western

Last updated: March 2014

CP5 output driver

To complete the project, as remitted in CP4 under the Investment Framework process. This enhancement will provide capacity for four train paths per hour (in each direction) between Cheltenham Spa and Swindon. The linespeed remains unchanged.

Scope of works

The scope of works will include:

- re-doubling the railway between Swindon Loco Junction (78m 20ch) and Kemble (90m 74ch), based on predominately slewing works to the existing single line and the relaying of a new second track, associated signalling and other discipline works; and
- additional intermediate infill signalling to be provided between Kemble and St Mary's crossing, and between this crossing and Standish junction. This new signalling is to include associated cable routes, telecoms and signalling power supplies. Consideration shall be given to possible implementation of modular signalling elements. This line of the route is controlled from Gloucester Signal Control so the works can be developed in two parts.

Significant interfaces

- Swindon A resignalling and re-control to Thames Valley Signalling Centre. The commissioning of this project has to coincide with this renewal as the Swindon to Kemble line will be controlled from the new location. Coinciding of the commissioning works is essential and a strategy to achieve this has been agreed – albeit with the detail being finalised.
- GWML electrification (this line of route will not be part of the electrified route, however it will be a diversionary route when core works are undertaken in the Bristol area). The programme is to complete this project in advance of the core works in the Bristol area so the benefits of the diversionary route can be realised.
- This capacity is being delivered in support of the IEP proposed timetable. This timetable has been developed on the premise that the infrastructure delivered by the project has been commissioned in advance of the new timetable.

Key assumptions

In addition to the enhancement the project will deliver two core renewal elements of work:

- embankment renewal at Purton and Minety; and
- renewal (and relocation) of 2 crossovers at Swindon.

Funding for both elements of works will be funded from the respective CP4 renewal budget provisions.

Activities and milestones

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	August 2014	Regulated Output

The very high volume of works during Easter nationally, coupled with ongoing remedial work from flooding earlier this year, means engineering resources will now be operating at full capacity during one of the busiest phases of the Swindon to Kemble redoubling scheme.

To minimise risk to the work, and avoid the possibility of unnecessary inconvenience to customers, we are now working towards completing the scheme between Swindon and Kemble by August 2014 rather than Easter as originally planned.

The revised plan will provide the team with greater flexibility in allocating engineering resources, including personnel and trains.

As a result of this change, the line closure originally planned to happen in April will be shortened, with much of the remaining work carried out overnight when trains are not running.

Customers and services will therefore be predominantly unaffected by the ongoing work until August, when the testing and commissioning of signalling equipment will mean the line is closed for four days. Our aspiration is for the newly doubled line to open on August Bank Holiday Monday, 25th August.

Westerleigh Junction to Barnt Green Linespeed Improvement

Details

Project reference code: W011

HLOS driver: CP4 completion – linespeed improvements

Operating route: Western

Last updated: March 2014

CP5 output driver

This enhancement will provide a linespeed increase to 100mph for the majority of the route, resulting in increased performance robustness.

Scope of works

- Scheme Plan 1 Down Line Stoke Prior to Stoke Works Junction – linespeed increase from 90mph to 90/100mph. Commissioned and complete.
- Scheme Plan 2 Up Line Cheltenham Alstone – linespeed increase 75mph to 80mph. Commissioned and complete.
- Scheme Plan 3 Up and Down Lines Robinswood to Tuffley, the following linespeed increases: 90mph to 95mph (Down) and 90mph to 90/HST100mph (Up) between 93m 11ch & 94m 1ch **and** 75mph to 80mph (Down) and 70mph to 90/HST100mph (Up) between 94m 1ch & 95MP. Physical works completed and preparation testing and commissioning to be completed.
- Scheme Plan 4 Charfield to Yate – linespeed increase from 90mph to 90/HST100mph. Physical works completed and preparation testing and commissioning to be completed.

Two of the four scheme plans are already commissioned.

All physical works are completed for both remaining two scheme plans but not able to preparation test and commission due to track quality issues outside of the project's scope. The project is working with the Western Route Asset Manager (Track) to formulate a programme of works for improving track quality to the required standard. Track work is to be completed October 2014, preparation testing in November 2014, installation amendments following design modifications to be completed February 2015 and commissioning of the remaining two scheme plans in April 2015.

Significant interfaces

- Plain line and high output track renewals programme.
- Seven Day Railway projects – additional crossovers, improved worker access points and enhancements to level crossings which would enable improved single line working opportunities.
- Interaction with Bromsgrove station relocation project.
- Interaction with Bromsgrove electrification and Redditch branch improvement.

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Key assumptions

- Delivery of this project is dependant on the availability of high output equipment programme.

Activities and milestones

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	April 2015	Regulated Output

England and Wales Projects: Wales

England and Wales – Wales

WL001 Welsh Valley Lines electrification

WL002 Barry – Cardiff Queen Street corridor

Welsh Valley Lines Electrification

Details

Project reference code: WL001
 HLOS driver: Other electrification projects
 Operating route: Wales
 Last updated: December 2013

CP5 output driver

The scheme will enable the more efficient operation of passenger services on the Valley Lines network, replacing ageing diesel traction with electric trains. A new timetable will be introduced to meet continued growth in demand for rail in the region. The project will deliver the scope of work described below and will enable faster journey times, more efficient rolling stock and support economic growth.

Scope of works

Electrification of the Valley Lines passenger network which includes the following lines:

- Rhymney;
- Coryton;
- Merthyr Tydfil;
- Aberdare;
- Treherbert;
- Cardiff Bay;
- Radyr via City Line;
- Radyr Branch Junction to Penarth Curve South Junction;
- Vale of Glamorgan Line to Bridgend;
- Penarth;
- Barry and Barry Island;
- Bridgend to Maesteg;
- Ebbw Vale (to Cardiff);
- Cardiff to Bridgend (Great Western Main Line); and
- Cardiff Canton depot, Rhymney and Treherbert stabling points.

The scope of the project has been estimated at 348 single track kilometres.

Significant interfaces

- Cardiff Area resignalling scheme.
- The Great Western Main Line electrification scheme (GWMLe).
- Wales & Borders refranchise in 2018.

Key assumptions

- The business case is centred on efficiencies from an electric fleet as well as growth in demand from customers.
- GWMLe scheme will deliver the OHLE between Cardiff and Bridgend.
- The scheme is funded through RAB borrowing and a facility charge will be paid by the Wales & Borders franchise.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	December 2015	Regulated Output
GRIP 4 completion	Single option scope defined	April 2016	Indicative
GRIP 6 start	Start on site	February 2017 (accelerated gauge clearance works start September 2014)	Indicative
GRIP 6 completion	Infrastructure ready for use	December 2019	Indicative

The funder has set a target date to commission between October 2018 and December 2019.

It should be noted that an efficient profiling workstream is considering all electrification projects and the outcome of this workstream may result in reprofiling the delivery dates of some electrification projects.

Barry – Cardiff Queen Street Corridor

Details

Project reference code: WL002
 HLOS driver: CP4 completion - capacity
 Operating route: Wales
 Last updated: March 2014

CP5 output driver

This project facilitates the increase of south Wales valley line services from 12 trains per hour to 14 trains per hour through the central Cardiff corridor by the end of CP4 (March 2014) and to 16 trains per hour by May 2016. The construction of the additional through platform and associated track at Cardiff Central station will be completed by May 2016 following decommissioning of Cardiff power signal box and the recovery of the associated cable routes.

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;
- new/revised station building and access works to service the new platforms at Cardiff Queen Street station;
- the provision of an additional through platform at Cardiff Central station to accommodate the increased level of south Wales valley lines services;
- new/revised station building and access works to service the new platform at Cardiff Central station;
- 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.

Significant interfaces

- Cardiff Area Signalling Renewal (CASR) - the Network Rail renewal of the Cardiff area signalling system.
- The provision of Tir Phil loop and new station (funded by WAG).
- Rhymney Valley turn back (at Caerphilly) (funded by WAG).
- Barry Town platform 3 re-instatement (funded by WAG).

Key assumptions

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

Activities and milestones

Milestone	Description	Date	Status
Phase 2 – Valley Lines	Cardiff Queen Street station access enhancement completion	June 2014	Regulated Output
Phase 3 – Barry Lines	Cardiff – Barry lines signalling and construction of Barry new platform and Treforrest curve	June 2014	Regulated Output
Phase 4 – Cardiff East	Major signalling commissioning and permanent way remodelling Cardiff East	October 2014	Regulated Output
Phase 5 – Cardiff Central	Major signalling commissioning and permanent way Cardiff Central including commissioning of the West of Cardiff. Leckwith – Llanharran	January 2016	Regulated Output
Phase 6 – Cardiff platform 8 works	Cardiff Central platform 8 works and Southern entrance	May 2016	Regulated Output
Phase 7 – recoveries	Permanent way and signalling recoveries	October 2016	Indicator
GRIP 6 completion	Infrastructure ready for use	November 2016	Regulated Output

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.

England and Wales Projects: London North East

England and Wales – London North East

LNE001 Northern Programme (Yorkshire)

LNE002a Intercity Express Programme (IEP) – East Coast capability

LNE002b Intercity Express Programme (IEP) – East Coast power supply upgrade

LNE003 LNE routes traction power supply upgrade

LNE004 Stevenage and Gordon Hill turnbacks

LNE005 Capacity relief to the ECML (GN/GE joint line)

LNE006 North Doncaster Chord

LNE007 Tram Train pilot

Northern Programme (Yorkshire)

Details

Project reference code: LNE001

HLOS driver: Committed projects / other electrification projects / City capacity

Operating route: LNE

Last updated: March 2014

CP5 output driver

This programme will deliver infrastructure to support the illustrative train service specification supporting Northern Hub and TransPennine electrification. It combines a number of schemes proposed for delivery in CP5 on cross-Pennine routes which facilitate the introduction of electric train operation on passenger and freight services and provide the capacity metric into Leeds and Sheffield.

The current programme will support a target date for completion of December 2018, with the provision of:

- an electrified route to enable the operation of electric traction between the following points:
 - Stalybridge to Leeds;
 - Leeds to York; and
 - Leeds to Selby; and
- the introduction of additional services, and longer trains, on routes into Leeds and Sheffield.

For the electrification works, the project's western boundary meets the extent of North Trans-Pennine Electrification West (LNW002), which is defined in a separate entry.

This electrification scope will also provide alternative electrified East Coast Main Line diversionary routes from Doncaster to York via Leeds and from Doncaster to Leeds via Hambleton South and West Junctions. Subject to the availability of suitable rolling stock, it also offers the opportunity to increase capacity and reduce journey times by the introduction of enhanced performance electric units and has the potential to reduce the cost of operation of rail services and carbon emissions.

Electrification of the routes noted above supports the following strategic priorities:

- increasing capacity and reducing journey times between key cities aligned with other route improvements; and
- facilitating commuter travel into the major urban areas of the North of England and support of economic growth.

The Northern Programmes (Yorkshire) is a constituent programme within the North of England Programmes. The new and amended infrastructure required to support the

delivery of planned changes in train services has been identified. These milestones are known as Configuration States and the Northern Programmes (Yorkshire) outputs required to deliver each one are detailed below.

The programme has been created to efficiently manage the development and delivery of the constituent projects within the Northern Programme (Yorkshire). This will include identifying opportunities to package the works (including planned CP5 renewals) through an integrated programme within the same geographical area.

In line with this approach, journey time improvements on the Calder Valley, which form part of the scope of works for CR005 Northern Hub, will be integrated for design and delivery purposes with other enhancements/renewals in the same geographic area. This will support the provision of a diversionary route for services whilst works between Leeds and Stalybridge, as part of this programme, are being progressed.

The Northern Programmes (Yorkshire), therefore, consists of the following interventions:

Intervention	Description
North Trans-Pennine Electrification East	Provides an electrified route for the operation of electric traction between a) Stalybridge to Leeds b) Leeds to York c) Leeds to Selby
Huddersfield Station Capacity Improvement	Provides for additional capacity for 8 x 23m trains to operate on cross-Pennine inter-urban services, 4 x 23m to/from Leeds and Manchester and for 3 x 23m trains between Huddersfield and Sheffield
Leeds and Sheffield Capacity	Provides additional capacity at Leeds Station and a programme of platform extensions to allow longer trains to operate on a number of routes in West and South Yorkshire into Leeds and Sheffield
Bradford Mill Lane Capacity	Provides parallel moves at Bradford Interchange to/from Leeds and Halifax
East of Leeds Capacity	Provides enhanced capacity on the corridor to the east of Leeds

The East of Leeds capacity and Leeds and Sheffield capacity interventions are the subject of collaboration agreements between Network Rail, Northern Rail and First TransPennine Express.

Further detail for each individual intervention is as follows:

Scope of works

North Trans-Pennine Electrification East

The scope includes 25kV AC overhead electrification (OLE) and associated power supplies and distribution for the following routes, including all running lines and crossovers:

- Stalybridge National Grid Feeder Station (excl.) to Copley Hill East Junction;
- Neville Hill West Junction to Colton Junction;

- Micklefield Junction to Selby Station;
- Hambleton East Junction to Hambleton North Junction; and
- Hambleton South Junction to Hambleton West Junction.

Other works will include signalling immunisation, track lowering and bridge reconstructions on the above routes to facilitate the introduction of the electrified lines.

Huddersfield station capacity improvement

The current scope of work provides for 2 x 4 x 23m trains to operate on cross-Pennine inter-urban services, 4 x 23 metre trains to operate to/from Leeds and Manchester and 3 x 23m trains between Huddersfield and Sheffield and currently includes:

- potential extension of platform 2 to accommodate peak hour train lengthening on the Sheffield – Huddersfield route;
- potential extension of platform 4; and
- potential remodelling of east end of station layout to give longer platform 5, 6 and 8 and altered access to the stabling sidings.

Leeds and Sheffield capacity

- Additional platform capacity at Leeds Station. Options being developed include:
 - increasing capacity in low-numbered platforms 1-5;
 - increasing the operational length of platform 17; and
 - creation of an additional through platform through joining platforms 13 and 14.
- A programme of platform extensions to allow longer trains to operate on a number of routes in West and South Yorkshire into Leeds and Sheffield. The current scope of platform extensions is based on assumptions regarding future rolling stock deployment which may be subject to change with emerging requirements.

Bradford Mill Lane capacity

Provision of parallel moves at Bradford Interchange to/from Leeds and Halifax through:

- an additional crossover between platforms 1 & 2 at Bradford Interchange; and
- relocation of the existing Bowling Junction crossover close to Mill Lane Junction together with bi-directional signalling.

East of Leeds capacity

Enhanced line capacity to enable a more intensive train service to operate between Leeds and York. Options being developed include:

- improvements to signalling to provide three minute planning headways between trains;
- alterations to the track layout at Neville Hill West Junction to provide more flexible access for train movements on and off the train maintenance depot; and
- improvements to Micklefield Junction, which will include consideration of a turnback facility as one of the options to meet the required outputs.

Significant interfaces

- North Trans-Pennine Electrification West.
- Strategic Freight Network.
- National SCADA renewal.
- East Coast Main Line power supply upgrade phase 2.
- GSM-R and FTN.
- Northern Hub.
- Renewal of Huddersfield station roof in early CP5.
- Huddersfield and Healey Mills signalling recontrol in CP5.
- East Coast Connectivity.
- Leeds Southern entrance.
- Leeds Station Master Plan.
- Signalling renewals between Hebden Bridge and Bradford Mill Lane.
- Neville Hill depot operational requirements and improvements including stabling / train service maintenance.
- Neville Hill S&C renewals.
- Micklefield Junction and Peckfield S&C renewals.
- Emerging development work for journey time improvements.
- Proposal for new station at Low Moor.

Key assumptions

- A strategy is developed to enable provision of electric rolling stock for this route to the same timescales as provision of OLE electrification.
- Ancillary works (e.g. rolling stock clearance, depots / stabling works or platform lengthening) created by the introduction of electric rolling stock will be a separate project.
- Any additional or complementary enhancement works to be delivered in conjunction with North Trans-Pennine Electrification do not impact on the delivery of the committed outputs.
- Suitable conventional or high output plant will be available for the installation of the overhead line system.
- Sufficient capacity and outage opportunities exist to enable provision of Grid supply points for electrification to the timescales required.
- No additional feeder stations are required east of Leeds.
- Trans-Pennine electrification is delivered as part of a wider programme of electrification and not as a stand alone project.
- No overarching development consent is required and any individual planning consents are secured in a timely manner.
- New electrical control facilities will be provided and funded by the national SCADA project.
- Sufficient possessions can be agreed to implement the clearance work required at the tunnels on this route without impacting the programme.
- Information on the extent of third party services within overline structures is complete and accurate.
- GSM-R and FTN programmes will have completed work along the full line of route.
- Additional power supply points for motorised electrical switches are readily available long the line of route.

- Track lowering to achieve electrical clearances at overline structures will not result in additional works to the foundations of those structures.
- Disruptive track access will be available where required.
- No land purchase is required where applicable.
- Listed Building Consent will be obtained where required.
- No significant works will be required to the viaduct to the east of Huddersfield station.
- Stations will be able to accommodate additional passenger flows.
- In the absence of an operational plan, scope is based on an Indicative Train Service Specification endorsed by Northern Programmes Infrastructure Plan Group.
- No infrastructure works are required at Sheffield Station to delivery capacity metrics.
- Completion of the enhancement work at Bradford Mill Lane will be completed with the planned signalling renewal in CP5.
- Current freight run-round capability at Bradford Mill Lane will be maintained.
- Scope for East of Leeds capacity is subject to further development.
- Transport & Works Act Orders will not be required.
- Sufficient capacity will be provided on the Calder Valley route to enable the diversion of services from the Diggle route during electrification works.

Activities and milestones

The programme has been broken down into a number of packages that combine electrification, capacity, journey time and renewals works as efficiently as possible. The journey time and renewals elements, which are being progressed as part of these packages of work, are provided for information only as these are not commitments within the CP5 Delivery Plan.

East of Leeds	GRIP 3 Complete	GRIP 6 Start (Indicative)	GRIP 6 Complete (Indicative)
Electrification Leeds to York	March 2015	March 2016	December 2018
Electrification Leeds to Selby	March 2015	March 2016	December 2018
East of Leeds Capacity	February 2015	October 2016	April 2018
South and West Yorkshire Train Lengthening (cross- Pennine route)	March 2015	July 2017	November 2018

West of Leeds	GRIP 3 Complete	GRIP 6 Start (Indicative)	GRIP 6 Complete (Indicative)
Electrification Stalybridge to Leeds	March 2015	March 2016	December 2018 *
Huddersfield Station Capacity	March 2015	November 2016	September 2017
South and West Yorkshire Train Lengthening (cross-Pennine route)	March 2015	July 2017	November 2018
Train Lengthening schemes non cross-Pennine Route)	March 2015	July 2017	November 2018

Calder Valley	GRIP 3 Complete	GRIP 6 Start (Indicative)	GRIP 6 Complete (Indicative)
Bradford Mill Lane Capacity Improvements	January 2015	July 2016	November 2017

Leeds Station	GRIP 3 Complete	GRIP 6 Start	GRIP 6 Complete
Capacity Improvements	March 2015	July 2017	November 2018

* Energised infrastructure available

Our regulated output is to develop these schemes to the end of GRIP 3 (single option selection).

Interventions to be completed prior to Configuration State 7 and to be available for the December 2018 timetable change.

Intercity Express Programme (IEP) – East Coast Capability

Details
Project reference code: LNE002a
HLOS driver: Committed projects
Operating route: LNE
Last updated: December 2013

CP5 output driver

This project will provide additional capability for Class 800/801 trains. The key output is for ECML and core diversionary route infrastructure to be fit for IEP operation to the declared timescales. Some of the key deliverables are listed below (but they are not limited to the below):

- infrastructure gauge clearance for the IEP which will in turn require:
 - completion of physical gauge clearance works; and
 - certificate of Gauging Authority;
- completed and updated operational arrangements at stations which may include platform extensions; and
- updated Sectional Appendix.

Scope of works

The scope of works includes development, design and implementation works to introduce trains up to 260m long on the ECML from 2018 onwards. The constituent parts of the infrastructure capability works are as follows:

- gauge clearance on specific routes across ECML this includes provision of a test route;
- a review of all stations where trains are due to stop; this may result in the following changes:
 - platform extensions;
 - introduction of selective door opening; and
 - revisions to permissive working (attaching/detaching/platform sharing) arrangements; and
- overhead line alterations.

IEP is proposed to operate over the core and diversionary routes as defined in the East Coast IEP Network Master Availability and Reliability Network Agreement.

Significant interfaces

- Thameslink Programme.
- CP5 HLOS projects.
- ECML power supply upgrade programme.
- East Coast Connectivity.

Key assumptions

- The rolling stock procured by the DfT will be compatible with the characteristics of the Network Rail infrastructure defined in the Train Infrastructure Interface Specification (TIIS) and will meet the requirements of the Train Technical Specification (TTS).
- Platform lengthening scope excludes locations where selective door opening operation has been agreed with the DfT, ORR and train operators.
- Any train alterations required to meet station operation requirements (e.g. SDO) will be progressed by the DfT with the Train Service Provider.
- All IEP depot and depot access works are excluded from this submission (part of Train Service Provider contract requirements).
- All assembly plant and assembly plant access works are excluded from this submission (part of Train Service Provider contract requirements).
- No infrastructure work is required to address ballast displacement and aerodynamic effects.
- Pantograph design for IEP will allow 2 pantograph operation without any modification to OLE infrastructure.
- Pantographs can be raised at linespeed without any modification to OLE infrastructure. Feasibility work will confirm this
- Existing signalling arrangements can support IEP splitting and joining requirements.
- No infrastructure work is required to address platform stepping distances.
- No infrastructure work is required to address bridge resonance effects.

Activities and milestones

OLE

Milestone	Description	Date	Status
GRIP 4 completion	Single option scope defined	August 2014	Indicator
GRIP 6 start	Start on site	March 2015	Indicator
GRIP 6 completion	Infrastructure ready for use	August 2017	Regulated Output

Gauging

Milestone	Description	Date	Status
GRIP 4 completion	Single option scope defined	May 2015	Indicator
GRIP 6 start	Start on site	June 2015	Indicator
GRIP 6 completion	Infrastructure ready for use	August 2017	Regulated Output

Stations – Phase 1

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	August 2017	Regulated Output

Stations – Phase 2

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	August 2014	Regulated Output
GRIP 4 completion	Single option scope defined	April 2015	Indicative
GRIP 6 start	Start on site	August 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	August 2017	Indicative

Intercity Express Programme (IEP) – East Coast Power Supply Upgrade

Details

Project reference code: LNE002b
 HLOS driver: Committed projects
 Operating route: LNE
 Last updated: March 2014

CP5 output driver

The output is upgraded traction power supply capability between Doncaster and London to support Intercity Express Programme and Thameslink requirements and enable the introduction of new rolling stock on the ECML.

Scope of works

- On the ECML mainline the scope of works consists of National Grid 400kV feeding supply transformer.
- An upgrade of the existing classic overhead line feeding system between Wood Green and Bawtry.
- Doncaster-Leeds: Ardsley feeder station has been upgraded with an additional transformer in CP4.

Note - the upgrade of traction power supplies on the Hertford Loop is not required for either IEP or Thameslink KO2 services and is therefore not included in this scope of works.

Significant interfaces

- Thameslink Programme.
- ECML performance project.
- CP5 enhancement schemes.
- ERTMS.
- Transpennine Electrification.
- E&P asset renewals.

Key assumptions

- National Grid can meet their committed timescales specified in their feasibility study.
- Track access required to deliver the project will be granted.
- The Auto Transformer feeding wire can be installed at ground level.
- The rolling stock procured by the DfT will be compatible with the traction power draw characteristics of the Network Rail infrastructure defined in the Train Infrastructure Interface Specification (TIIS) and will meet the requirements of the Train Technical Specification (TTS).

Activities and milestones

National Grid 400kV Feeder Stations

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	December 2016	Regulated output

ECML Power Supply Upgrade – Phase 1

Milestone	Description	Date	Status
GRIP 4 completion	Single option scope defined	August 2014	Indicator
GRIP 6 completion Corey's Mill to Welwyn (Thameslink requirement)	Infrastructure ready for use	March 2016	Regulated output
GRIP 6 completion Commissioning of Essendine AT feeder area	Infrastructure ready for use	December 2016	Indicator
GRIP 6 completion Wood Green to Bawtry	Infrastructure ready for use	August 2017	Regulated output

LNE Routes Traction Power Supply Upgrade

Details

Project reference code: LNE003
 HLOS driver: Capacity enabler
 Operating route: LNE
 Last updated: December 2013

CP5 output driver

This project will provide power supply upgrade development work to enable the delivery of required power to support growth in CP6.

The ECML mainline between Wood Green and Bawtry is to be upgraded during CP5 (project NE028) as part of the Intercity Express Programme. This project will review the requirements for traction power supplies on the remainder of the route using an integrated train service specification.

Power supply upgrades are strategic in nature and take more than one control period to develop and implement. It is considered necessary to continue the development of this project in CP5 for likely delivery in late CP5 and CP6 following completion of the works between Wood Green and Bawtry (LNE002b) in 2017. This includes discussion with and studies by National Grid for Supergrid transformers.

Scope of works

The scope of works will be confirmed following traction power supply modelling. Options may include the conversion to an autotransformer Feeding System (ATFS) for the remainder of the EMCL between Bawtry and Edinburgh and on the Hertford Loop.

Significant interfaces

- Intercity Express Programme.
- ECML power supply upgrade - phase 1.
- East Coast Connectivity.
- North Trans-Pennine electrification.
- MML electrification.
- Edinburgh – Glasgow Improvement Programme (EGIP).
- ERTMS programme.

Key assumptions

- Implementation works will be phased over CP5 and CP6.
- Access (possessions and/or isolations) will be available as required.
- Additional capacity will be provided above the timetable/train service specification to meet Network Rail E&P RAM policy.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	December 2014	Regulated Output
GRIP 4 completion	Single option scope defined	CP6	Indicative
GRIP 6 start	Start on site	CP6	Indicative
GRIP 6 completion	Infrastructure ready for use	CP6	Indicative

Stevenage and Gordon Hill Turnbacks

Details

Project reference code: LNE004

HLOS driver: City capacity – London King's Cross

Operating route: LNE

Last updated: December 2013

CP5 output driver

This project delivers the capacity metric into Moorgate and King's Cross providing for efficient use of suburban rolling stock by allowing services to turnback at Stevenage and Gordon Hill hence providing efficient resourcing for peak capacity on Inner Suburban services into King's Cross and Moorgate.

Scope of works

- Potential for additional crossovers and turn-back at Stevenage (which may include an intervention at Langley Junction).
- Potential for island platform / turn-back facility at Gordon Hill (Hertford Loop).

Key assumptions

- Stations will be able to accommodate additional passenger flows without the need for infrastructure interventions.
- Sufficient room is available within the existing relay room at Langley Junction to accommodate three geographical signalling sets needed for the new facility at Stevenage station.
- Sufficient land owned by Network Rail exists to locate the turnout / track from (and including) Langley Junction to Stevenage station.

- No land purchase is required.
- The project will secure necessary disruptive track access requirements.
- That innovative technical solution or construction approach (e.g. modular) will not be required.
- A derogation to standards is required at Gordon Hill and will be secured.
- Planning permission and/or TWA will not be required.

Significant interfaces

- Hertford North Integration Facility.
- LNE routes traction power supply upgrade.
- Thameslink Programme.
- East Coast Main Line Connectivity.
- Intercity Express Programme – East Coast capability.
- Intercity Express Programme – East Coast power supply upgrade.
- ERTMS.
- CP5 renewals programme.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	December 2014	Regulated Output
GRIP 4 completion	Single option scope defined	October 2017	Indicative
GRIP 6 start	Start on site	March 2017	Indicative
GRIP 6 completion	Infrastructure ready for use	September 2018	Indicative

The timetable change date is anticipated to be December 2018.

Capacity Relief to the ECML (GN/GE Joint Line)

Details

Project reference code: LNE005
 HLOS driver: CP4 completion – specified project
 Operating route: LNE
 Last updated: March 2014

CP5 output driver

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 output shall be achieved without a worsening of overall freight running times when compared to direct operation via the East Coast Main Line (ECML). The target time for a Class 4 (Class 66 locomotive with 1600 tonne trailing load) is as follows:

- Down Train = 02hrs 05min Between Werrington Junction (exclusive) and Doncaster Decoy North Junction (exclusive); and
- Up Train = 02hrs 02min between Doncaster Decoy North Junction (exclusive) and Werrington Junction (exclusive).

Notwithstanding the above journey time commitments, an understanding of the affordability of providing a 2hr 2min journey time in each direction shall be gained and shared with key freight operators.

Two freight paths each way per hour, over and above existing traffic levels on all sections of the route from Werrington Junction (exclusive) to Doncaster Decoy North 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). In preparing for future traffic the capability being provided shall assume a train length of 775metres for each of these paths.

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

Scope of works

The current requirements of the project are:

- gauge clearance for W9, W10 (with an option for W12) at linespeed between Werrington Junction (exclusive) and Doncaster Decoy North (exclusive);
- development of a solution including consideration of the consents strategy 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;

- provision for 775m freight train operation;
- mitigation measures (including closures of level crossings), taking into account the increase in speed and numbers of trains operating, provide that current levels of level crossing safety risk are maintained or improved; and
- infrastructure works as required to deliver the journey time outputs (southern access connection exclusive).

Various consents will be required for the multiple level crossing sites on the route which may require alterations as a result of the project.

The capability of any new gradients to accommodate up to a 2500 tonne train hauled by a single Class 66 under normal adhesion conditions shall be investigated.

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

- W10 gauge clearance from Pyewipe Junction to Doncaster Decoy North Junction is to be funded from an additional funding source (HPUK). This funding from HPUK will not be available within the time frame of this project and so Network Rail will identify a mechanism whereby interim funding arrangements are established such that the holistic outputs for the GN/GE route are delivered in the timescales below. The commercial arrangements will need consideration.
- 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 and capacity on certain sections of the route.
- Access to the southern end of the GNGE will be addressed through the East Coast Connectivity Fund.
- The full capacity and journey time outputs defined in this statement will be achieved on completion of the CP5 access connection at the south end of the GNGE line.

Activities and milestones

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	November 2014	Regulated Output

North Doncaster Chord

Details

Project reference code: LNE006
 HLOS driver: CP4 completion – specified project
 Operating route: LNE
 Last updated: March 2014

CP5 output driver

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

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

The scheme also reduces the number of potential junction conflicts between high speed passenger trains and freight services thereby reducing junction layout safety risk.

The scheme is providing an optimised design that enables the closure of Joan Croft level crossing. In agreement with the Doncaster Metropolitan Borough Council officers a replacement rural highway bridge will be provided.

Scope of works

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 3,000 tonnes trailing loads; and
- retention of the Joan Croft to Applehurst junction and Shaftholme junctions to Askern (and vice versa in both cases).

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 CP4 HLOS.

Key assumptions

A key assumption is that the scheme will be approved without the need for a public inquiry. Also, that ground conditions do not add additional risks over those already identified.

Activities and milestones

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	June 2014	Regulated Output

In line with previously recognised dependencies, and with cross industry support, the milestone has been moved to early CP5.

Tram Train Pilot

Details

Project reference code: LNE007

HLOS driver: Investment Framework

Operating route: LNE

Last updated: March 2014

CP5 output driver

To provide infrastructure capability enhancements to enable the operation of the Vossloh CityLink Tram Train according to the “Tram Train Project Client Requirements v7.0” agreed and approved by the project clients (Department for Transport; Network Rail; Northern Rail; South Yorkshire Passenger Transport Executive; South Yorkshire Supertram Limited).

The provision of the infrastructure capability enhancements will contribute to the delivery of the agreed client objectives for the project:

- understand the changes to industry costs of operating a lighter weight vehicle, with track brakes, on the national rail network;
- determine changes to technical standards required to allow inter-running of light weight tram-type vehicles with heavy rail passenger and freight traffic and to gain the maximum cost benefit from Tram Train operation;
- gauge passenger perception and acceptance of a light rail Tram Train service;
- determine the practical and operational issues of extending Tram Trains from the national rail network to a tramway system;
- devise a business case to support the long term operation of Tram Train services in Sheffield/Rotherham and the wider UK;
- deliver the project within an agreed budget; and
- gain direct experience of the processes that would allow Tram Train technology to be utilised elsewhere in Great Britain.

Scope of works

The project concerns the provision of infrastructure enhancements to facilitate the operation of the Vossloh CityLink Tram Train vehicle between Meadowhall South and Rotherham Parkgate. The infrastructure works comprise:

- 400m plain line and associated junctions linking Network Rail and South Yorkshire Supertram Limited infrastructure at Meadowhall South;
- 11.5 single track kilometres of 750V dc overhead line electrification;
- 1 x 600kW substation;
- 200m single track turnback facility at Rotherham Parkgate;
- additional signals to control entry/exit with the South Yorkshire Supertram Limited network and at the turnback facility at Rotherham Parkgate;

- two new stops for the Tram Train service at Meadowhall South/Tinsley and Rotherham Parkgate;
- low height platform extensions to enable the Tram Train service to call at Rotherham Central Station;
- alterations to track and overbridges to accommodate the overhead line electrification; and
- the production of an industry learning report, created after completion of a 2 year pilot operation period following commissioning of the Tram Train passenger service.

Significant interfaces

- GSM-R and FTN.
- Sheffield and Woodburn signal reconrol.
- Beighton and Woodhouse resignalling.
- Leeds and Sheffield capacity.
- Sheffield to Doncaster 25kV ac electrification.
- Tram Train – Supertram additional vehicles project (South Yorkshire Passenger Transport Executive).

Key assumptions

- The Tram Train vehicle delivery programme matches the infrastructure delivery programme to permit joint commissioning of the system.
- A vehicle wheel profile capable of sustaining safe operation on heavy rail and tramway infrastructure is identified and approved.
- Suitable conventional or high output plant will be available for the installation of the overhead line system.
- Sufficient capacity and outage opportunities exist to enable provision of the electricity supply points to the timescales required.
- No additional feeder stations are required.
- No additional infrastructure works are required to provide for any future installation of 25kV ac overhead line electrification on the route.
- No overarching development consent or Transport & Works Act Order is required and any individual planning consents are secured in a timely manner.
- Electrical control facilities will be provided within the South Yorkshire Supertram Limited Operations Control Centre.
- Sufficient possessions can be agreed to implement the work required without impacting on the programme.
- Information on the extent of third party services within overline structures is complete and accurate.
- GSM-R and FTN programmes will have completed work along the full line of route.
- Additional power supply points for any motorised electrical switches are readily available along the line of route.

- Track lowering to achieve electrical clearances at overline structures will not result in additional works to the foundations of those structures.
- No land purchase is required where applicable.
- Listed Building Consent will be obtained where required.
- Stations will be able to accommodate additional passenger flows.
- Safety authorisation for the infrastructure will be granted in line with the project programme.

Activities and milestones

Milestone	Description	Date	Status
GRIP 6 Start	Start on site	January 2015	Indicative
GRIP 6 Complete	Infrastructure ready for use	May 2016	Indicative
GRIP 8 Complete	Production of Industry Learning report	December 2018	Indicative

England and Wales Projects: East Midlands

England and Wales – East Midlands

EM001 MML long-distance high-speed services train lengthening

EM002 St Pancras to Sheffield linespeed improvements

MML Long-Distance High-Speed Services Train Lengthening

Details

Project reference code: EM001

HLOS driver: City capacity – London St Pancras (terminating)

Operating routes: East Midlands and LNE

Last updated: December 2013

CP5 output driver

To improve infrastructure capability to enable the introduction of longer trains on the MML on selected services in order to accommodate forecast levels of passenger growth and reduce crowding on MML LDHS between London St. Pancras and Nottingham and Sheffield.

Specifically this is to be achieved through infrastructure alterations or operational control measures (or a combination of the two) that will accommodate increased train lengths vehicles up to 260m long at station platforms for Long Distance High Speed (LDHS) services operating up to 125mph on the Midland Main Line from London St. Pancras to Corby, Nottingham and Sheffield.

Scope of works

The project is assessing a number of measures to increase capability including the following:

- operation control measures at platforms;
- platform extensions;
- new foot bridges;
- minor signalling changes; and
- St. Pancras works are being assessed and currently not included in the AFC.

Significant interfaces

- Midland Main Line electrification.
- Derby station area remodelling.
- Electric Spine: Leicester capacity.
- Electric Spine: Bedford – Sharnbrook- Kettering- Corby.
- DfT rolling stock strategy.

Key assumptions

- Sufficient clarity is provided on the DfT's rolling stock strategy in time to complete GRIP 3, to date only 10 x 26m vehicles have been assessed.
- The AFC is currently based upon 10 x 26m vehicles, should this assumption change there will be an impact on cost, scope and outputs.
- The following rolling stock is being assumed;
 - Class 377 up to 12 cars, multiple pantographs (London to Corby);
 - 10 x 26m vehicles, multiple pantographs; and
 - electric locomotive, single pantograph and 23m coaches (1 dvt & 9 cars).
- This project does not include associated ancillary works necessary to enable the introduction and operation of electric trains (e.g. rolling stock clearance, depots or stabling works as a result of the operation of electric trains).
- This project does not address station capacity and depot capacity, other than the platform accommodation of the lengthened trains.
- If works are required at London St. Pancras (platforms 1 – 4) the buffer stops will remain in their current location due to significant costs/disruption being envisaged.
- Excluded are any improvements to Route Availability above RA5 for loco hauled stock or gauging requirements for any of the suggested rolling stock types. Platform canopies are excluded from the scope and AFC.
- No structural strengthening or alteration will be required.
- No major junction remodelling or re-signalling will be required.
- Planning consents will not be required.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	March 2015	Regulated Output
GRIP 4 completion	Single option scope defined	March 2016	Indicative
GRIP 6 start	Start on site	July 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	January 2019	Indicative

St Pancras – Sheffield linespeed improvements

Details

Project reference code: EM002
 HLOS driver: CP4 completion – linespeed improvements
 Operating routes: East Midlands and LNE
 Last updated: March 2014

CP5 output driver

Our obligation is to deliver this project in CP4. This project will improve the capability of the infrastructure to enable a minimum eight minute improvement in journey times between London and Sheffield for Class 222 operated services calling at Leicester, Derby and Chesterfield. In achieving the aforementioned capability improvement for Class 222 operated services, there will also be an incremental benefit of a minimum of around five minutes to the HST operated services between London and Nottingham calling at Market Harborough, Leicester and East Midlands Parkway. The primary outputs are to deliver the line speed increases provisionally detailed below, with actual work sites becoming fixed as programme packages emerge from GRIP 4. The project aims to increase line speed where they are currently below the 125mph capability of the Class 222 and HST trains operating over the route. The project will be delivered in such a manner as to maximise synergy with permanent way renewals which are planned on the MML 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 MML between St Pancras International and Derby, Nottingham and Sheffield.

The project outputs of journey time reduction will also include a reduction in the engineering allowance between St Pancras and Sheffield. A reduction of around 3 minutes in the engineering allowance will be made possible through Network Rail's Investment and Transformation Programme initiatives such as: improving network access processes, improved work bank planning, increased use of modular components and reliability centred maintenance. This reduction of around 3 minutes from those applicable in the Rules of the Route used for the December 2008 timetable would be for the main hours of operation of services (broadly 06:00 – 21:00 Mondays to Fridays) and will apply from the start of the December 2013 timetable. The exact times would be subject to agreement through the industry process to agree Rules of the Route, as would the level of engineering allowances for Saturdays and Sundays.

Tables published in the CP4 Enhancements Programme show the sections of the line (between the given mileages) where it has been identified that the current speed could be

raised. The tables are not definitive and are subject to further refinement as design work continues. As such the exact location and extent of work sites will vary as the project continues to progress.

Scope of works

The aim is to do this in such a manner as to maximise synergy with permanent way renewals which are planned on the MML in CP4. The project will make use of and amend, where required, the high output track renewals planned on the MML.

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 projects delivery plan, which is guided by synergies with other planned works on the route such as maintenance and renewal activity are being developed. The line speed in chosen delivery sites will be increased when all the asset clearance work is complete.

There is a very limited property implication at some of the level crossings sites. All planning and statutory authority is within permitted development. Statutory process will be required for the closure and diversion of footpaths.

Significant interfaces

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

Network Rail will work collaboratively with the Train Operators on the route to deliver the project safely, quickly and efficiently. A close working relationship will be developed to enable decisions to be made promptly, with full advantage being made of the best solution being developed using innovation to ensure rapid progress.

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.
- Existing rolling stock (HST and Class 222) will be used with the 8 minute journey time reduction only being applicable to Class 222 traction.

Activities and milestones

Work is programmed around a carefully considered commercial strategy designed to most efficiently deliver the outputs. The strategy is reliant upon planned track renewals and High Output Ballast Cleaning sites planned for CP4. Work packages will emerge from GRIP 4 – 5 based upon identified synergies.

Milestone	Description	Date	Status
Late works commissioning	Timetable change: (potential benefit available through performance improvement may be available earlier if reasonably practicable.)	December 2013	Regulated output

This project will go through change control to accurately reflect the delivery commitment by June 2014.

England and Wales Projects: London North West

England and Wales – London North West

LNW001 North West electrification

LNW002 North Trans-Pennine electrification – West

LNW003 Stafford Area Improvement Scheme

LNW004 West Coast power supply upgrade phase 3B

LNW005 Birmingham New Street Gateway project

LNW006 Walsall to Rugeley electrification

LNW007 Chiltern Main Line train lengthening

LNW008 North West train lengthening

LNW009 Bromsgrove electrification

LNW010 Redditch branch enhancement

North West Electrification

Details

Project reference code: LNW001

HLOS driver: Committed projects

Operating route: LNW

Last updated: March 2014

CP5 output driver

This programme facilitates the introduction of electric train operation on passenger and freight services on the routes shown below. The current programme would support key output dates (timetable change dates) as set out in the table below. In the case of each timetable change date, the output is defined as the provision of an electrified route to provide the opportunity for the operation of electric traction between the points stated.

Date of timetable change	Provision of electrified routes for services between
December 2013	Manchester (Piccadilly) to the West Coast Main Line
December 2014	Liverpool to Wigan, Liverpool to Manchester (Victoria and Piccadilly)
May 2016	Preston to Blackpool
December 2016	Preston to Manchester (Victoria and Piccadilly)

This project also 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.

The project will deliver the infrastructure scope of works described below.

Scope of works

The scope of work includes 25kV AC overhead electrification (OLE) and associated power supplies / distribution for the following routes, including all running lines and crossovers (except where indicated):

- Bootle Branch Junction – Earlestown East Junction;
- Earlestown West Junction – Earlestown South Junction;
- Newton-le-Willows Junction – Deal Street Junctions;
- Parkside Junction – Lowton Junction;
- Ordsall Lane Junction – Castlefield Junction;
- Deal Street Junctions – Manchester Victoria East Junction including platforms 3 to 6 at Manchester Victoria;
- Deal Street Junctions – Euxton Junction;
- Preston Fylde Junction – Blackpool North including platforms 1 to 8 at the latter;
- Huyton Junction – Springs Branch Junction;

- Ince Moss Junction to Bamfurlong Sidings Junction; and
- Ordsall Lane Junction – Windsor Bridge South Junction.

Other works to deliver the electrification will include signalling immunisation, track lowering and bridge reconstructions on the above routes.

This project does not include associated ancillary works necessary to enable the introduction and operation of EMUs and other electric traction (e.g. rolling stock clearance, depots / stabling works or platform lengthening as a result of the operation of EMUs).

Blackpool Line upgrade

During project development, the opportunity was identified to combine the electrification main works from Preston Fylde Junction to Blackpool North with full resignalling of the route and track renewals / remodelling. Development has begun of a new combined project, to encompass resignalling, telecoms, track renewal / remodelling and installation of OLE and distribution equipment. The project will develop enhancement options, including line speed improvements.

This combined project will also contain the track lowers required to achieve electrical clearance and the upgrade to access points in order to avoid any potentially abortive works on this route.

Significant interfaces

- Northern Hub.
- West Coast power supply upgrade.
- North Trans-Pennine electrification.
- Liverpool – Manchester journey time improvements.

Key assumptions

- New electrical control facilities will be provided and funded by the national SCADA project.
- The Blackpool Line upgrade project will be multi-funded, with funding from North West electrification, track renewals and a funding contribution to reflect the OPEX savings as a result of the signal box closures. Agreement on the funding will be available at the appropriate time for incorporation into the Blackpool Line upgrade, without causing delay to the overall programme.

Activities and milestones

Network Rail's specific commitments are shown in the table below. In each phase main works incorporates foundations, masts, OLE, signalling, distribution, protection, control and telecommunications.

Civils enabling works includes structures clearance, parapet works and access points (except on the Blackpool Line Upgrade where track lowers and access point improvements will be included as part of the main works).

A full project programme for the Blackpool Line upgrade, including implementation, will be developed and delivered as part of GRIP 3 outputs.

Milestone	Description	Date	Status
Phase 2 GRIP 6 completion	Phase commissioned	December 2014	Regulated Output
Phase 3 GRIP 4 completion	Single option scope defined	December 2014	Indicator
Phase 3 GRIP 6 start	Start on site	December 2014	Indicator
Phase 3 GRIP 6 completion	Phase commissioned	May 2016	Regulated Output
Phase 4 GRIP 4 completion	Single option scope defined	September 2014	Indicator
Phase 4 GRIP 6 start	Start on site	November 2014	Indicator
Phase 4 GRIP 6 completion	Phase commissioned	December 2016	Regulated Output

It should be noted that an efficient profiling workstream is considering all electrification projects and the outcome of this workstream may result in reprofiling the delivery dates of some electrification projects.

North Trans-Pennine Electrification – West

Details

Project reference code: LNW002

HLOS driver: Committed projects

Operating route: LNW

Last updated: March 2014

CP5 output driver

This programme facilitates the introduction of electric train operation on passenger and freight services on the routes shown below. This project has been separated out from the main North Trans Pennine Electrification programme as it is to be delivered in conjunction with the North West Electrification programme due to synergies with timescales and power supplies. The timing of the Trans-Pennine Electrification West works has been aligned with the North West Electrification programme in order to support the operation of the proposed changes to service patterns at Manchester Victoria. Additionally, the provision of a new grid supply point at Stalybridge will alter the feeding arrangements for the North West Electrification works and hence there is efficiency in aligning both programmes.

The target date for completion of electrification between Manchester Victoria and Stalybridge and Ashburys to Philips Park Junction / Baguley Fold, including the power supply from Stalybridge National Grid feeder station, is December 2016 to align with outputs of the North West Electrification Programme. The section between Guide Bridge West Junction and Stalybridge is to be delivered at the same time as the North Trans-Pennine Electrification East (Project Reference: LNE001). The commitment associated with the North Trans-Pennine Electrification West programme is to deliver the following scope of works.

Scope of works

The scope of Trans-Pennine Electrification includes 25kV AC overhead electrification and associated power supplies and distribution for the following routes, including all running lines and crossovers (except where indicated):

- Manchester Victoria to Stalybridge Junction (including platforms 1 and 2 at Manchester Victoria);
- Ashburys West Junction to Philips Park Junction / Baguley Fold Junctions; and
- Guide Bridge West Junction to Stalybridge National Grid feeder station.

Other works will include signalling immunisation, track lowering and bridge reconstructions on the above routes.

This project does not include associated ancillary works necessary to enable the introduction and operation of electric trains and other electric traction (e.g. rolling stock clearance, depots / stabling works or, platform lengthening as a result of the operation of electric trains).

Significant interfaces

- North West electrification.
- Northern Hub.
- Huddersfield Station capacity enhancement.
- Micklefield turnback.
- East Coast Main Line power supply upgrade phase 2.
- North Trans-Pennine electrification East.
- Northern urban centres.
- Strategic Freight Network.
- National SCADA renewal.
- DfT rolling stock strategy.

Activities and milestones

Except Guide Bridge West Junction to Stalybridge National Grid feeder station

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	September 2014	Regulated Output
GRIP 4 completion	Single option scope defined	December 2014	Indicative
GRIP 6 start	Start on site	June 2015	Indicative
GRIP 6 completion	Infrastructure ready for use	December 2016	Indicative

It should be noted that an efficient profiling workstream is considering all electrification projects and the outcome of this workstream may result in reprofiling the delivery dates of some electrification projects.

Guide Bridge West Junction to Stalybridge National Grid feeder station

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	September 2014	Regulated Output
GRIP 4 completion	Single option scope defined	December 2014	Indicative
GRIP 6 start	Start on site	March 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	December 2018	Indicative

Final stage completion occurs in March 2019.

Stafford Area Improvement Scheme

Details

Project reference code: LNW003

HLOS driver: Committed projects

Operating route: LNW

Last updated: March 2014

CP5 output driver

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 various flat junctions in the area, such as Trent Valley and Norton Bridge. Current levels of infrastructure performance at these locations also impacts on overall performance of the route.

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 service specification, issued in August 2009 and entitled 'WCML Post IEP'. A fast line, standard off-peak hour timetable to deliver this has been developed by Network Rail and agreed by DfT in August 2009. The project will deliver the capability for two additional, off peak, fast line paths from London to the North West (each direction), one additional path per hour on the Birmingham-Manchester axis (each direction) and one additional freight path per hour through Stafford, again in each direction.

Scope of works

The capacity improvements will be delivered through the provision of a grade separated junction at Norton Bridge area, to connect the slow lines north of Stafford to the Stone line without conflicting the WCML fast lines. To increase flexibility in the Stafford station area, a new 775m capable freight recess facility will be developed by connecting the existing Salop No1 siding and the Down Goods Loop. In addition, a series of line speed enhancements will be developed at Trent Valley Junction and on the slow lines between Doxey Junction and Crewe Basford Hall.

Significant interfaces

- It is planned that infrastructure works in the Stafford area will take place in conjunction with the planned Stafford signalling renewal programme.
- The ability to implement the final project option will be dependent on a successful planning application through the Development Consent Order process (previously Infrastructure Planning Commission IPC).
- The DCO response is due 03 April 2014. Key risks post the DCO include agreeing the required network access to enable successful delivery, discussions are on-going with operators to assess methodology and mitigate risk. There is also a risk entailing the integration of the third party utilities diversionary works required in the Norton Bridge area.
- The infrastructure options are being developed in such a way so as to not prejudice the development of HS2.

Key assumptions

Complete delivery of the project is dependent upon a successful planning application through the Infrastructure Planning Commission (IPC) process. This planning application must be successful and support a scheme that will meet the required outputs.

Activities and milestones

Milestone	Description	Date	Status
GRIP 4 completion	Single option scope definition	April 2014	Indicator
GRIP 6 start Stafford Resignalling	Start on site	February 2014	Indicator
GRIP 6 start Norton Bridge	Start on site	October 2014	Indicator
GRIP 6 completion Stafford Resignalling	Infrastructure ready for use	December 2015	Indicator
GRIP 6 completion Norton Bridge	Infrastructure ready for use	August 2017	Indicator
Infrastructure operational		December 2017	Regulated Output

West Coast Power Supply Upgrade

Details

Project reference code: LNW004
 HLOS driver: Capacity enabler
 Operating route: LNW
 Last updated: December 2013

CP5 output driver

Phase 3 of the WCPSU is remitted to upgrade sections of the WCML to a 12kA autotransformer (AT) system. The project is required to support the North West electrification scheme, specifically the implementation of Liverpool – Manchester EMU services in December 2014, Preston – Blackpool in December 2015 and Preston – Manchester in December 2016. In addition, the project is required to support the implementation of the Stafford timetable specification in December 2017.

Scope of works

The scope of the overall programme is to deliver an upgraded traction power supply system to support the operation of the Stafford specification. Provision for growth in electric freight is no longer part of the scope. This reduction in scope has been agreed with the Department for Transport.

Phase one was completed in time for the December 2008 timetable change. Phase two was complete as of March 2012.

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 and Whitmore (Phase 3A) and between Whitmore and Great Strickland (Phase 3B) with an upgraded Autotransformer (AT) traction power supply and distribution system. The power supply upgrade works required in the route section from Great Strickland to Carstairs (Phase 3C) are no longer required.

Significant interfaces

- North West electrification programme.
- Stafford area improvements scheme.
- LNW route 25kV traction switchgear renewal.
- Renewal of 25kV traction sole user assets at Rugby and Stafford.

Key assumptions

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

Activities and milestones

Phase 3A: North Wembley – Whitmore

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	September 2014	Regulated Output

Phase 3B: Whitmore – Great Strickland

Milestone	Description	Date	Status
GRIP 6 start	Start on site	June 2013	Indicator
Completion of first commissioning area	Weaver to Springs Branch	November 2014	Indicator
Completion of second commissioning area	Oxenholme to Carnforth / Oxenholme to Great Strickland	June 2015	Indicator
Completion of third commissioning area	Springs Branch to Euxton	October 2015	Indicator
Completion of fourth commissioning area	Weaver to Whitmore	October 2016	Indicator
GRIP 6 completion	Infrastructure ready for use	February 2017	Regulated Output

Birmingham New Street Gateway Project

Details

Project reference code: LNW005

HLOS driver: Committed projects

Operating route: LNW

Last updated: March 2014

CP5 output driver

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)	<p>Provide sufficient passenger capacity to meet both short term and forecast longer term needs.</p> <p>Improve passenger facilities and the environment within the station.</p> <p>Installation of ticket barriers.</p> <p>Improve the overall manageability of the station.</p>
Transport (Multi-Modal)	<p>Improve access to/from/in the station for all users.</p> <p>Improve the interchange capability within the station and between transport modes.</p> <p>Improve pedestrian access routes to/from/across the city.</p>
City & Regional Regeneration	<p>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.</p> <p>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.</p> <p>Create a major commercial development to the southern aspect.</p> <p>Strategic added value benefits to the city, including initiatives in sustainable development, skills development and training, and information and communication technologies.</p>
Commercial	<p>Maximise commercial value of the scheme.</p> <p>Stimulate the successful re-development of Pallasades shopping centre/car-park.</p> <p>Improve access to commercial facilities for all users.</p>

Scope of works

Platform level

- The work generally comprises 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.
- Two new train dispatch rooms are to be constructed to accommodate platform level staff.
- Passive provision is made for the widening of platform 8/9.

Concourse level

- The works comprise 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 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 First Class Lounge.
- Public Information Systems are to be provided including a new departure board located on one side of the atrium.
- Works to the North West entrance to the Pallasades include lifts, stairs and escalators to the Pallasades level.

Off station works

- TOC back of house accommodation is to be relocated to new accommodation, which will be 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.
- New taxi drop off and pick up areas will be created. A canopy for the taxi drop off area is to be provided.

- Within the station site a new walkway will provide a route from the proposed northern station entrance to the proposed southern station entrance and on to the southern part of the city.
- A new short term parking facility is to be created utilising part of the existing NCP lower level car park. At the concourse level a through route will provide drop off / pick up facilities. It is envisaged that the existing alignment and connections at both Navigation Street and Hill Street will be incorporated into this facility.
- Part of the existing Navigation Street footbridge will be removed and replaced by a new enhanced section. This new section will extend to Hill Street and provide a new entrance to the station. In addition the footbridge will be modified so as to connect to both platforms 1 and 12 (these are not currently accessible off the existing footbridge).
- A major new retail facility (John Lewis) will be constructed as part of the project, located on the southern side of the station adjacent to Hill Street/Station Street.
- The existing NCP car park will be demolished, due to its condition, and rebuilt in the same location.

Significant interfaces

- Ladywood House redevelopment as a hotel: independent commercial development.
- Centro project linking to Moor Street station.
- Potential service diversions in the highways along the Metro route to and past the station, and construction of the Metro route itself in Stephenson Street/Stephenson Place.

Key assumptions

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

Activities and milestones

Milestone	Output	Date	Status
Complete phase 2 (east)	Main concourse open for use by passengers	September 2015	Regulated Output

For further information please see <http://www.networkrail.co.uk/asp/6222.aspx>

Walsall to Rugeley Trent Valley Electrification

Details

Project reference code: LNW006

HLOS driver: Other electrification projects

Operating route: LNW

Last updated: March 2014

CP5 output driver

This project will provide the infrastructure to enable the running of electric rolling stock between Walsall and Rugeley Trent Valley.

The Government's High Level Output Specification (July 2012) recognises that electrification of the route between Walsall and Rugeley Trent Valley has regional and strategic value, and will help to accommodate increased commuter demand into Birmingham during CP5.

Electrification will contribute to accommodating growth on the route by facilitating conversion to electric train operation. Electrification will provide the opportunity to reduce journey times, and improve connectivity between locations on the route and the wider region, including longer distance destinations.

Electrification of the route will provide an electrified alternative / diversionary route to the Wolverhampton – Stafford route.

Conversion to electric rolling stock will also offer the opportunity to accommodate peak growth into Birmingham on other routes by releasing the diesel train sets currently operating on the route.

Scope of works

The scope of the project is 27 kilometres of infill electrification works between Walsall Station and Rugeley Trent Valley. The scope includes installation of 25kV AC overhead electrification and associated power supplies and distribution.

Other works will include track lowering and bridge reconstructions.

Significant interfaces

- Walsall to Rugeley journey time improvement strategy and Walsall - Rugeley resignalling (planned completion 2013).
- DfT rolling stock strategy.

Key assumptions

- EMUs will be available to enable electric operation of passenger services. The project does not include provision of rolling stock or associated platform works to accommodate changes to rolling stock at the stations along the route.
- Clearance for the OLE at bridge/tunnel at Walsall station with the Saddlers Shopping Centre constructed above will be achieved by OLE design and track lowering arrangements without the need for re-construction.
- No new power supply points are required.
- The closure of Bloxwich Crossing is progressed by a separate project.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	September 2014	Regulated Output
GRIP 4 completion	Single option scope defined	March 2015	Indicative
GRIP 6 start	Start on site	TBC	Indicative
GRIP 6 completion	Infrastructure ready for use	December 2017	Indicative

It should be noted that an efficient profiling workstream is considering all electrification projects and the outcome of this workstream may result in reprofiling the delivery dates of some electrification projects.

Chiltern Main Line Train Lengthening

Details

Project reference code: LNW007
 HLOS driver: City capacity – London Marylebone
 Operating route: LNW
 Last updated: March 2014

CP5 output driver

Infrastructure interventions are required to help facilitate the operational plans developed with train operators to meet the HLOS capacity metrics and support forecast demand in CP5. On the Chiltern Main Line, platform extensions are required to facilitate the proposal for train lengthening to 9 car operation at key stations in the morning peak, to deliver increased capacity into London Marylebone.

Scope of works

Platform extensions are required to accommodate the proposed 9 car operation at five key stations on the Chiltern route: Bicester North, Haddenham and Thame Parkway, Princes Risborough, High Wycombe and Beaconsfield.

The operation of 9 car train formations south of Banbury will require Driver Only Operation (DOO) equipment to be enhanced at the five stations to accommodate longer trains in a safe manner. Sidings at both Wembley Stadium and West Ruislip will also be enhanced.

Additional train despatch signalling control equipment is necessary on two platforms at Marylebone station.

Significant interfaces

- Rolling stock strategy.
- Operational plans.

Key assumptions

- In-filling of the existing subway at High Wycombe station is possible and an alternative structure between the platforms is proposed.
- The additional rolling stock and depot / stabling enhancements to support the operational plans to accomplish the HLOS capacity metric is not included in this project.

Activities and milestones

Platform lengthening (except High Wycombe DOWN platform)

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	March 2014	Regulated Output
GRIP 4 completion	Single option scope definition	April 2014	Indicative
GRIP 6 start	Start on site	May 2014	Indicative
GRIP 6 completion	Infrastructure ready for use	August 2014	Indicative

The implementation programme will be confirmed once GRIP 3 is complete.

High Wycombe DOWN Platform lengthening, siding enhancement works and additional signalling control equipment on two platforms at Marylebone station.

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	December 2013	Indicator
GRIP 3 completion	Single option selection	December 2014	Regulated Output
GRIP 4 completion	Single option scope definition	To be determined	Indicative
GRIP 6 start	Start on site	To be determined	Indicative
GRIP 6 completion	Infrastructure ready for use	To be determined	Indicative

The implementation programme will be confirmed once GRIP 3 is complete.

North West Train Lengthening

Details

Project reference code: LNW008

HLOS driver: City capacity – Liverpool and Manchester

Operating route: LNW

Last updated: March 2014

CP5 output driver

Infrastructure interventions are required to help facilitate the operational plans developed with train operators to meet the HLOS capacity metrics and support forecast demand in CP5 for routes into Liverpool and Manchester.

Scope of works

Early development identified that platform lengthening would be required at the following stations:

- 4 x 24m car length at Mossley Down, Greenfield Down, Marsden, Slaithwaite, Mouldsworth, Delamere, Cuddington, Greenbank, Plumley Down, Ashley Down, Hathersage and Grindleford;
- 4 x 23m car length at Dove Holes, Chapel-en-le Frith, Middlewood, Woodsmoor, Humphrey Park, Glazebrook Down, New Lane, Bescar Lane, Moses Gate, Hall i'th'wood, Darwen, Ramsgreave & Wilpshire, Langho, Whalley and Clitheroe;
- 6 x 24m car length at Liverpool South Parkway Up and Down fast platforms, Widnes, Warrington Central and Newton-le-Willows; and
- 3 x 23m car at Bamber Bridge Up.

Hadfield - Dinting – Glossop – Manchester rail capacity improvements – scope to be identified.

The scope will be determined by the rolling stock strategy for services in the North West and the operational plans of the relevant train operators

Significant interfaces

- DfT rolling stock strategy.
- Operational plans.
- North West station renewals and maintenance programme.

Key assumptions

- Cost estimates have been produced based on an initial list of platforms that have been identified as requiring extensions to facilitate train lengthening on the route.
- The additional rolling stock to support the operational plans will be provided outside of this project.
- Scope is subject to confirmation of rolling stock strategy and further development.

Activities and milestones

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	August 2012	Indicator
GRIP 3 completion	Single option selection	To be determined	Regulated Output
GRIP 4 completion	Single option scope defined	To be determined	Indicative
GRIP 6 start	Start on site	To be determined	Indicative
GRIP 6 completion	Infrastructure ready for use	To be determined	Indicative

The implementation programme will be confirmed once GRIP 3 is complete.

Bromsgrove Electrification

Details

Project reference code: LNW009

HLOS driver: CP4 completion - electrification

Operating route: LNW

Last updated: December 2013

CP5 output driver

This project will provide infrastructure to support an increase in 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.

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.

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 3 car in the Up direction and 4 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.
- 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 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

Activity	Output	Date	Status
Station re-location GRIP 4 final option	Agree final option with partners	February 2014 ⁺	Indicator
Station re-location	Completion of station relocation in interim layout	April 2015*	Indicator
GRIP 6 commences	Start on site	August 2015	Indicator
GRIP 6 complete	Infrastructure ready for use	July 2016	Regulated Output

*This date is subject to agreement of funding and agreements for the third party enhancement.

+This date is subject to industry processes for station closure being ratified for the old station, Station Change being established for the new station and planning consent being granted for the new station facilities and car park. The timescales are predicted on the assumption that industry processes are completed successfully to allow the station to be relocated by April 2015.

DfT aspiration is that the projects are implemented for the May 2015 timetable change with the integration of the delivery of the station scheme with electrification and signalling.

Network Rail and the third party promoters of the station have agreed to work co-operatively and collaboratively on an integrated plan to determine how the construction completed date can be brought forward.

Redditch Branch Enhancement

Details

Project reference code: LNW010

HLOS driver: CP4 completion - capacity

Operating route: LNW

Last updated: March 2014

CP5 output driver

This project will provide the infrastructure to support the primary output of 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.

Scope of works

Improving capacity on the Redditch branch has been examined and the current options include:

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

This work required a Development Consent Order (DCO) from the Planning Inspectorate as the scheme fell under the Planning Act 2008. Accommodating the additional platform and new track requires land purchase achieved by agreement with private parties.

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.
- Longbridge station and area redevelopments.
- 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 construction programme requires the closure of the Redditch Branch Line to train services from 5th July 2014 to 31st August 2014 inclusive.

Activity	Output	Date	Status
GRIP 6 complete	Infrastructure ready for use	August 2014	Regulated Output

*Hand back is planned for start of service on Monday 01 September 2014

Scotland - Funds

Scotland - Funds

SF001 Scottish Stations Fund

SF002 Scottish Strategic Rail Freight Investment Fund

SF003 Scottish Network Improvement Fund

SF004 Future Network Development Fund

SF005 Scotland: Level Crossing Fund

Scottish Stations Fund

Details

Fund reference code: SF001

Last updated: March 2014

Purpose

The purpose of the fund is to improve the public's access to railway services. To support this objective, Scottish Ministers would expect that this will fund, or will support the funding of:

- improvements to station buildings and facilities;
- improvements to passenger facilities at stations supporting long-distance services;
- up to £6 million towards improving the Caledonian Sleeper station facilities as specified as part of the franchise objectives;
- the development of new and improved car and cycle parking facilities;
- new stations; and
- accessibility works.

There is £31m available for this purpose.

Fund management

The fund is administered by the Head of Strategy and Planning (Scotland) and the Route Commercial Manager (Scotland). Authorisation of draw down and spend is as set out in Network Rail's internal regulations but schemes are also required to have been supported by the Scotland Route Strategy Planning Group or as promoted by Scottish Ministers, and endorsed by Scotland Route Investment Review Group involving all relevant train operators and Transport Scotland.

Decisions on funding

The net cost of major works (i.e. the amount that will be drawn down from the Scottish Station Fund) must not exceed the following without prior approval from Transport Scotland:

- £100,000 if the benefit-cost ratio is less than 2 or not yet determined; and
- £1 million if the benefit-cost ratio can be demonstrated to be 2 or greater.

A benefit-cost ratio must therefore be determined at the earliest opportunity.

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. A more detailed (usually quantitative) appraisal should be completed prior to the commitment of detailed design. The

appraisal must be clear, evidence based and in line with the fund principles, including the Scottish Ministers' priorities, and consider the financial impact on each affected industry partner. The appraisal is in accordance with the principles of the Scottish Transport Appraisal Guidance (STAG).

The proposal associated with the Caledonian Sleeper franchise objectives will be assessed as part of the evaluation process of the franchise bids. Transport Scotland will advise the works to be funded to support the Caledonian Sleeper franchise up to a maximum value of £6 million.

Role of the Office of Rail Regulation

The Office of Rail Regulation (ORR) does not intend to scrutinise all individual proposals for investment. However, they will review efficiency at a high level over the whole fund and in detail for a sample of schemes. As the ORR's acceptance criteria include efficient delivery, the efficiency rigour that is applied to the activity to which these funds relate should be consistent with the ORR's final determination for CP5.

Fund proposals

It is expected that the schemes will involve enhancements linked to renewals, improvements to existing stations and proposals for new stations. The promoter should identify funding partners, as proposals that are part-funded by third parties are likely to result in the greatest return. Stand-alone enhancement schemes are also possible.

For new stations it is expected that promoters will follow the Scottish Transport Appraisal Guidance (STAG) process. In addition promoters should consult Network Rail's Investment in Stations document prior to requesting investment from this fund.

There are a number of schemes which may be delivered with the assistance of this fund and are listed below. They include, amongst others:

- Kintore new station;
- Dalcross new station;
- Robroyston new station;
- Greenock Central car park extension; and
- North Berwick platform extension.

These schemes are indicative and this list will be updated as we confirm the schemes that will draw down on the fund.

Scottish Strategic Rail Freight Investment Fund

Details

Fund reference code: SF002

Last updated: March 2014

Purpose

Consistent with objectives of the Scottish Ministers to encourage growth in rail freight and reduce emissions, the fund should support sustainable rail transport for freight, thereby reducing the supply chain's transport emissions and reducing road congestion. The fund will facilitate, or contribute towards, strategic infrastructure interventions on the Scottish network to enable rail freight to deliver against these objectives. This fund does not replace, nor will it replicate, the grant elements of the Scottish Government Future Transport Fund, which aims to encourage a shift of freight to rail and water. There is £31m available for this purpose.

Fund management

The fund is administered by the Head of Strategy and Planning (Scotland). Authorisation of draw down and spend is as set out in Network Rail internal regulations but following recommendation from the Freight Working Group, schemes are required to have been supported by the Freight Joint Board (Scotland). This cross-industry group oversees the development of Rail Freight in Scotland and consists of representatives from Transport Scotland, Freight Operating Companies and Network Rail.

Decisions on funding

Where the Freight Joint Board for Scotland agrees to pursue a project initially, the net cost of major works (i.e. the amount that will be drawn down from the Strategic Rail Freight Investment Fund) must not exceed the following without prior approval from Transport Scotland:

- £100,000 where the benefit-cost ratio is less than 2 or not yet determined; or
- £2.5m where the benefit-cost ratio (BCR) can be demonstrated to be 2 or greater.

A benefit-cost ratio must therefore be determined at the earliest opportunity.

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

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. A more detailed (usually quantitative) appraisal should be completed prior to the commitment of detailed design. The appraisal must be clear, evidence based and in line with the fund principles, including the Scottish Ministers' priorities, and consider the financial impact on each affected industry partner. The appraisal is in accordance with the principles of the Scottish Transport Appraisal Guidance (STAG).

Role of the Office of Rail Regulation

The Office of Rail Regulation (ORR) does not intend to scrutinise all individual proposals for investment. However, they will review efficiency at a high level over the whole fund and in detail for a sample of schemes. As the ORR's acceptance criteria include efficient delivery, the efficiency rigour that is applied to the activity to which these funds relate should be consistent with the ORR's final determination for CP5.

Fund proposals

The fund can be used for improvement initiatives that encourage growth and productivity in rail freight; reduce emissions and reduce road congestion.

The following projects are currently being considered as possible candidates for funding in Control Period 5 and include, amongst others:

- Mossend Yard enhancement;
- Slateford Junction enhancement;
- Elgin to Inverness gauge improvement;
- Grangemouth electrification;
- Edinburgh suburban electrification (multi-funded project);
- Newtonhill enhancements (multi-funded project);
- Aberdeen to Central Belt improvements (multi-funded project);
- Laurencekirk Up freight loop; and
- Waterloo branch improvements.

Scottish Network Improvement Fund

Details

Fund reference code: SF003

Last updated: March 2014

Purpose

The purpose of this fund is to deliver, or support the delivery of, interventions on the Scottish network which support the development of the capacity and capability of general infrastructure and network communications systems in line with the strategic priorities of Scottish Ministers, including improved journey times, improved connectivity and resilience. The fund should exploit opportunities available through current or planned works. There is £62m available for this purpose.

Fund management

The fund is administered by the Head of Strategy and Planning (Scotland). Authorisation of draw down and spend is in accordance with Network Rail internal regulations but schemes are required to have been supported by Network Rail's Scotland Route Strategy Planning Group and the Scotland Route Investment Review Group involving all relevant train operators and Transport Scotland.

Decisions on funding

The net cost of major works (i.e. the amount that will be drawn down from the Scottish Network Improvement Fund) must not exceed the following without prior approval from Transport Scotland:

- £0.5m of the total fund amount if the benefit-cost ratio is less than 2 or not yet determined; or
- £5m if the benefit-cost ratio can be demonstrated to be 2 or greater.

A benefit-cost ratio must therefore be determined at the earliest opportunity.

The fund is not intended to support investments where the financial 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; and
- are sufficient for Network Rail to justify funding the scheme, Network Rail would be expected to fund it themselves.

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. A more detailed (usually quantitative) appraisal should be completed prior to the commitment of detailed design. The appraisal must be clear, evidence based and in line with the fund principles, including the Scottish Ministers' priorities, and consider the financial impact on each affected industry partner. The appraisal is in accordance with the principles of the Scottish Transport Appraisal Guidance (STAG).

Role of the Office of Rail Regulation

The Office of Rail Regulation (ORR) does not intend to scrutinise all individual proposals for investment. However, they will review efficiency at a high level over the whole fund and in detail for a sample of schemes. As the ORR's acceptance criteria include efficient delivery, the efficiency rigour that is applied to the activity to which these funds relate should be consistent with the ORR's final determination for CP5.

Fund proposals

It is expected that most schemes would take advantage of opportunities available through current or planned works 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 following projects are currently being considered as possible candidates for funding in Control Period 5:

- various linespeed improvements linked with renewals;
- Greenock Central crossover and bi-directional working;
- Polmadie to Glasgow bi-directional working;
- Anniesland connection;
- Perth depot stabling and servicing;
- Milngavie platform extension;
- Glasgow Central capacity improvements;
- Edinburgh Waverley capacity improvements;
- Portobello junction remodel;
- Charing Cross turnback;
- Exhibition Centre turnback;
- Ladybank to Hilton branch Phase 3;
- Edinburgh suburban electrification (multi-funded project);
- Newtonhill enhancements (multi-funded project); and
- Aberdeen to Central Belt improvements (multi-funded project).

Future Network Development Fund

Details

Fund reference code: SF004

Last updated: March 2014

Purpose

This will fund or support the development of proposals for strategic interventions to improve the capacity and capability of the Scottish network in Control Period 6 and beyond. There is £11m available for this purpose.

Fund management

The fund is administered by the Head of Strategy and Planning (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 by Network Rail's Scotland Route Strategy Planning Group and the Scotland Route Investment Review Group involving all relevant train operators.

Decisions on funding

The net cost of major works (i.e. the amount that will be drawn down from the Future Network Development Fund) must not exceed £200,000 without prior approval from Transport Scotland.

A business rationale must be presented to Transport Scotland at the earliest opportunity.

Appraisal

Future Network Development Fund schemes will be subject to the value for money test appropriate to the type of scheme under consideration. The appraisal must be clear, evidence based and in line with the fund principles, including the Scottish Ministers' priorities, and consider the financial impact on each affected industry partner.

Role of the Office of Rail Regulation

The Office of Rail Regulation (ORR) does not intend to scrutinise all individual proposals for investment. However, they will review efficiency at a high level over the whole fund and in detail for a sample of schemes. As the ORR's acceptance criteria includes efficient delivery, the efficiency rigour that is applied to the activity to which these funds relate should be consistent with the ORR's final determination for CP5.

Fund proposals

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 or as otherwise brought forward by Transport Scotland.

The following strategic projects may be considered for further development under this fund.

Strategic Projects

Passenger capacity at Glasgow Central, Glasgow Queen Street and Edinburgh Waverley , including any requirements resulting from the introduction of High Speed 2 services

Train handling capability at Glasgow Central

Train handling capability at Edinburgh Waverley

Rail improvements between Aberdeen and the Central Belt

Rolling programme of electrification

Aberdeen to Inverness corridor improvements phase 2

Highland Main Line corridor phase 3

Far North route availability enhancement for freight

East Kilbride station capability

Scotland: Level Crossing Fund

Details

Fund reference code: SF005

Last updated: March 2014

Purpose

In addition to the baseline funding requirement for level crossing safety in Scotland, this fund will support Network Rail, local authorities and other local stakeholders to work in partnership to facilitate the closure and partial closure of level crossings in Scotland to reduce wider industry costs. There is £13m available for this purpose.

Fund management

The fund is administered by the Network Rail Route Safety Improvement Manager (Scotland). Authorisation of draw down and spend is in accordance with Network Rail internal regulations but schemes are required to have been supported by Network Rail's Scotland Route Strategy Planning Group and the Scotland Route Investment Review Group involving train operators.

Appraisal

The appraisal for Level Crossing safety is based on an 'as low as reasonably practical' (ALARP) study (using Network Rail's All Level Crossing Risk Model (ALCRM)).

Where base line (ALARP) level crossing safety funding or third party funding is not sufficient to facilitate closure of the level crossing consideration should be given to the benefits provided to the local community and the rail industry's reputation.

Role of the Office of Rail Regulation

The Office of Rail Regulation (ORR) does not intend to scrutinise all individual proposals for investment. However, they will review efficiency at a high level over the whole fund and in detail for a sample of schemes. As the ORR's acceptance criteria include efficient delivery, the efficiency rigour that is applied to the activity to which these funds relate should be consistent with the ORR's final determination for CP5.

There are a number of level crossings which may benefit from the assistance of this fund including, amongst others:

- Cornton No. 1 & 2;
- Dingwall No. 1;
- Dalcross;
- Delny;
- St Germain's; and
- Rosarie.

Scotland Enhancements Programme: Projects

Scotland – Projects

SC001 EGIP Electrification of Springburn to Cumbernauld

SC002 EGIP – Initial Phase Key Output 1

SC003 EGIP – Initial Phase Key Outputs 2, 3 & 4

SC004 EGIP – Edinburgh Gateway (Gogar) intermodal transport interchange (advance works)

SC005 EGIP – Haymarket station capacity project: GRIP 5 to 8 implementation

SC006 EGIP 2013 advance route clearance programme (other routes)

SC007 Borders Railway

SC008 Rolling programme of electrification (Scotland)

SC009 Aberdeen to Inverness improvements phase 1

SC010 Highland main line journey time improvements (phase 2)

SC011 Motherwell area stabling

SC012 Motherwell resignalling enhancements

SC013 ECML (North) – WCML (Carstairs) gauge enhancement

SC014 Rutherglen and Coatbridge (R&C) electrification

EGIP - Electrification of Springburn to Cumbernauld

Details

Project reference code: SC001

HLOS driver: Increasing the capacity and capability of the Scottish network

Operating route: Scotland

Lines of route: Dalmuir to Cumbernauld via Glasgow Queen St Low Level and Springburn

Glasgow Queen Street High Level to Falkirk Grahamston

Last updated: March 2014

CP5 output driver

The project will electrify 50 single track kilometres (stk's) of railway to permit electric trains to operate between Springburn and Cumbernauld and Motherwell and Cumbernauld. This will allow Glasgow Cumbernauld services to divert to Glasgow Queen Street Low Level, freeing capacity in Queen Street High Level.

This project helps address capacity issues at Glasgow Queen St High Level. The extension of existing EMU services from Springburn to Cumbernauld facilitates a cascade of Class 158 DMU rolling stock to the new Borders Railway.

Scope of works:

- Electrification of the routes from Cowlares West / Sighthill Junction to Cumbernauld.
- Electrification of Gartcosh Junction to Gartsherrie South Junction.
- Electrification of Garnqueen North Junction to Gartsherrie South Junction.
- Installation of additional S&C and a crossover at Springburn to improve operating flexibility for Cumbernauld service turnarounds.
- Platform lengthening at Cumbernauld for 6 car EMU operation.

The extent of the electrification works equates to circa 50stk's of new electrification, clearance works for the remaining 3 foul structures, parapet raising on 5 other bridges and immunisation of existing telecoms and S&T equipment.

Significant interfaces

Scotland CP5 projects (confirmed as part of asset renewals workbanks) have been reviewed and no significant interfaces have been identified. Disruptive access proposals in the 2014 Engineering Access Statement will be arranged to align with the scope and possession opportunities for track renewals and other work-types where practicable.

Key assumptions

OLE equipment will be new Network Rail OLE Design Series 2 – suitable for 100mph running.

Activities and milestones

GRIP 4 for EGIP electrification (including the scope of Cumbernauld electrification) was completed at the end of February 2011.

GRIP 5-8 for advance structures clearance works on the Cumbernauld routes has been undertaken during 2012 (5 structures), and further works were completed in early 2013 (2 structures). A contract for 2013/14 clearance works at the final 3 structures was awarded in early 2013.

The contract for undertaking GRIP 5-8 for infrastructure works at Springburn and Cumbernauld was awarded in early 2013, leading into a delivery programme that commenced in mid-2013 and will be complete by June 2014.

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	March 2014	Regulated Output

EGIP – Initial Phase Key Output 1

Details
Project reference code: SC002
HLOS driver: Increasing the capacity and capability of the Scottish network
Operating route: Scotland
Line of route: Edinburgh to Glasgow (via Falkirk High)
Last updated: March 2014

CP5 output driver

This project will electrify the route between Newbridge Junction and Glasgow Queen Street and extend platform lengths. Together with alterations at Glasgow Queen Street and Edinburgh Waverley this will permit 7 car electric trains to operate on the route. In addition, a new station will be constructed known as Edinburgh Gateway including a tram interchange to give improved access to Edinburgh airport and West Edinburgh.

The key outputs of EGIP include reductions in journey times and increased passenger capacity on the main Edinburgh to Glasgow route, giving benefits to passengers, contributing to the Scottish Government’s goals of improving economic connectivity and reducing road congestion. Electrification will also reduce CO2 emissions on the route.

The increase in capacity will be achieved through electrification and the introduction of longer train formations. 7 car formations will operate during peak periods, intermediate station platforms will be extended to accommodate longer trains. These will replace the current 3 car DMUs which operate as 6 car formations during peak periods. End to end journey times will be progressively reduced from the current fastest journey time of 50 minutes to 42 minutes on completion of EGIP Initial Phase and the electrification of other routes that connect with the corridor when 8 car trains will also be able to operate.

Scope of works

Project	Physical outputs
Glasgow Queen St High Level to Newbridge Junction (via Falkirk High) Electrification	25kv OHL electrification
Cumbernauld to Greenhill Lower Junction Electrification	25kv OHL electrification
Glasgow Queen Street High Level station capacity	Extended platforms, station throat re-modelling and signalling headway improvements
Platform extensions at Croy, Falkirk High, Polmont and Linlithgow	Platforms lengthened to support 8-car EMU operation

Project	Physical outputs
Haymarket to Inverkeithing signalling headways	Signalling improvements to deliver reduced headways
Edinburgh Waverley station capacity	Works to support operation of 8 car EMU E&G services, which may include platform, S&C and signalling alterations and additional S&C in the station throat.
East of Edinburgh EMU depot	Creation of a stabling and cleaning facility for new EMU rolling stock at Millerhill, which may include Portobello Junction re-modelling.
Edinburgh Gateway station	New station on the Edinburgh to Fife Line to provide an interchange with the Edinburgh Tram network for onward connection to Edinburgh Airport.

The extent of the above electrification works equates to approximately 150stk’s (single track kilometres) of new electrification, including provision of a new feeder station at Greenhill, electrification clearance works to 8 foul structures and immunisation of existing telecoms and signalling equipment.

Significant Interfaces

The following Scotland CP5 renewals have been identified as relevant to EGIP. Works will be phased to combine scope and possession opportunities or de-conflict where scope or work-types are incompatible:

- Greenhill Upper Junction S&C renewals;
- Winchburgh Junction S&C renewals; and
- Queen Street Tunnel slab track and S&C renewals.

The project will also interface with the following previously authorised EGIP advance works:

- 2012 advance route clearance works;
- 2013 advance route clearance works;
- 2014 advance route clearance works; and
- Springburn to Cumbernauld electrification.

The project will also interface with the following further EGIP works in CP5:

- EGIP Initial Phase Key Outputs 2 / 3 / 4.

The project will also interface with the following planned Transport Scotland funded enhancement in CP5:

- Stirling / Alloa / Dunblane electrification.

Key assumptions

- The project will be able to deliver the works to plan without powers granted through the Transport & Works (Scotland) Act (TAWs) process.
- OLE equipment will be new Network Rail OLE Design Series 2, suitable for 100mph running.
- The programme for completion of the Edinburgh Gateway Project is dependant on the programme for completion of the remaining Edinburgh Tram Project works.

Activities and milestones

GRIP 4 for the above electrification works was completed at the end of February 2011. GRIP 4 for the majority of the above infrastructure works was completed in June 2012. Subsequent revisions to the scope of the programme specified by Transport Scotland required that further GRIP 4 development work had to be undertaken and this will be completed by March 2014.

GRIP 6 for Key Output 1 (this project) is scheduled for completion by December 2016. Subsequent Key Outputs 2, 3 and 4 will be completed by March 2019.

Milestone	Description	Date	Status
GRIP 6 start	Start on site	October 2014	Indicator
GRIP 6 completion	Infrastructure ready for use	March 2017	Regulated output

EGIP – Initial Phase Key Outputs 2, 3 & 4

Details

Project reference code: SC003
 HLOS driver: Increasing the capacity and capability of the Scottish network
 Operating route: Scotland
 Line of route: Edinburgh to Glasgow (via Falkirk High)
 Last updated: March 2014

CP5 output driver

This project will remodel Glasgow Queen Street station to permit the operation of 8 car trains on the main Edinburgh / Glasgow route and increase line speeds where appropriate to deliver a 42 minute fastest journey time between Edinburgh Waverley and Glasgow Queen Street.

The key outputs of EGIP include reductions in journey times and increased passenger capacity on the main Edinburgh to Glasgow route, giving benefits to passengers, contributing to the Scottish Government’s goals of improving economic connectivity and reducing road congestion. Electrification will also reduce CO2 emissions on the route.

The increase in capacity will be achieved through electrification and the introduction of longer train formations. 4 car EMUs will be introduced, operating as 8 car formations during peak periods. These will replace the current 3 car DMUs which operate as 6 car formations during peak periods. End to end journey times will be progressively reduced from the current fastest journey time of 50 minutes to 42 minutes on completion of EGIP Initial Phase and the electrification of other routes that connect with the corridor.

Scope of works

Project	Physical outputs
Glasgow Queen Street High Level station : concourse works	Physical works required to allow extensions to a number of the existing platforms at their concourse ends to provide 8 car standage. Increased station concourse space and enhanced passenger facilities to accommodate forecast growth.
Edinburgh to Glasgow (E&G) line speed improvements	Increased line speeds at a number of locations to allow end to end journey target to be achieved. (The extent of these works is dependent on the output from timetable and rolling stock development work that is currently underway)

Significant Interfaces

The following Scotland CP5 renewals have been identified as relevant to EGIP. Works will be phased to combine scope and possession opportunities or de-conflict where scope or work-types are incompatible:

- Queen Street tunnel slab track;
- Carmuir West S&C renewals; and
- CP5 asset renewals between Polmont – Greenhill Upper Junction and Hilton Junction.

The project will also interface with the following CP5 projects:

- EGIP Initial Phase Key Output 1; and
- Stirling, Dunblane, Alloa relectrification.

The project will also interface with the following CP5 project:

- Glasgow Queen Street Station Buchanan Galleries Tax Incremental Financing (TIF) funded development.

Key assumptions

- The project will be able to deliver the works to plan without powers granted through the Transport & Works (Scotland) Act (TAWs) process.
- Electrification works commence at a sufficiently early date that the outputs can be delivered to the scheduled milestone dates – given that night-time freight and Inverness Sleeper services may significantly constrain Sunday - Friday night access.
- The interfacing works that have to be delivered by the Queen Street Station Buchanan Galleries TIF funded development project are delivered in accordance with the agreed programme to the extent that they do not impact on the EGIP milestone dates.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	May 2014	Regulated Output
GRIP 4 completion	Single option scope defined	September 2014	Indicative
GRIP 6 start	Start on site	January 2017	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2019	Indicative

EGIP – Edinburgh Gateway (Gogar) Intermodal Transport Interchange (Advance Works)

Details

Project reference code: SC004

HLOS driver: Increasing the capacity and capability of the Scottish network

Operating route: Scotland

Last updated: March 2014

CP5 output driver

This project will complete GRIP 5 and advanced works for the new station at Edinburgh Gateway which will be delivered as part of EGIP KO1 (see SC002).

This project now forms part of the Edinburgh to Glasgow Improvements Programme (EGIP) KO1 (SC002). It will provide a new intermodal station on the existing Edinburgh to Fife rail line in the Gogar area. The station will be located adjacent to the new Edinburgh Tram network that is currently being constructed by City of Edinburgh Council (CEC). The new station will provide a means of connecting Edinburgh Airport into the national rail network via the Edinburgh Tram network. It will also provide an access to the surrounding Edinburgh Park and Gyle areas and the proposed West Edinburgh development area.

Station specification

The new station and interchange shall include the following specification items:

- 265m long platforms on the Up (to Edinburgh) and Down (from Edinburgh) Fife Lines;
- a station building to the rear of the Down platform, including associated ticketing facilities and ticket gates;
- a footbridge link between the platforms and associated DDA compliant lifts, escalators and stairs at each end of the footbridge;
- a covered forecourt area between the rail station and the tram stop;
- a retaining wall between the forecourt area and the tram stop;
- a link bridge from the forecourt area to the tram stop;
- a circulation tower between the link bridge and the rear of the northern tram stop platform, including DDA compliant lift, escalators and stairs;
- an access road into the station with associated short term car parking provision, bus layover facilities, and suitably landscaped station surroundings;
- a pedestrian underpass below the A8 road to provide an access to the Gyle Centre and other pedestrian access routes; and
- associated customer information facilities.

The station will be fully DDA compliant in accordance with the Accessible Train and Station Design for Disabled People Code of Practice.

Scope of works to be delivered by Network Rail

The current obligation for this project is to deliver GRIP 5 (Detailed Design) and the implementation of advance works. The advance works consist of:

- track lowering below the adjacent A8 road bridge to achieve electrification clearances;
- utilities diversion works; and
- land acquisition.

Scope of works being delivered by others

Transport Scotland is contracting separately with City of Edinburgh Council (CEC) to deliver the tram stop related elements of the project.

Significant interfaces

The project will interface with the following projects that are planned to be delivered by Network Rail:

- EGIP Initial Phase Key Output 1: Haymarket to Inverkeithing signalling headway improvements;
- miscellaneous planned Network Rail infrastructure renewals; and
- FTN/GSM-R.

This project will also interface with the following project that is being delivered by others:

- Edinburgh Tram.

Key assumptions

- Network Rail will become the owner of the completed station within operational boundaries to be agreed by Transport Scotland, Network Rail and CEC. This includes the public access routes to the station from the south via the A8 underpass, and from the Edinburgh Tram network via the circulation tower and connecting concourse.
- Transport Scotland will enter into agreements with CEC to cover their involvement with the construction and operational phases of the project, including the new tram stop and the agreed elements of the link to the new station.
- The content of these agreements will be agreed in advance by NR where they directly relate to the construction and/or future operation and maintenance of the station.
- Network Rail will enter into the appropriate agreements with the operator of the Edinburgh Tram network regarding the ongoing operational interface of the Transport Interchange.
- A Franchise Change Notice will be signed between the ScotRail franchise operator and Transport Scotland to cover all of the franchise operator's involvement in the design, development, construction and operational phases of the project.

- The ScotRail franchise operator will operate the new station and will update their Safety Management System accordingly.
- A Station Lease Agreement will be entered into between Network Rail and the franchise operator (currently First ScotRail) prior to the commencement of operations.
- Network Rail will be responsible for progressing any land purchases required and obtaining all necessary consents required for the Project. Transport Scotland will carry the risk associated with the successful conclusion of these activities.
- Liability for the performance of CEC will rest with Transport Scotland.

Activities and milestones

Milestone	Description	Date	Status
GRIP 6 completion – advance works	Infrastructure ready for use	December 2014	Regulated Output
GRIP 6 completion - interchange	Infrastructure ready for use	March 2017	Regulated Output

EGIP – Haymarket Station Capacity Project

Details

Project reference code: SC005

HLOS driver: Increasing the capacity and capability of the Scottish network

Operating route: Scotland

Last updated: December 2013

Key outputs

This project will rebuild Haymarket Station to accommodate anticipated future passenger flows.

This project forms part of the Edinburgh - Glasgow Improvements Programme (EGIP). The project will enhance the facilities at Edinburgh Haymarket station in order that it can accommodate forecast future demand levels, including that generated by EGIP. A tram interchange will be available on completion of the Edinburgh tram project.

Project specification

The proposal involves the redevelopment of Haymarket station to extend the station concourse over the existing car park to the rear of the station building. Specific works are:

- an expansion of the existing station concourse;
- the creation of an additional entrance off Haymarket Terrace facilitating improved accessibility and links to other transport modes;
- the retention of the Grade A Listed building and refurbishment of the ground and lower ground floors;
- a glazed roof structure over the new concourse with new station ticket office and retail outlets beneath;
- new footbridge concourse extension with lift, escalator and stair access to platforms below;
- removal of old footbridge and stairs;
- re-profiled platform surfaces throughout including new copers and new surfacing with tactile strips;
- new 6 car length platform canopies;
- refurbished platform facilities for staff and passengers;
- new emergency escape facilities off the east end of platforms 2, 3 and 4 ;
- associated alterations to car park access and egress arrangements; and
- enhanced security measures.

Scope of works to be delivered by Network Rail

The scope of work to be delivered by Network Rail for GRIP 5 to 8 (detailed design and implementation including commissioning, handover and completion) comprises the following:

- form B and 'approved for construction' drawings;
- implementation programme including commissioning and handover activities;
- detailed cost estimate including QCRA;
- compliance with appropriate planning and statutory consents;
- further planning applications as required for proposed security measures; and
- Implementation of works including commissioning handover and completion of:
 - the retention of the Grade A Listed building and refurbishment of the ground and lower ground floors;
 - an expansion of the existing station concourse;
 - a glazed roof structure over the new concourse with new station ticket office and retail outlets beneath;
 - an additional entrance off Haymarket Terrace facilitating improved accessibility and links to other transport modes;
 - a new footbridge concourse extension with lift, escalator and stair access to platforms below;
 - removal of the existing footbridge and stairs;
 - new platform surfaces throughout including new copers and surfacing with tactile strips;
 - new 6 car length platform canopies;
 - refurbished platform facilities for staff and passengers;
 - new emergency escape facilities off the east end of platforms 2, 3 and 4 ;
 - associated alterations to car park access and egress arrangements; and
 - enhanced security measures.

Scope of works being delivered by others

The Edinburgh tram stop is being delivered by City of Edinburgh Council.

Interfaces with other projects

The project will interface with the following infrastructure projects that also form part of EGIP scope and are being delivered by Network Rail:

- Edinburgh to Glasgow electrification;
- Haymarket to Inverkeithing headway improvements; and
- Edinburgh Waverley Station infrastructure capacity.

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

- Haymarket Station LLPA renewal;
- GSMR / FTN; and
- other miscellaneous planned Network Rail infrastructure renewals.

The project will also interface with the following project that is being delivered by others:

- Edinburgh Tram: it is recognised that there will be a significant interface with the Edinburgh Tram project to create the interchange facility. In particular the re-opening of Haymarket Yards to through traffic is an essential pre-cursor to implementation works on this project commencing.

The 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.

Key assumptions

- Network Rail will become the owner of the completed station.
- The ScotRail franchise operator will operate the new station and will update their Safety Management System accordingly.
- An amended Station Lease Agreement will be entered into between Network Rail and the ScotRail franchise operator.
- Agreement can be reached with City of Edinburgh Council on the access arrangements and the management of the technical interfaces between this project and the Edinburgh Tram project.

Activities and Milestones

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	April 2014	Regulated Output

2013 Advance Route Clearance Programme (Other Routes)

Details

Project reference code: SC006
 HLOS driver: Increasing the capacity and capability of the Scottish network
 Operating route: Scotland
 Last updated: December 2013

Key outputs

This project will undertake advance route clearance works at various structures to facilitate the electrification of the route to Stirling Dunblain and Alloa included in the rolling Programme of Electrification (Scotland) (see SC008).

The project will deliver electrification clearances at 9 foul structures. These structures are on routes that are covered by Transport Scotland's subsequent wider electrification aspirations following the completion of the Edinburgh Glasgow Improvement Programme (EGIP). GRIP 1 to 4 development of the project was undertaken as part of EGIP. The electrification is now being delivered on a stand alone basis and does not form part of EGIP, however these advanced works are being funded from the EGIP programme.

Project specification

The specification for the works under the project is as follows:

- detailed design of the previously identified value engineered solutions at these locations to provide electrification route clearance; and
- implementation of the works, including any associated utilities diversion work.

Scope of works to be delivered by Network Rail

The scope of work to be delivered by Network Rail for GRIP 5 to 8 (detailed design and implementation including commissioning, handover and completion) comprises the following:

- form B and 'approved for construction' drawings;
- implementation programme including commissioning and handover activities;
- compliance with appropriate planning and statutory consents; and
- implementation of works including commissioning, handover and completion.

Scope of works being delivered by others

There are no items of scope being delivered by others.

Interfaces with other projects

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

- Edinburgh to Glasgow electrification;
- EGIP infrastructure projects; and
- Stirling to Dunblane and Alloa electrification.

The management of these interfaces and interdependencies is a reasonable requirement of Network Rail.

Key assumptions

- Network Rail will become the owner of the completed railway assets.

Activities and Milestones

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	December 2014	Regulated output

Borders Railway

Details

Project reference code: SC007
 HLOS driver: Increasing the capacity and capability of the Scottish network
 Operating route: Scotland
 Line of route: New Railway South of Newcraighall
 Last updated: March 2014

CP5 output driver

This project will provide a new rail route between Newcraighall and Tweedbank with 7 new stations to permit operation of a half hourly passenger service with a maximum 44 minute journey time between Newcraighall and Tweedbank.

To create a rail route in the Scottish Borders connecting the Borders to the existing rail network at Newcraighall.

Scope of works

- Provision of 30 miles of new single track railway with passing loops to create a rail route in the Scottish Borders connecting the Borders to the existing rail network at Newcraighall.
- Provision of 7 new stations at Shawfair, Eskbank, Newtongrange, Gorebridge, Stow, Galashiels and Tweedbank.
- Provision of 6 station car parks at Shawfair, Eskbank, Newtongrange, Gorebridge, Stow and Tweedbank; and
- a route capable of supporting a journey time of 44 minutes (plus one performance minute) between Tweedbank and a connection point at Newcraighall based on the rolling stock being cascaded (Class 158 DMUs) (modelled using Railsys).

Significant interfaces

There are currently no identified significant interfaces with other Network Rail managed projects.

Key assumptions

The project is being delivered and managed by Network Rail. It is being financed by an addition to the RAB. Transport Scotland will fund the repayments.

Activities and milestones

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	June 2015	Regulated Output

Rolling Programme of Electrification (Scotland)

Details

Project reference code: SC008

HLOS driver: Increasing the capacity and capability of the Scottish network

Operating route: Scotland

Last updated: March 2014

CP5 output driver

As part of an ongoing rolling programme, this project will electrify the routes to Stirling, Dunblane and Alloa and the Shotts Line to permit services to be operated by electric trains to contribute to Scottish government environmental targets and support the EGIP KO4 outputs.

The principal driver for the project is the output of the Scottish Government's Strategic Transport Projects Review (STPR). The STPR defines the most appropriate strategic investments in Scotland's national transport network from 2012 to support the Scottish Government's purpose of promoting sustainable economic growth by planning the next 20 years of transport investment for Scotland's rail and trunk road networks.

Output benefits

- A reduction in environmentally harmful emissions by introducing electric trains.
- A reduction in energy consumption by introducing electric trains.
- A reduction in operating costs by introducing electric trains.
- Electrification of these routes supports the Scottish Government's stated aim of reducing journey times.
- Electrification provides further diversionary routes for electric traction, thus enhancing network resilience.
- Electrification of the Shotts Line and Cumbernauld to Grangemouth route sections facilitates freight traffic being hauled by electric locomotives thus reducing freight shipping costs and enabling heavier and longer trains to operate.

Scope of works

The scope of the works during CP5 is to complete the installation of a 25kV overhead electrification system on the nominated route sections detailed below:

- Greenhill Lower - Carmuir West Junction - Falkirk Grahamston and Polmont;
- Carmuir West – Stirling – Dunblane – Alloa (including Larbert Junction to Carmuir East);
- Holytown Junction – Shotts – Midcalder Junction (the Shotts line); and
- Rutherglen East Junction – Langloan Junction – Coatbridge Junction – Whifflet North Junction (the R&C line) (implementation commenced in CP4 and refer to delivery plan SC014).

The development work carried out to date has identified that significant engineering works will be required at a large number of structures to provide the necessary clearances for installation of overhead line equipment and early clearance of many of these structures has formed part of an enabling work package prior to the full electrification installation.

Significant interfaces

There are significant interfaces for the Greenhill to Polmont and Dunblane/Alloa routes in respect of aligning the access requirements for construction with the need to protect diversionary routes during the core EGIP works. There are interfaces with the following projects:

- electrification of the Grangemouth branch (planned to be funded from the Scottish Strategic Rail Freight Investment Fund);
- the Motherwell North and Carstairs remodelling projects;
- the national Gauge Restoration Plan on the Shotts line; and
- Rutherglen East Junction – Langloan Junction – Coatbridge Junction – Whifflet North Junction (the R&C line).

Interface with planned renewals will be explored as the project develops. In addition the project will interface with Transport Scotland's franchising programme for the next ScotRail franchise commencing April 2015.

Key assumptions

A number of specific assumptions have been made in development to date in respect of infrastructure, rolling stock, timetable, operations and performance. These are detailed fully in the Project Requirements Specification and sponsor's remit.

A key assumption in developing the project is that the existing network layout will not be changed. In the study work done so far no increase in service frequencies on any of the sub-route sections has been considered.

Activities and milestones

Milestone	Description	Date	Status
GRIP 4 completion	Single option scope defined	January 2014	Indicator
GRIP 6 start	Start on site	June 2014	Indicator
GRIP 6 completion	Infrastructure ready for use	March 2019	Regulated output

Aberdeen to Inverness Improvements Phase 1

Details

Project reference code: SC009

HLOS driver: Increasing the capacity and capability of the Scottish network

Operating route: Scotland

Last updated: March 2014

Key outputs

This project will provide infrastructure to permit trains to call at potential new stations at Kintore and Dalcross without extending average journey times and permit more frequent commuter services to Aberdeen and Inverness while contributing towards the Scottish Government's longer term aspirations for the route.

Make progress during CP5 towards a longer term requirement to:

- provide an hourly service between Aberdeen and Inverness;
- provide a half hourly service (other than after the evening peak) between Inverness and Elgin, including infrastructure to facilitate a new station at Dalcross;
- provide a half hourly service (other than after the evening peak) between Inverurie and Aberdeen, including infrastructure to facilitate a new station at Kintore;
- enable journey time improvements to provide average end to end journey time of around 2 hours, calling at all stations; and
- retain freight capacity.

During CP5, the HLOS requires that the infrastructure is provided to facilitate construction of and provision of services at new stations at Dalcross and Kintore (subject to station promoter funding contributions), as well as introduction of more frequent commuter services on the Inverness - Elgin and Aberdeen – Inverurie sections of the route and progress towards the longer term journey time aim.

A more detailed specification of the outputs required was provided by Transport Scotland in March 2013. This requires a re work of the timetable development which will, in turn, dictate the infrastructure requirements for these initial phases.

CP5 output driver

The principal driver for the project is the Scottish Government's Strategic Transport Projects Review (STPR). The STPR defines the most appropriate strategic investments in Scotland's national transport network from 2012 to support the Scottish Government's purpose of promoting sustainable economic growth through planning the next 20 years of transport investment for Scotland's rail and trunk road networks.

This project is specified in the STPR (Project 19) with the stated aim of reducing journey times and increasing service frequency on the route.

Scope of works

The main elements of scope required to deliver the full project (i.e. including the requirements beyond CP5) include:

- infrastructure to facilitate Dalcross Station: new station close to Inverness Airport;
- infrastructure to facilitate Kintore Station: new station to the west of Aberdeen;
- dynamic loops/double tracking: new or extended existing loop provision or double tracking at Dalcross, Nairn, Forres, Elgin, Huntly, Inverurie, Kintore and Dyce;
- line speed improvements: these will be at a number of sites, many of which will require track upgrade/renewal;
- level crossing upgrades: to address the altered risk categorisation arising from faster and more frequent train services; and
- signalling upgrades: to enable more efficient operations, particularly at crossing locations.

The final extent of the above physical scope items or alternative scope necessary to deliver Phase 1 of the project in CP5 will be determined by the current timetable development as, due to the single line nature of the route, the timetable will drive where and how much infrastructure is needed to cross trains travelling in opposite directions. It is also central to the identification of the line speeds and other infrastructure capabilities necessary to support the journey time reduction objective. Further timetable development work has been undertaken on the revised HLOS sequencing of output requirements and an updated draft GRIP 3 report was issued in December 2013. Discussions on the phasing of outputs are at an advanced stage with Transport Scotland which is linked to the extent of scope to be included in Phase 1 of the project.

Significant interfaces

The project does not interface with any other planned enhancement projects other than potential linkage to timetable changes in the Central Belt arising from EGIP and on the Highland Main Line. In both cases, these may affect connection timings onto the Aberdeen – Inverness line, on which the timetable is relatively inflexible due to its single line and passing loop configuration. Interfaces with planned renewals will be explored as each of the projects develops.

The project will also interface with the refranchising programme for the next ScotRail franchise commencing in April 2015.

Key assumptions

For this stage the following project assumptions have been made:

- rolling stock to be used on the route will be Class 158 and 170 Diesel Multiple Units (DMUs);
- all trains on the route will call at all stations between their originating and terminating points, including Dalcross and Kintore when these are constructed;
- the locations proposed for Dalcross and Kintore stations will not alter from that identified in the original GRIP 3 study;
- agreement will be reached with relevant stakeholders for the closure of Dalcross Level Crossing prior to the construction of the new Dalcross station;
- reasonable provision of freight capacity will be required but not during peak periods;
- seasonal charter trains will continue to operate over the route;
- no requirement to introduce longer trains/lengthen platforms other than specified;
- that some temporary journey time extension may be necessary as the delivery of project interventions is staged; and
- access arrangements will be facilitated to achieve optimal delivery efficiencies.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion without AIP	Single option selection	September 2014	Regulated output
GRIP 3 completion with AIP	Approval in principle	September 2015	Indicative
GRIP 6 start	Start on site	March 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2019	Indicative

Highland Main Line Journey Time Improvements (Phase 2)

Details

Project reference code: SC010

HLOS driver: Increasing the capacity and capability of the Scottish network

Operating route: Scotland

Last updated: December 2013

CP5 output driver

This project will provide infrastructure to permit the reduction of average end-to-end journey time between Edinburgh / Glasgow and Inverness by 10minutes, the operation of one passenger train per hour in each direction taking into account longer term Strategic Transport Projects Review (STPR) aspirations.

The principal driver for the project is the Scottish Government's priorities for transport which include improvements to journey times and connectivity reflected in the STPR. The STPR defines the most appropriate strategic investments in Scotland's national transport network from 2012 to support the Scottish Government's purpose of promoting sustainable economic growth by planning the next 20 years of transport investment for Scotland's rail and trunk road networks.

This project is specified in the STPR (Project 17) with the stated aim of improving rail network capacity between Inverness and Perth and reducing journey times.

Scope of works

The project will initially require timetable development to identify the infrastructure requirements necessary to deliver the enhanced service frequency and journey time improvements, taking into account longer term aspirations. This is likely to require new or extended double track sections and considerable track works, including accelerated renewals, to facilitate increased linespeeds. Strengthening works to structures and signalling system changes are also likely to be required, especially if the timetable requirements require additional loops, extension of existing loops and/or extension of existing double track sections. This project is currently predicted to continue through CP5. The aim is to find the optimal infrastructure solutions that deliver the passenger output requirements together with worthwhile efficiency gains for freight.

Principal physical works are therefore likely to include:

- new or extended double track sections;
- new or extended loops;
- re-alignment of track;
- renewal/upgrade of track including switches and crossings to meet higher capability requirements;
- track formation treatment;

- bridge strengthening; and
- signalling system alterations.

The project includes a detailed timetable study to determine the extent of infrastructure required to achieve the outputs specified for CP5.

Significant interfaces

The project interfaces with the following planned enhancement projects as follows:

- EGIP – to the extent that the timing of HML trains to/from Edinburgh Waverley and Glasgow Queen Street will be determined by the EGIP timetable;
- Aberdeen – Inverness Improvements Phase 1 – to the extent that the timetable on the HML will need to integrate with the Aberdeen – Inverness timetable to enable good service connections; and
- development work to identify Phase 3 opportunities using the future network development fund.

Interfaces with planned renewals will be explored as the project develops. In addition, the project will interface with Transport Scotland's refranchising programme for the next ScotRail franchise commencing in April 2015.

Key assumptions

For this stage of the project, the following assumptions have been made:

- passenger rolling stock deployed on the route will consist of Class 158 and 170 units, HST units (which are planned to be replaced by IEP units in 2018) and existing sleeper formations;
- any gauging, platform extension or other work required by the IEP trains will be taken forward separately by the IEP project;
- that the stopping pattern of trains is not fixed and can be flexed to optimise crossing of trains travelling in opposite directions;
- the GRIP 3 report will include a costed option to deliver the full average 10 minute reduction in journey times although additional option(s) which do not provide the full 10 minutes may be presented if they avoid significant infrastructure costs (to be decided by Transport Scotland). A minimum of 7 minutes average journey time reduction should be assumed and any proposal to deliver average journey time reductions in excess of 10 minutes will be welcomed if the incremental costs are relatively low;
- a maximum interval of 90 minutes and minimum interval of 30 minutes between departures from both Inverness and Perth is deemed acceptable within the objective of providing one train an hour;
- all trains will make passenger stops at both Pitlochry and Aviemore;
- the minimum quantum of passenger stops per day (Monday – Saturday) at other stations to be as follows (all excluding all sleeper calls except as shown below):

CP5 Enhancements Delivery Plan

- Dunkeld & Birnam 9 each way;
- Blair Atholl, 7 each way;
- Dalwhinnie, 5 each way;
- Newtonmore, 5 each way;
- Kingussie, 11 each way (includes East Coast trains);
- Carrbridge, 5 each way; and
- land acquisition, to the extent that this may be needed for additional infrastructure, can be achieved without the need for statutory powers.

It is also assumed that final agreement on project scope will be reached with Transport Scotland once the project reaches the stage of GRIP 3 conclusion.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion without surveys and AIP	Single option selection	June 2014	Regulated output
GRIP 3 completion with surveys and AIP	Approval in principle	September 2015	Indicative
GRIP 6 start	Single option scope defined	March 2016	Indicative
GRIP 6 completion	Start on site	March 2019	Indicative

Motherwell Area Stabling

Details

Project reference code: SC011

HLOS driver: Increasing the capacity and capability of the Scottish network

Operating route: Scotland

Last updated: March 2014

CP5 output driver

This project will electrify the remaining 'back of Shops' sidings to permit the stabling of additional EMUs at Motherwell required by the electrification with a longer term target to consolidate all stabling at Motherwell on one site with appropriate cleaning and servicing facilities.

The train stabling arrangements in the Motherwell area involve use of a number of locations: the Derby & Weighs sidings, the Hamilton loop and Back of Shops sidings in the former Motherwell TMD. These locations are utilised on a regular basis for overnight stabling and cleaning of EMU and DMU fleets at Motherwell. The facilities at each of these stabling locations are very basic, and not commensurate with the quality of product that the rail industry is expected to deliver.

In addition, there is currently insufficient stabling capacity in the Motherwell area, and this requires daily ECS moves between Yoker and Motherwell.

Scope of works

The project will consider consolidation of all stabling and cleaning facilities at a reduced number of locations with a view to releasing some or all of the existing sites in current use for other purposes. Delivery of the project will be in two phases.

Phase 1 – Motherwell Back of Shops sidings

A GRIP 2 study was completed in June 2012 but this concluded that limited opportunities for cost effective enhancement of the initially preferred site at the former Motherwell TMD existed. The extent of scope deemed cost effective to take forward to implementation is modest and consists of improvements to the 'Back of Shops' sidings location (including additional electrification) in the former TMD. It is anticipated that this will be implemented by May 2014.

Phase 2 – Motherwell Bridge sidings

A new study has been commissioned to examine options for the redevelopment of the former Motherwell Bridge sidings as a stabling and servicing facility. A client remit for this study has been agreed and a GRIP 2 study is expected to report in March 2014. Following review of this GRIP 2 report, a decision on scope to be developed further will be made in consultation with Transport Scotland and ScotRail.

The scope of potential enhancements at the Motherwell Bridge site will consider:

- track layout alterations to provide access from Motherwell Weighs;
- EMU facilities;
- carriage cleaning facilities, including walkways, water drainage and power;
- CET facilities;
- road access; and
- staff and store facilities.

Significant interfaces

There is a significant interface with the planned Motherwell North signalling renewal project currently being developed for delivery in CP5.

Interfaces with planned renewals will be explored as the project develops. The project will also interface with the refranchising programme for the next ScotRail franchise commencing in April 2015.

Key assumptions

To be determined once the findings of the GRIP 2 study on the Motherwell Bridge site are considered.

Activities and milestones

Phase 1 – Back of shops sidings

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	May 2014	Regulated output

Phase 2 - Bridge sidings

Milestone	Description	Date	Status
GRIP 3 completion	Single option selection	November 2014	Regulated output
GRIP 4 completion	Single option scope defined	TBC	Indicative
GRIP 6 start	Start on site	April 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	TBC	Indicative

Motherwell Resignalling Enhancements

Details

Project reference code: SC012

HLOS driver: Increasing the capacity and capability of the Scottish network

Operating route: Scotland

Last updated: March 2014

CP5 output driver

This project will, in conjunction with the renewal of Motherwell signalling assets, provide appropriate and cost effective enhancements where appropriate including reduced headways and bi-di signalling.

Potential enhancements elements of this project are driven by:

- an HLOS requirement to enable more effective train operations in the Motherwell area and improve track maintenance opportunities;
- a RUS requirement to enhance the network in the Motherwell North area, specifically the suburban commuter routes which are approaching capacity; and
- the desirability of capturing opportunities for synergy in delivering potential enhancement initiatives alongside core renewals.

Scope of works

The scope of the enhancement element of the project consists of:

- Part 1 - increased signalling capacity on the down Shotts Line between Carfin and Holytown Junction; and
- Part 2 - reduced capacity bi-directional signalling in the Up direction over the Down line from Law Junction to Carstairs and in the Down direction over the Up line from Carstairs to Shieldmuir South Junction.

Significant interfaces

Potential interfaces with other CP5 projects include:

- Motherwell area stabling;
- Carstairs Junction re-modelling, and
- the rolling programme of electrification works.

Key assumptions

- Motherwell North and Motherwell South (Phase 1) signalling renewals are progressed and delivered in CP5.
- Delivery of Part 2 Motherwell South bi-directional working is dependant on the final scope of Motherwell South signalling renewal which is not yet agreed.
- The project assumes, and will provide passive provision for, 25kV OLE by immunisation and earthing of all signalling equipment and bonding of all lineside apparatus. The track circuits, where used, will be AC immune single rail. The Motherwell North signalling renewal project is currently liaising with the OLE project over positioning of OHNS, TSCs, Boosters etc.
- The project assumes some future rolling stock may be electrified, however the precise type/class of rolling stock is not known at this stage. The infrastructure will be compatible with electrified rolling stock.

Activities and milestones

Part 1 (Motherwell North – Carfin/Holytown)

Milestone	Description	Date	Status
GRIP 4 completion	Single option scope defined	August 2014	Indicator
GRIP 6 start	Start on site	November 2016	Indicator
GRIP 6 completion	Infrastructure ready for use	February 2018	Regulated output

Part 2 (Motherwell South – Bi-directional working)

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	May 2014	Indicator
GRIP 3 completion	Single option selection	February 2015	Regulated output
GRIP 4 completion	Single option scope defined	February 2016	Indicative
GRIP 6 start	Start on site	May 2017	Indicative
GRIP 6 completion	Infrastructure ready for use	September 2018	Indicative

ECML (North) – WCML (Carstairs) Gauge Enhancement

Details

Project reference code: SC013
 HLOS driver: Network availability
 Operating route: Scotland
 Last updated: December 2013

CP5 output driver

The project will deliver infrastructure enhancements to permit W12 gauge traffic to operate between Temple Hirst Junction and Carstairs.

Scope of works

The physical works include:

- 2 x major bridge reconstructions on the Edinburgh Suburban Lines;
- track lifts;
- track slews (including S&C); and
- minor civil works.

Significant interfaces

The works have synergy with the planned electrification of the Edinburgh suburban lines early in CP5.

The works will provide a diversionary route for WCML traffic to/from Scotland during planned blockades to undertake significant WCML works in CP5.

Key assumptions

Clearance of lower sector infringements out with the scope of the project will be funded by Scotland Route.

Activities and milestones

Milestone	Description	Date	Status
GRIP 4 completion	Single option scope defined	To be determined	Indicator
GRIP 6 start	Start on site	To be determined	Indicator
GRIP 6 completion	Infrastructure ready for use	March 2016	Regulated Output

Rutherglen and Coatbridge (R&C) Electrification

Details

Project reference code: SC014

HLOS driver: Increasing the capacity and capability of the Scottish network

Operating route: Scotland

Last updated: December 2013

Network Rail's obligation requirements:-

This project will electrify the Rutherglen and Coatbridge line to permit services to be operated by electric trains to contribute to Scottish Government environmental targets.

We will deliver the scope of works to the milestone dates, both as described below and in the timescales outlined at the end of this document.

Scope of works

Generally, the scope of work to be delivered by Network Rail is the installation of 25kV overhead electrified contact system on the R&C Line. The physical works to be undertaken comprise the electrification of the line from Rutherglen East Junction to Whifflet North Junction and Langloan Junction to Coatbridge Junction. Each end of the route is already electrified, so this piece of electrification fills a strategic gap in the Scottish electrified network.

Advance works

- Provision of Driver Only Operation (DOO) platform equipment at Carnyle, Mount Vernon, Baillieston, Bargeddie and Kirkwood stations.
- Platform extension works to cater for 6 car EMU sets with 20m long cars.
- Deliver a solution at OB 21 at Bargeddie to accommodate the 25kV OLE contact system.
- Parapet protection works at overline structures.

Main works

- Installation of approximately 26 single track kilometres of 25kV OLE.
- Immunisation and electromagnetic conductivity ("EMC") works to cable routes, equipment and station domestic wiring installations.

This proposal is a Network Rail / ScotRail Alliance initiative, supported by Transport Scotland. It forms part of the rolling programme of electrification specified for CP5 to reduce emissions and energy consumption, with delivery accelerated to maximise the utilisation of existing electric multiple unit (EMU) rolling stock (see SC008).

Output benefits

- Electrification of the route will allow consideration of possible improvements in capacity, journey times and connectivity available by integrating the Whifflet (R&C) passenger services with the Argyle line group of services.
- The EMU stock required to run the route, once electrified, already exists within the ScotRail franchise fleet. This project is an enabler for ScotRail to maximise the utilisation of an existing funded rolling stock resource and releases diesel multiple unit ("DMU") stock required for deployment on the new Borders Railway which is opening in 2015.
- Electrification provides a diversionary route for Virgin and First TransPennine Express passenger services, thus enhancing network resilience.

Significant interfaces

The project will interface with the following projects that are either being delivered by Network Rail or other industry partners:

- Motherwell North Signalling Renewals (MNSR);
- Transport Scotland M8/M73/M74 trunk road improvements project;
- other miscellaneous planned Network Rail infrastructure renewals; and
- FTN / GSM(R).

Key assumptions

- Network Rail will become the owner of the completed railway assets.
- There are no periods of prolonged severe adverse weather during construction.
- All consents will be provided timeously, and contain no materially adverse conditions.
- The project complies with interoperability requirements.
- Sufficient disruptive access is agreed by all operators currently using the route to undertake the works within the milestone dates proposed.
- Driver route / traction familiarisation can be contained during the period from commissioning of the OLE in August 2014 until the start of the special timetable arrangements for the Ryder Cup Golf Tournament in September 2014.

Activities and milestones

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	August 2014	Regulated Output