Draft CP5 Enhancements Delivery Plan

18 December 2013

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Introduction

Purpose

This document sets out the outputs and milestones required to be delivered by the planned enhancement programme in Control Period 5 (CP5). The enhancements plan has an entry for every project and ring-fenced fund funded through PR13.

Status of this document

We are publishing our draft plans for consultation.

The Office of Rail Regulation (ORR) published the Final Determination on 31 October 2013. Network Rail has until 7 February 2014 to accept or object to the Final Determination. We continue to clarify elements of the Final Determination with ORR to inform our decision.

At the same time we continue to develop our plans for CP5. As we refine our plans, elements will change before we publish the CP5 Delivery Plan. We will explain the key changes from the draft plan in our CP5 Delivery Plan to be published in March 2014.

Consultation

The consultation deadline is 31 January 2014.

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 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 appraisal criteria and recommendations made.

The High Level Output Specifications (HLOSs) were published by Transport Scotland 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. They were partly informed by the IIPs.

The Network Rail Strategic Business Plan, published on 7 Janaury 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 delivery 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

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

A number of projects are specified in the HLOSs, including completion of the Thameslink and Crossrail and Reading programmes, East – West Rail, 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.

We have been provided with a number of funds in CP5 such as the Stations Improvements Fund, 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 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 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.

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. At this

stage there will be a further funding submission to ORR for each project (described further below). Once funding is established and GRIP 3 completed, 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.

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 Passenger Transport Executives; bodies that provide one-off funding, such as local authorities, Transport Scotland, the Welsh Assembly Government and other regional bodies.

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 Governance for Railway Infrastructure Projects (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.

Reporting of funds

We have discussed with stakeholders, through RIPG and POG, how to improve the transparency of reporting of the use of funds in CP5. We will undertake the following in CP5:

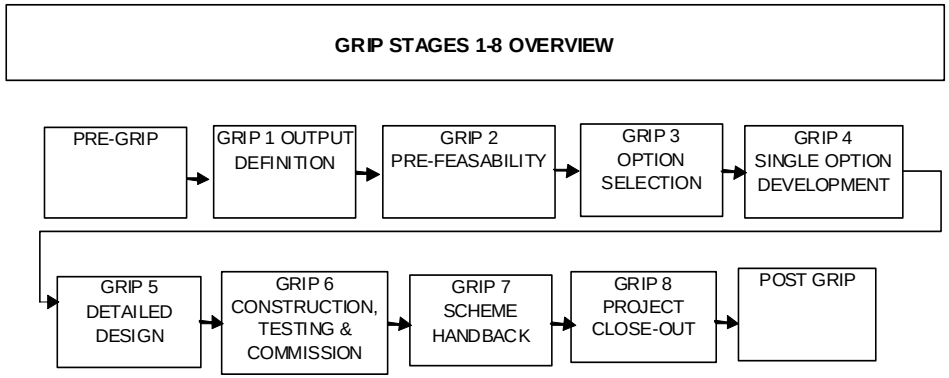
- quarterly reporting on proposed prioritisation and use of CP5 funds at RIPG and POG;
- quarterly updates to the CP5 Enhancements Plan to update the list of schemes authorised to draw down from funds; and
- publication of a definition sheet for schemes authorised to draw down from each fund with details of outputs, scope and milestones proportionate to the size of the scheme.

A list of candidate schemes is being compiled for each fund. The scheme lists will be shared with RIPG and POG and this document will be updated for the scheme list in March 2014.

Project development

Our projects are developed through the Governance of Railway Investment Projects (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 are:

- GRIP 2 completion (indicator), where scope options that will deliver the required output have been identified;
- GRIP 3 completion (regulated output), where the single option of scope to deliver the output 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.

Milestones within the plan at this stage are indicative as we go through consultation with our stakeholders, develop our projects further and complete an efficient delivery review to profile delivery of the enhancements capital programme in the most efficient manner. When the plan is finalised in March 2014, the milestones will be baselined.

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 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.

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;
- where appropriate, an update of the business case assumptions to demonstrate value for money;
- 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 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 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 it is 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.

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

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).

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 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.

Summary

Summary

England and Wales
Ring-fenced funds Level Crossing Risk Reduction, Stations Improvement fund (SIF), East Coast Connectivity, CP6 Development, Network Rail Discretionary fund, Passenger Journey Improvement, Strategic Freight Network, 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
The Electric Spine Midland Main Line electrification, Derby area station remodeling, Electric Spine development programme
Anglia Service improvements in the Ely area; Anglia traction power supply upgrade, West Anglia main line capacity increase, Great Eastern Main Line capacity improvement (Bow Junction)
Kent Kent traction power supply upgrade, Route 1 – power supply enhancements, East Kent resignalling phase 2:enhancements, New Cross Grid, Gravesend Kent 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 signaling 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
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, Westerm 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)
Wales Welsh Valley Lines electrification, Barry – Cardiff Queen Street corridor
London North East North Trans-Pennine electrification – East, 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, Huddersfield station capacity improvements, Leeds and Sheffield capacity, Bradford Mill Lane capacity, East of Leeds capacity, Capacity relief to the ECML (GN/GE joint line), North Doncaster Chord, Liverpool – Leeds journey time improvements
East Midlands MML long distance high peed services train lengthening
London North West North West electrification, North Trans-Pennine electrification – West, Stafford area improvement scheme, West Coast power supply upgrade phase 3B, Birmingham New Street Gateway project, Acton (Great Western Main Line) to Willesden (West Coast Main Line) electrification, 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 (Springburn to Cumbernauld), EGIP – Initial Phase Key Output 1, EGIP – Initial Phase Key Outputs 2, 3 & 4, EGIP – Edinburgh Gateway (Gogar) Intermodal Transport Interchange, 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

England & Wales CP5 Enhancements Programme Funds

England and Wales ring-fenced funds
F001 Level Crossings Risk Reduction
F002 Stations Improvement Fund (SIF)
F003 East Coast Connectivity
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)

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.

Level Crossings Risk Reduction Fund

Details
Fund reference code: F001
Last updated: December 2013

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 (LCCRF).

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 LCRRC 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 LCRRC 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.

Scope

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.

Scheme development

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 Improvement Fund (SIF)

Details
Fund reference code: F002
Last updated: December 2013

Network Rail's obligations

To work with stakeholders to identify the best use of the Station Improvement Funds (SIF) 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.

Governance

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

The SIF shall be disaggregated to meet the requirements set out in the HLOS Statement with £103m allocated to 'Access for All' (AfA) measures and £103m allocated to station infrastructure improvement (including passenger information).

AfA measures will be proposed by Local Delivery Groups (LDG)[1] 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 SB is to act as 'trustee' to the DMOS for the station infrastructure investment element of the fund. Investment will be proposed by an LDG and the SB will approve funding providing projects meet the agreed criteria. The agreed criteria will satisfy the DMOS requirements regarding governance and risks associated with projects funded by the SIF.

SB is a cross-industry body consisting of train operating owning group representatives, Department for Transport, Transport Scotland, Office of Rail Regulation and Network Rail senior management. SB will be co-chaired by a Network Rail & Train Operator representative. The Train Operator representative will be elected by SB. 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 Control Period 5, SB 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. 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, National Passenger Survey (NPS) data will be utilised where practicable to assess the benefit of investment. Progress against satisfaction will be measured and presented to SB by Local Delivery Groups (LDG) 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.
- Planning Oversight Group/Rail Industry Planning Group - quarterly reporting giving overview on the use of SIF, although the use of funds and delivery of projects will be driven through local engagement.
- 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 SB's first activities in CP5 will be to review and define scope.

[1] There are currently 17 LDGs established. LDGs are locally formed delivery groups made up of NR & TOC representatives.

East Coast Connectivity

Details
Fund reference code: F003
Previous fund reference code: NE023
Last updated: December 2013

Network Rail's obligations

To work with the industry to develop plans to deliver works within a maximum CP5 expenditure of £247m (12/13 prices) 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.

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The East Coast Programmes Board has so far (Oct 2013) 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.

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: December 2013

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.

Objective

The fund will be used to develop schemes to a greater level of definition that are considered likely to be required and funded for delivery during CP6 as part of the next periodic review.

Governance

The Head of Long Term Planning and Funding is the fund holder for the CP6 Development fund. Authorisation of draw down and spend is as set out in Network Rail's Investment Regulations. Schemes will be prioritised by Network Rail following discussion with customers and funders at the appropriate industry planning fora including Rail Industry Planning Group (RIPG) and Planning Oversight Group (POG). Qualifying schemes will generally have been discussed with DfT as part of the HLOS development process or will be in support of joint industry activity to plan for CP6. 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 and POG to provide an oversight on the use of the CP6 Development fund.

Eligibility rules

The fund will be used to develop schemes not otherwise funded in CP5 through the PR13 settlement, and which are considered likely to be required, and funded for delivery, primarily during CP6. The fund would generally cover early stage development costs and separate funding would generally be required for detailed design work and other significant costs such as Planning Consents processes.

Appraisal

CP6 Development fund schemes will be subject to the value for money test appropriate to the type of scheme under consideration.

Schemes to be developed in CP5

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

Network Rail Discretionary Fund (NRDF)

Details
Fund reference code: F005
Last updated: December 2013

Network Rail's obligation

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

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

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

Our obligation is to work with stakeholders to identify the best use of available funds and to deliver the schemes that are funded through NRDF. As part of the process of updating the 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.

Governance

The Head of Long Term Planning and Funding is the fund holder for NRDF. Authorisation of draw down and spend is as set out in Network Rail's Investment Regulations but schemes are required to have been supported at the appropriate Route Strategy Planning Group (Network Rail's internal cross-functional group where local investment opportunities are reviewed) and will generally have been discussed at Route Investment Review Group (at which Network Rail shares its forward renewals plans with TOCs and FOCs and discusses opportunities for enhancements to the network). We propose to use RIPG to take an oversight on the use of NRDF funds, although the use of funds and delivery of projects will still be driven through local engagement. This process involves consultation with the relevant train operators.

Eligibility rules

Schemes with a total cost in excess of £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.

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

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

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

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

Appraisal

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

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

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

Draw down from the fund

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

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

Schemes which can be funded by the NRDF

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

The fund can be used for initiatives that deliver:

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

This list is not intended to be exhaustive.

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

Strategic Freight Network (SFN)

Details
Fund reference code: F006
Last updated: December 2013

Network Rail's obligations

The continuation of the SFN fund was announced in the DfTs High Level Output Specification (HLOS) in July 2012. An allocation of £206m has been granted to fund improvements identified by the industry to continue rail freight expansion in England and Wales whilst stimulating wider economic growth and environmental benefits.

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 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). A cross-industry group meeting quarterly 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 affects 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 to 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 scope of the Southampton to West Coast Main Line 775m train lengthening programme for delivery in CP5 is:

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

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.

Passenger Journey Improvement Fund (PJIF)

Details
Fund reference code: F007
Last updated: December 2013

Network Rail's obligation

To work with the industry to develop and deliver works to improve passenger journey experience.

Objective

The Secretary of State wishes to see improvements in passengers' journey experiences and is making available up to £206m over CP5, targeted at the improvement of several aspects of the passenger service offer. It is expected that activities will be focused on three areas; journey time improvement, performance/reliability improvement and other enhancement opportunities that emerge, often as increments to asset renewal activity, such as projects to reduce station transit time for passengers.

Governance

The Head of Long Term Planning and Funding is the fund holder for the PJIF. Management of funding will be in accordance with Network Rail Investment Regulations.

The fund is not expected to be disaggregated to specific geographic areas but will instead be prioritised based on a 'best case' approach. Proposals will be put forward from many different industry forums.

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.
- Planning Oversight Group / 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 update.

Scope of works

Where possible it is hoped schemes will be linked to renewals as this is likely to provide the greatest value for money. However, stand-alone enhancement schemes are also possible, including those part-funded by third-parties.

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

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.

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.

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, 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 best support HS2 Ltd and DfT in the development of the project particularly at the interfaces and the integration of HS2 with the existing 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: December 2013

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.

Objective

The objective of the Innovation fund is to support delivery of the Rail Technical Strategy (RTS) which sets out the rail industry's vision for the future railway. The Innovation Fund is complementary to the Strategic 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. The fund will be directed 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 has created an Enabling Innovation Team within RSSB to develop and implement the funding plan. TSLG has established a core group of TSLG members to provide oversight to this team. Network Rail will review proposed investments through the Technology and Innovation Board (T&I Board), a cross-functional group established to direct and oversee R&D projects across Network Rail and influence R&D projects in industry. RSSB (the Enabling Innovation Team) will be responsible for managing delivery and will report expenditure and progress to TSLG. TSLG will agree changes to the funding plan with the fund holder.

Financial authorisation for Innovation fund projects will be via the Network Rail Investment Panel.

Portfolio management will be applied to the treatment of risk and to return on investment and to ensure there is a balanced delivery against RTS outcomes. 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.

Purpose of the Innovation fund

- Support delivery of the RTS, 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.
- The Innovation Fund supports short, medium and long term innovations to include technical, business model, operational, process and supply chain innovation.
- The Innovation Fund can be accessed by all parts of industry and is 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.
- For the avoidance of doubt, the Innovation fund will not fund projects that would ordinarily be funded by individual industry organisations.

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: December 2013

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.

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 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.

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; or
  - 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

Details
Fund reference code: F010
Last updated: December 2013

Network Rail's obligations

The Final Determination includes a fund for depots and stabling 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.

Objective

The objective of the fund 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 a two level Governance process. Support is required from the DfT through the DSF DfT / Network Rail bi-lateral group and the cross-industry DSF Steering Group. The two level governance facilitates industry involvement and enables the DfT to feed in commercially confidential plans for re-franchising.

The DSF DfT / Network Rail bilateral group would be expected to generate proposals for depots and stabling which would result directly from confidential plans for franchise replacement, franchise re-mapping, rolling stock procurement and redeployment.

The cross-industry DSF Steering Group would meet quarterly to oversee the development of the DSF and will consist of representatives from DfT, the Welsh Government, ATOC, ROSCOs train manufacturers and the ORR (as observers). It will consider the proposals generated by the DfT / Network Rail bilateral group alongside other industry proposals that fulfil the funds objectives and meet the criteria of the fund. The recommendations of this group will then be passed back to the DfT / Network Rail bilateral group for verification against franchising policy and, where appropriate consistency with the objectives of committed electrification enhancements and capacity metrics.

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.

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

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
- 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 industry following consultation of the Delivery Plan.

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

ETCS Cab Fitment Fund

Details
Fund reference code: F011
Last updated: December 2013

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.

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 other 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 on track machines are available to assure the continued maintenance of the routes equipped with ETCS.

Governance

The Client Manger National Operating Strategy is the fund holder for the ETCS Cab Fitment fund.

A Programme Control Board (PCB) 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 PCB will oversee 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.

Schemes will be prioritised by Network Rail following discussion with operators and with stakeholders the agreement at PCB.

Progress reporting on the fund

Progress will be reported at the ERTMS Programme Control Board.

Scope of works

Freight locomotive projects

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 08	Class 47	Class 60	Class 73
Class 09	Class 56	Class 66	Class 86
Class 20	Class 57	Class 67	Class 90
Class 31	Class 58	Class 68	Class 92
Class 37	Class 59	Class 70	Class 325

There are approximately 950 freight locomotives and it is anticipated that up to 550 will need to be equipped with ETCS in CP5 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 workscopes, 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;
- supply/installation to fleets;
- logistics planning;
- provision of cover vehicles;
- recruitment of driver 'float' to cover drivers whilst be trained;
- operation preparedness (bringing into service, driver training materials, trainer training, driver training, maintenance training, maintenance equipment, changes to SMS);
- acceptance into service through operator Safety management System; and
- procurement of a whole life support plan.

Passenger trains
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 shown overleaf.

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

- specification development (interface requirements, technical workscopes, 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 operator safety management system.

The current baseline is shown below.

Scope of the Passemger ETCS Programme			
Class 43	Class 165	Class 313	Class 323
Class 82	Class 166	Class 314	Class 334
Class 91	Class 170	Class 317	Class 350
Class 150	Class 175	Class 318	Class 360
Class 153	Class 180	Class 320	Class 365
Class 155	Class 185	Class 321	Class 380
Class 158	Class 222	Class 322	Class 390

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

- ballast cleaners;
- ballast regulators;
- stoneblowers;
- MPVs;
- rail grinders;
- dynamic track stabilisers; and
- measurement trains.

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 Network Changes) on terms agreeable to the FOCS, Network Rail and the ORR.
- There is sufficient capacity in the supply chain to serve all of the ETCS on-board projects.

Milestones

Freight First-in-Class and Fleet Fitment
These dates are currently under review by the Programme and stakeholders and are likely to rephased. Until the new schedule is confirmed the following dates remain as the baseline.

Activity	Milestone
Freight on-board ETCS invitation to tender (ITT) issued (currently under revision)	December 2013
Freight on-board ETCS contract awards	December 2014
First First-in-Class complete	September 2016
Fleet fitment commences	December 2016
All First-in-Class projects complete	September 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 1 on-board ETCS ITT issued	March 2014
Tranche 1 on-board ETCS contract award	June 2014
First First-in-Class testing starts	September 2015

OTM

Activity	Milestone
Start First-in-Class fitment and entry into service	March 2016

ERTMS infrastructure

Network Rail's obligation

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

Output

ETCS level 2 systems will:

- reduce the cost of signalling renewals;
- reduce the cost of signalling maintenance;
- improve safety through continuous automatic train protection;
- provide the opportunity for enhanced operational capability and increased capacity; and
- afford regulatory compliance to Railway Interoperability Regulations (2011).

Scope

ERTMS Level 2 (without signals) will be deployed on East Coast Main Line (ECML) as part of its resignalling and enhancement programme. Implementation is planned to be undertaken in following phases:

- Hertford Loop with signals (line-side signals removed as part of Phase 1a);
- Kings Cross to Welwyn Garden City inclusive of Hertford loop (Phase 1a);
- Welwyn Garden City to South Peterborough inclusive of Hitchin to Royston (Phase 1b); and
- South Peterborough to Doncaster South (Decoy) (Phase 2).

Note: DfT has requested Network Rail to identify the impact of deferring the commissioning of King's Cross to South Peterborough to February 2020 or the provision of an overlay in December 2018 to facilitate an efficient train fitment programme (i.e remove the need to retrofit Class 43 & Class 92 sets). Network Rail and DfT are continuing to review the options.

ERTMS will be provided on Western Main Line, initially for the operation of Crossrail services on the Western Inner area from 2017, and will be progressively overlaid throughout the route. The line-side signals will remain operational until they are decommissioned and removed – currently planned 2025. In the same way as ECML, implementation is planned in phases:

- overlaid from Paddington to west of Hayes & Harlington (Airport Junction);
- overlaid from Hayes & Harlington to Didcot (west of);
- overlaid from Reading to Newbury and Didcot to Bristol (Parkway & Temple Meads);
- overlaid from Bristol to Taunton and Didcot to Oxford (Bicester Town, Heyford & Finstock).

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 that interface to the ERTMS system are the assessed to be at the correct competency level.
- Network Rail is able to deliver the Practical Handling Facility needs of the affected operators.
- Network Rail will be granted the necessary access to the network to install & commission the system.
- 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) will remain 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

Western Main Line

Activity	Milestone
Paddington – Heathrow GRIP 4-8 contract award	December 2014
Paddington – Heathrow GRIP 4 complete	December 2015
Paddington – Heathrow ETCS installation / testing complete	March 2017
Heathrow – Bristol GRIP 3 complete	December 2014
Heathrow – Bristol GRIP 4 complete	December 2015
Heathrow – Bristol ETCS installation / testing complete	June 2019
Western ETCS complete	September 2019

East Coast Main Line

Activity	Milestone
Hertford Loop overlay GRIP 3 complete	June 2014
Hertford Loop overlay commissioned	December 2015
King's Cross – Peterborough GRIP 4-8 contract award	December 2014
King's Cross – Peterborough commence commissioning	June 2017
King's Cross – Peterborough complete commissioning	December 2019
Peterborough – Doncaster complete commissioning	December 2020

New Stations Fund

Details
Fund reference code: F012
Last updated: December 2013

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 routinely provide a list of schemes authorised to draw down from the fund as we progress through the control period.

Objective

The fund will be used to enable a funding contribution to be made to the provision of brand new stations promoted by third parties in England and Wales. This funding will be distributed through a competition to ensure that all promoters of New Stations which meet the conditions have 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, the Association of Train Operating Companies and the Campaign for Better Transport. Qualifying schemes met conditions set out in the New Stations Fund guidance. The Group Strategy Director 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 is to provide funding for the construction of brand new or reopened stations that are promoted by third parties. This excludes improvements or refurbishments at existing stations. Proposals need to be sufficiently developed at the time of application. It is expected that a third party contribution of 25 per cent or more of the NSF Project cost 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 and will be updated as we progress through the control period. 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

CP4 Station Commercial Project Facility (SCPF)

Details
Fund reference code: F013
Last updated: December 2013

Network Rail's obligation

SCPF is an industry initiative funded primarily by the DfT. The programme aimed to deliver £100 million worth of commercially focussed station improvements through CP4. Our obligation is to administer and programme manage this facility.

Objective

The aim is to reduce industry costs by funding station improvements that generate an increased financial return. 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 of Operational Services. 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
King's Cross accelerated gate line renewals	Network Rail
Driver only operation: Strood to Gillingham	Network Rail
Extension of car park at Charlbury	First Great Western
Waterloo East balcony ticket gating	Southeastern
Rochester Station new ticket office and gating	Southeastern
Strood car park extension	Southeastern
Denmark Hill ticket gating	Southeastern
Brighton Station development	Southeastern
Extension of car park at Charlbury	FGW
Car park scheme at Langley station	FGW
Extension of car park at Radley station	FGW
Extension and reconfiguration of car par at Kemble station	FGW
Pangbourne station car park	FGW
Bath Spa ticket gates	FGW
Dore & Totley car park enhancement	South Yorkshire PTE
Northallerton car park enhancements	FirstTPE
Three Bridges retail development	Southeastern
Dover Priory automatic ticket gates	Southeastern
Huddersfield automatic ticket gates	First TPE
Hanborough car park extension	FGW
Southend East ATG	Greater Anglia

Schemes still to be implemented in CP4 and CP5

Project	Delivery agent
Crewe car park enhancement	Cheshire East Council
Banbury East MSCP	Chiltern Railways
Ferme 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

Crossrail

Details
Project reference code: CR001
Previous project reference code: CR001
Last updated: December 2013
Operating routes: Anglia, Kent and Western

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

- Resignalling 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

Reading station area redevelopment

Details
Project reference code: CR002
Previous project reference code CR002
Last updated: December 2013
Operating route(s): Western

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 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 resignalling throughout the area;
- passive provision for a possible future extension of Crossrail; and
- the Transport and Works Order Act 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 should be made clear in sufficient time to enable delivery of the facilities without negative impact on the programme.

Activities and milestones

Activity	Output	Date
Key output 2: FGW depot fully operational	FGW civils enabling works Depot facilities FGW new depot familiarisation Northern embankment depot Main lines east remodelling Cow Lane bridges Little John's Lane bridge	November 2013
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

East West Rail

Details
Project reference code: CR003
Previous project reference code: NW002
Last updated: December 2013
Operating route(s): LNW, Western and East Midlands

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 and Aylesbury.

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:

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 passenger 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 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 Midland, 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: 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 EWR 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 EWR 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 EWR 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 EWR 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**	**Output**
Oxford GRIP 6 completion	**Infrastructure ready for use**	**March 2016**	**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**	**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.

Thameslink Programme

Details
Project reference code: CR004
Previous project reference code: TL001
Last updated: December 2013
Operating route(s): Anglia, East Midlands, Kent, LNE, and Sussex

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 was 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 that 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

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

Northern Hub

Details
Project reference code: CR005
Previous project reference code: DP003
Last updated: December 2013
Operating route(s): LNW & LNE

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.

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 & 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)

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 journey time improvements between Manchester Victoria and Stalybridge are delivered through the CP4 Leeds to Liverpool scheme with delivery deferred to CP5.
- The timeline for obtaining consents allows delivery in CP5.
- No funding for depot and stabling works has been included in 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
Ordsall Chord	Complete	November 2014	December 2016	Interventions to be completed prior to Configuration State 5 and be available for the Dec 2016 timetable change
Manchester Victoria Capacity East	**November 2013**	November 2014	December 2016	
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	

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 Dec 2018 timetable change
Manchester Oxford Road	**March 2014**	April 2016	December 2018	
Manchester Piccadilly	**March 2014**	Apr 2016	Dec 2018	

Northern Hub Outer Schemes	GRIP 6 start	GRIP 6 complete	Configuration state
Huyton and Roby Stage 1	Complete	August 2014	Configuration State 3 *Available for December 2014 timetable change*
Chat Moss Capacity	November 2013	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/Grindleford & Chinley]	May 2016	August 2018	Configuration State 7 *Available for December 2018 timetable change*
Hope Valley JTI	May 2016	August 2018	

Mobile Maintenance System

Details
Project reference code: CR006
Last updated: December 2013
Operating route(s): London North Eastern, Anglia, Kent, Sussex and Wessex
Output: Network Availability

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 delivery 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**	**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
Operating route(s): London North Eastern and East Midlands
Project reference code: ES001
Previous project reference code: DP005
Last updated: December 2013
Output: Electrification

CP5 output driver

To reduce railway industry costs and cut carbon emissions though 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.

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 resignalling 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**	**Output**
GRIP 4 completion		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
Operating route(s): London North Eastern and East Midlands Route
Project reference code: ES002
Previous project reference code: NE003
Last updated: December 2013
Output: Journey time improvements

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;
- line speed 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**	**November 2014**	**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
Operating route(s): Wessex, Western, London North Western, London North Eastern and East Midlands
Project reference code: ES003
Previous project reference code: NE032, WW005, DP025, SE025, NE029, DP026, DP024
Last updated: December 2013
Output: Electrification and Capacity

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 to 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 resignalling 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 a 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**	**June 2014**	**Output**
GRIP 5 completion	Detailed design	November 2015	Indicative
GRIP 6 start	Start on site	April 2014	Indicative
GRIP 6 completion	Infrastructure ready for use	June 2016	Indicative

MML Capacity (Bedford-Kettering)

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	January 2014	Indicator
GRIP 3 completion	**Single option selection**	**November 2014**	**Output**
GRIP 5 completion	Detailed design	November 2016	Indicative
GRIP 6 start	Start on site	May 2015	Indicative
GRIP 6 completion	Infrastructure ready for use	September 2017	Indicative

Oxford-Bletchley Electrification

Dates shown mirror 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**	**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.

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

- Leamington Spa to Coventry capacity upgrade and electrification;
- Leicester area capacity enhancement (Syston to Wigston);
- Reading (Southcote Junction) to Basingstoke electrification; and
- Sheffield to ECML 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 Service improvements in the Ely area
A002 Anglia traction power supply upgrade
A003 West Anglia Main Line capacity increase
A004 Great Eastern Main Line capacity improvement (Bow Junction)

Service Improvements in the Ely Area

Details
Operating route(s): Anglia
Project reference code: A001
Previous project reference code: SE027
Last updated: December 2013
Output: Capacity

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 allowing parallel moves to/from Kings Lynn and to/from Norwich.

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; and
- the area covered by this project is just north of Kiln Lane level crossing to 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).
- Level Crossing changes in the region.

Key assumptions

- 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.
- Delivery strategy of three week blockade will be accepted by TOC's and FOC's.
- Closure of Ely North level crossing.

Activities and milestones

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	December 2013	Indicator
GRIP 3 completion	**Single option selection**	**June 2014**	**Output**
GRIP 4 completion	Single option scope defined	February 2015	Indicative
GRIP 6 start	Start on site	April 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	June 2016	Indicative

Anglia traction power supply upgrade

Details
Project reference code: A002
Previous project reference code: DP009
Last updated: December 2013
Operating route(s): Anglia
Output: Capacity enabler

CP5 output driver

The main output driver for this scheme is the operational support for the changes to train services on the Anglia routes.

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).

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**	**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**	**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**	**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
Previous project reference code: SE022
Last updated: December 2013
Operating route(s): Anglia
Output: Capacity

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. 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.

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.
- 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.

Key assumptions

- Power supply modelling is being undertaken under a separate CP5 traction power project. Any alterations to the power supply necessary to operate the additional services for which this project is intended, will be provided by that project (A002).
- There will be sufficient rolling stock available to operate additional services.
- That no additional stabling facilities will be required to operate the revised service.
- Most works can be accommodated within the current operational rail boundary. Where additional land is required, this can be secured for an affordable cost and planning permission obtained.
- It is assumed that a Development Consent Order (DCO) is required and that this will be approved within the statutory timescales of 24 months. Without the DCO being in place and approved, this project will not be able to commence GRIP 5.
- 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.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	**Single option selection**	**December 2015**	**Output**
GRIP 4 completion	Single option scope defined	May 2017	Indicative
GRIP 6 start	Start on site	February 2018	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2019	Indicative

Supplementary information

A previous, significant, assumption, based upon available information at the time, was 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. It has become apparent that this is not the case and it is now assumed that the Development Consents Order (DCO) process is required for this project.

The timescales for the DCO process are presently assumed by the project to take approximately 24 months. The DCO process is considered to be a key driver for milestone dates of GRIP 5 to 8 because of the high risk of proceeding with detailed design and potential for abortive / additional design costs. Therefore the commencement date for GRIP 5 is subject to this being approved within the statutory timescales. The activities and milestones dates above have been forecast to reflect this. 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. In particular, Network Rail is looking at how the GRIP and DCO processes can be run concurrently along with early resolution to land ownership issues to reduce risk.

Great Eastern Main Line Capacity Improvement (Bow Junction)

Details
Operating route(s): Anglia
Project reference code: A004
Previous project reference code: SE021
Last updated: December 2013
Output: Capacity

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).

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**	**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

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
Operating route(s): Kent
Project reference code: K001
Previous project reference code: DP011
Last updated: December 2013
Output: Capacity enabler

CP5 output driver

The main output driver for this scheme is the operational support of the CP5 (Dec 2018) train service on the Kent routes.

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 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.
- FOC's 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 3 completion	**Single option selection**	**August 2013**	**Output**
GRIP 4 completion	Single option scope defined	April 2014	Indicative
GRIP 6 start	Start on site	September 2014	Indicative
GRIP 6 completion	Infrastructure ready for use	December 2015	Indicative

Outer Kent resilience

Milestone	Description	Date	Status
GRIP 3 completion	**Single option selection**	**December 2014**	**Output**
GRIP 4 completion	Single option scope defined	December 2015	Indicative
GRIP 6 start	Start on site	January 2017	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2019	Indicative

Route 1 – power supply enhancements

Details
Project reference code: K002
Previous project reference code: 16.01
Last updated: December 2013
Operating route(s): Kent
Output: Capacity enabler

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 16th September 2011. This equates to circa twenty five 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; and
- 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;
  - 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 and 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 1: limited 12 car operations – project completion	**Enable trains to operate / essential infrastructure works completed**	**December 2013**	**Output**
Phase 2: flexibility to operate timetable during London Bridge high level construction work – project completion	**Enable trains to operate / essential infrastructure works completed**	**December 2014**	**Output**
Phase 3: Enable 2018 timetable recast	**Enable trains to operate / essential infrastructure works completed**	**June 2016**	**Output**

East Kent resignalling Phase 2: Enhancements

Details
Operating route(s): Kent
Project reference code: K003
Previous project reference code: SE006
Last updated: December 2013
Output: Capacity

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 to be delivered include:

- increase in capacity to 15tph;
- 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, CP5 Kent services enhancements will address the traction power requirement.

Scope of works

- Two additional signal sections to reduce headways between Rochester and Gillingham.
- Speed improvements between Longfield and Sittingbourne.
- 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 and associated station infrastructure changes.
- Tunnel and junction lighting between Rochester Bridge Junction and Gillingham.
- 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 include 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 Resignalling 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 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.
- RSSB will provide derogation for the platform curvature at Strood and Rochester.
- 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 4 completion	Single option scope defined	July 2014	Indicative
GRIP 6 start	Start on site	November 2013	Indicative
GRIP 6 completion	Infrastructure ready for use	February 2016	Indicative

New Cross Grid

Details
Operating route(s): Kent
Project reference code: K004
Previous project reference code: SE026
Last updated: December 2013
Output: Capacity enabler

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.

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	Indicative
Completion of 66kV decommissioning	Removal of redundant infrastructure	September 2016	Indicative
Project close-out	Project completion	December 2016	Indicative

Package 4: Gravesend train lengthening

Details
Operating route(s): Kent
Project reference code: K005
Previous project reference code: 15.23
Last updated: December 2013
Output: Capacity

Output driver

To facilitate the operational plan assumed with train operators to deliver the CP4 HLOS capacity metric by supporting 12 car operations between Dartford 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 of the latter 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 Corss.
- 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 Orpinton, 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**	**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
Operating route(s): Sussex
Project reference code: S001
Previous project reference code: DP008
Last updated: December 2013
Output: Capacity enabler

CP5 output driver

The main output driver for this scheme is the operational support for the changes to train services on the Sussex routes.

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 locations of specific interventions are subject to completion of detailed system modelling.

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;
- 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	January 2014	Indicator
GRIP 3 completion	**Single option selection**	**September 2014**	**Output**
GRIP 4 completion	Single option scope defined	December 2015	Indicative
GRIP 6 start	Start on site	February 2017	Indicative
GRIP 6 completion	Infrastructure ready for use	June2018	Indicative

Redhill additional platform

Details
Operating route(s): Sussex
Project reference code: S002
Previous project reference code: SE016
Last updated: December 2013
Output: Capacity

CP5 output driver

Additional operational resilience and platform capacity at Redhill.

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.

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.
- Redhill/Reigate area signalling re-control project.

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**	**March 2014**	**Output**
GRIP 4 completion	Single option scope defined	February 2017	Indicative
GRIP 6 start	Start on site	TBC	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2018	Indicative

Uckfield line train lengthening

Details
Operating route(s): Sussex
Project reference code: S003
Previous project reference code: SE011
Last updated: December 2013
Output: Capacity

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 longer trains to operate.

Scope of works

Develop a scheme allowing 10-car Class 170/171 (23m) stock to serve the eight station locations between Edenbridge and Uckfield including work to extend 12 platform faces and relocate two signals.

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 vehicles or by locking vehicles out of use between Oxted and Uckfield. 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.
- That 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 result in negligible increased passenger numbers using the Uckfield Line 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
GRIP 4 completion	Single option scope defined	May 2014	Indicative
GRIP 6 start	Start on site	Tbc	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2018	Indicative

London Victoria Station capacity improvements

Details
Operating route(s): Sussex
Project reference code: S004
Previous project reference code: SE018
Last updated: December 2013
Output: Station capacity

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.
- 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 4 completion	Single option scope defined	October 2014	Indicative
GRIP 6 start	Start on site	Tbc	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2017	Indicative

Balcombe to Copyhold bi-directional signalling upgrade

Details
Operating route(s): Sussex
Project reference code: S005
Last updated: December 2013
Output: Network availability

CP5 output driver

Improvements in Network Availability and Performance 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, hence increasing network availability. In addition, the flexibility can be used during perturbation to improve service recovery.

Scope of works

The scheme is developed to GRIP 4, 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.
- Faster safer 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**	**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

Waterloo

Details
Operating route(s): Sussex
Project reference code: WX001
Previous project reference code: SE028
Last updated: December 2013
Output: Capacity

CP5 output driver

The primary driver of this project is to provide capacity to meet demand and the forecast growth into and at London Waterloo station.

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 L&SE 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 is to fully reopen Waterloo International Terminal and the approaches to platforms 20-24, the extension of platforms 1-4 to accommodate 10 car trains, station capacity works and a package of mainline capacity improvement works.

Significant interfaces

- Reading, Ascot to London train lengthening.
- Crossrail 2.
- Feltham resignalling.
- Waterloo throat track renewals.
- Rolling stock procurement programme.
- Commercial development of Waterloo International and other sites in the vicinity of the station.

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

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

South London HV Grid (Wimbledon) upgrade

Details
Operating route(s): Wessex
Project reference code: WX002
Previous project reference code: DP021
Last updated: December 2013
Output: Capacity enabler

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.

Scope of works

The scope of work required to support this train service is outlined in the South London HV Strategy dated 8 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. Phase 1 will develop the scheme in CP5 and deliver a subset capability in CP5. The remaining scope will be delivered in CP6 in conjunction with National Grid.

At present the identified works are in the following packages:

- Wimbledon grid point upgrade and connection to the existing Network Rail traction power system; and
- upgrade to identified feeder cables to support the load transfer arrangements.

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**	**Output**
GRIP 4 completion	Single option scope defined	December 2016	Indicative
GRIP 6 start	Start on site – phase 1	December 2017	Indicative
GRIP 6 start	Start on site – phase 2	January 2020	Indicative
GRIP 6 completion	Infrastructure ready for use – phase 1	December 2018	Indicative
GRIP 6 completion	Infrastructure ready for use – phase 2	Tbc	Indicative

Reading, Ascot to London Waterloo train lengthening

Details
Operating route(s): Sussex
Project reference code: WX003
Previous project reference code: SE002
Last updated: December 2013
Output: Capacity

CP5 output driver

The key output is the provision of extra capacity between Reading and Waterloo by enabling longer trains to operate.

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 and Egham. From GRIP 3 onwards, this project will now be delivered as part of the Feltham Resignalling project, rather than a standalone project, owing to synergies and efficiencies that can be made between the two projects.

Significant interfaces

The project interfaces with:

- Wessex traction power supply upgrade project;
- Feltham resignalling 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

- 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.
- Existing substandard signal standbacks, other than those contained within the scope of the Feltham resignalling 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.
- 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**	**Output**
GRIP 4 completion	Single option scope defined	June 2015	Indicative
GRIP 6 start	Start on site	December 2015	Indicative
GRIP 6 completion	Infrastructure ready for use	May 2017	Indicative

Wessex traction power supply upgrade

Details
Operating route(s): Wessex
Project reference code: WX004
Previous project reference code: DP015
Last updated: December 2013
Output: Capacity enabler

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 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**	**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
Operating route(s): Wessex
Project reference code: WX005
Previous project reference code: 15.31
Last updated: December 2013
Output: Capacity

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

Route	Platforms and sidings to be lengthened
Hounslow Loop	Barnes Bridge (platforms 1 & 2)
	Chiswick (platforms 1 & 2)
	Kew Bridge (platforms 1 & 2)
	Brentford (platforms 1 & 2)
Staines to Weybridge	Virginia Water (platform 4)
	Weybridge (platform 1)
Raynes Park to Dorking[1]	Raynes Park (platforms 1 & 4)
	Motspur Park (platforms 1 & 2)
	Worcester Park (platforms 1 & 2)
	Stoneleigh (platforms 1 & 2)
	Ewell West (platforms 1 & 2)
	Epsom (platforms 1, 2, 3 & 4) and Epsom Up siding
	Ashtead (platforms 1 & 2)
	Leatherhead (platforms 1 & 2)
	Boxhill and Westhumble (platforms 1 & 2)

Route	Platforms and sidings to be lengthened
Kingston Loop and Shepperton Branch[1]	Vauxhall (platforms 7 & 8)
	Clapham Junction (platform 11)
	Earlsfield (platforms 2 & 3)
	Raynes Park (platforms (2 & 3)
	New Malden (platforms 1 & 4)
	Norbiton (platforms 1 & 2)
	Kingston (platform 3)
	Hampton Wick (platforms 1 & 2)
	Teddington (platforms 1 & 2)
	Strawberry Hill (platforms 1 & 2)
	Fulwell (platforms 1 & 2)
	Hampton (platforms 1 & 2)
	Kempton Park (platforms 1 & 2)
	Sunbury (platforms 1 & 2)
	Upper Halliford (platforms 1 & 2)
	Shepperton (platform 1)
Hampton Court Branch[1]	Berrylands (platforms 1 & 2)
	Thames Ditton (platforms 1 & 2)
	Hampton Court (platforms 1 & 2)
Guildford via Woking[1]	Guildford (platforms 1 & 2)
Guildford via Cobham[1]	Hinchley Wood (platforms 1 & 2)
	Claygate (platforms 1 & 2)
	Oxshott (platforms 1 & 2)
	Cobham and Stoke d'Abernon (platforms 1 & 2)
	Effingham Junction (platforms 1 & 2) and Effinham Junction sidings
	Horsley (platforms 1 & 2)
	Clandon (platforms 1 & 2)
	London Road (Guildford) (platforms 1 & 2)
Guildford via Leatherhead[1]	Bookham (platforms 1 & 2)
Chessington Branch[1]	Malden Manor (platforms 1 & 2)
	Tolworth (platforms 1 & 2)
	Chessington North (platforms 1 & 2)
	Chessington South (platform 1)

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;
- the Olympic and Paralympics Games (avoidance of possessions during); 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.
- 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 7 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 complete**	**December 2013**	**Output**
Kingston Loop and Shepperto Branch	**GRIP 6 infrastructure ready for use complete**	**April 2014**	**Output**
Hampton Court Branch	**GRIP 6 infrastructure ready for use complete**	**December 2013**	**Output**
Guildford via Woking	**GRIP 6 infrastructure ready for use complete**	**February 2014**	**Output**
Guildford via Cobham	**GRIP 6 infrastructure ready for use complete**	**December 2013**	**Output**
Guildford via Leatherhead	**GRIP 6 infrastructure ready for use complete**	**December 2013**	**Output**
Chessington Branch	**GRIP 6 infrastructure ready for use complete**	**December 2013**	**Output**

Platform extensions at Boxhill & Westhumble, Ashtead, and Leatherhead were completed prior to the London 2012 Olympic games.

Works at Hounslow Loop and Staines to Weybridge were complete by December 2012, in time for rolling stock introduction in 2013.

Wessex ASDO

Details
Operating route(s): Wessex
Project reference code: WX006
Previous project reference code: 15.34
Last updated: December 2013
Output: Capacity

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 route into Waterloo.

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	July 2013 – May 2014	SWT
Installation of trackside equipment (tags) complete at 168 stations and tags operational across network	**January 2014**	**Output**
Modification to Desiro fleet complete	May 2014	SWT

DC regeneration

Details
Operating route(s): Wessex
Project reference code: WX007
Previous project reference code: 16.08
Last updated: December 2013
Output: EC4T reduction

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

Scope of works

No further work is required to meet this obligation however the project development phase has verified some of the additional scope items to support the industries energy efficiency.

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 start – phase 2	Start on site	February 2017	Indicator
GRIP 6 completion – phase 1	Infrastructure ready for use	March 2014	Indicative
GRIP 6 completion – phase 2	Infrastructure ready for use	August 2017I	Indicative

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 (inc. Midland Shed)
W009 West of England diesel multiple unit capability works
W010 Swindon to Kemble re-doubling (non-periodic review)

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
Operating route(s): Western
Project reference code: W001a
Previous project reference code: DP001
Last updated: December 2013
Output: Electrification

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.

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
- depot at Reading.
- The project is being executed by Network Rail in two steps – Maidenhead to Oxford, Newbury and Bristol, and Bristol to Cardiff.

Significant interfaces

- Crossrail.
- Welsh Valleys electrification.
- South Wales mainline electrification (Cardiff to Bridgend and Swansea) (W001b).
- The 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 shed).
- Dr Days Junction to Filton Abbey Wood capacity Improvements.
- Bristol East Junction remodelling.
- Oxford Corridor capacity improvements.

Activities and milestones

The DfT target is for electrification to be completed for electric train operation to Newbury, Oxford and Bristol to deliver the December 2016 timetable, from Bristol to Cardiff to deliver the December 2017 timetable. Access to Bristol Temple Meads will follow Bristol East Junction remodelling (August 2016)

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

Milestone	Description	Date	Status
GRIP 3 completion	**Single option selection**	**April 2014**	**Output**
GRIP 4 completion	Single option scope defined	August 2015	Indicative
GRIP 6 start	Start on site	Commenced	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**	**April 2014**	**Output**
GRIP 4 completion	Single option scope defined	August 2015	Indicative
GRIP 6 start	Start on site	Commenced	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**	**April 2014**	**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 Mainline Electrification

Details
Operating route(s): Wales
Project reference code: W001b
Previous project reference code: DP001
Last updated: December 2013
Output: Electrification

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 to Bridgend (funded separately) (ELR: SWM2 170m 49ch to 190m 68ch); and
- Bridgend 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 2 completion	Feasibility complete	April 2011	Indicator
GRIP 3 completion	**Single option selection**	**August 2014**	**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
Operating route(s): Western and Wales
Project reference code: W002a
Previous project reference code: WW027
Last updated: December 2013
Output: Stations and Gauges

CP5 output driver

To provide infrastructure capability enhancements to enable the operation of the Hitachi Super Express train according to the remit “Infrastructure Output Specification “(IOS3) defined by the client (DfT).

Scope of works

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

- gauge clearance for the new IEP train on specific routes across GWML;
- a review of station operations at all stations where IEP 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 IEP 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 Hitachi Super Express Train is 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.

Diversionary 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 bi-mode and electric Hitachi Super Express 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 electric and bi-mode Hitachi Super Express 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 Hitachi Super Express 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).
- 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 Hitachi Super Express 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. Feasibility work continues between Network Rail, DfT, Hitachi and the TOCs to confirm this.
- No infrastructure work is required to address stepping distances – though Network Rail are expecting to receive an instruction on this in 2013.
- 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**	**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	March 2014	Indicative
GRIP 6 start – capability works	Start on site	December 2013	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
GREIP 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**	**Output**
GRIP 6 complete	All interface works completed	December 2014	Indicative

Intercity Express Programme: specific GWML capacity schemes

Details
Operating route(s): Western and Wales
Project reference code: W002b
Previous project reference code: WW028
Last updated: December 2013
Output: Capacity

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 Hitachi Super Express train.

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; and
- London to Cardiff/Swansea/Carmarthen.

Scope of works

The IEP capacity schemes comprise:

- at Bristol Parkway station: an additional platform face, signalling and track works to facilitate an additional fast 2tph each way between Bristol Temple Meads and London Paddington, contributing to the delivery of the capacity metrics for London Paddington and Bristol Temple Meads. This will also improve access between Bristol Parkway and Bristol Temple Meads stations and improve capacity across the wider Bristol Parkway area; and
- Worcester area capacity: an additional turn back facility at Henwick to deliver a clock-face London – Worcester Foregate Street service. The proposal 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 electric and bi-mode Hitachi Super Express 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 2018 GWML IEP timetable. The latter also supports West Midlands – Worcester/Hereford service development.

Although both enhancements 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 to contribute to the delivery of the Bristol and London Paddington capacity metrics.

Activities and milestones

Milestone	Description	Date	Status
Bristol Parkway 4th platform - GRIP 6 complete	Infrastructure ready for use	December 2017	Indicative
Henwick turnback facility – GRIP 3 complete	**Single option selection**	**June 2014**	**Output**
Henwick turnback facility – GRIP 4 to 8 authority		June 2014	Indicative
Henwick turnback facility – GRIP 6 complete	Infrastructure ready for use	December 2017	Indicative
GWML IEP timetable	New services introduced	December 2018	Indicative

Thames Valley branch lines electrification

Details
Operating route(s): Western
Project reference code: W003
Previous project reference code: NW012
Last updated: December 2013
Output: Electrification

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.

Scope of works

The core works will involve electrifying overhead at 25kV AC on the following routes:

- 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

- 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**	**Output**
GRIP 4 completion	Single option scope defined	December 2015	Indicative
GRIP 6 start	Start on site	Tbc	Indicative
GRIP 6 completion	Infrastructure ready for use	Tbc	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
Operating route(s): Western
Project reference code: W004
Previous project reference code: WW032
Last updated: December 2013
Output: Improved capability – stations and gauge

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.

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 Hitachi train 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).

Network Rail have been advised by DfT that the initial EMU operations will be with Class 319 units operating up to 8 car in length, but we are now awaiting final remit from the DfT to develop works for this configuration.

In anticipation of the remit from the DfT Network Rail has assumed that the EMUs will operate over the following parts of the Western route:

Core routes

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

Diversionary 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 24miles.
- 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.

Activities and milestones

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

Western rail access to Heathrow

Details
Operating route(s): Western
Project reference code: W005
Previous project reference code: WW029
Last updated: December 2013
Output: New rail link

CP5 output driver

To improve access to Heathrow Airport for both travelling customers and airport workforce. Also to improve rail connectivity to the airport from the immediate vicinity, 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.

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".

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

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).

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**	**February 2015**	**Output**
GRIP 4 completion	Single option scope defined	May 2016	Indicative
GRIP 6 start	Start on site	August 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 2017. Disruptive railway construction (connecting the new rail link tunnel and the new relief formation) could take place during the early stages of CP6 (2019 – 2024). However, it is commercially desirable before 2020.

Oxford Corridor capacity improvements

Details
Operating route(s): Western
Project reference code: W006
Previous project reference code: WW007
Last updated: December 2013
Output: Capacity

CP5 output driver

The objective of the scheme is to improve capacity and capability on the Oxford Corridor (Didcot North Junction - Aynho Junction).

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 resignalling works at Oxford to achieve the maximum synergy and cost benefit.
- East West Rail Phase 1 will complete GRIP 6 by February 2016.

Activities and milestones

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	December 2013	Indicator
GRIP 3 completion	**Single option selection**	**July 2014**	**Output**
GRIP 4 completion	Single option scope defined	January 2015	Indicative
GRIP 6 start	Start on site	September 2015	Indicative
GRIP 6 completion – stage 1	Infrastructure ready for use	February 2016	Indicative
GRIP 6 completion – stage 2	Infrastructure ready for use	December 2017	Indicative

Dr Days Junction to Filton Abbey Wood capacity improvements

Details
Operating route(s): Western
Project reference code: W007
Previous project reference code: WW009
Last updated: December 2013
Output: Capacity

CP5 output driver

The scheme provides capacity for 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 it will provide the capability to keep train services operational when engineering works 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 Rd;
- provision of a new double junction at Horfield;
- enhanced signalling; and
- a new platform at Filton Abbey Wood station.

Significant interfaces

- Electrification.
- Intercity Express Programme.
- Bristol Temple Meads Station and platform Capacity (incl. Midland Shed) schemes.
- Signalling renewals.
- Track renewals (especially Bristol East Junction).
- 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, 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	Indicative
GRIP 6 start	Start on site	May 2015	Indicative
GRIP 6 completion	**Infrastructure ready for use**	**August 2017**	**Output**

Bristol Temple Meads station capacity (incl. Midland Shed)

Details
Operating route(s): Western
Project reference code: W008
Previous project reference code: WW024
Last updated: December 2013
Output: Station and platform capacity

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) electric Super Express Train (SET) services in 2016, and specifically in 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.

Scope of works

- Provision on 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 signalbox 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**	**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	November 2018	Indicative

West of England Diesel Multiple Unit capability works

Details
Operating route(s): Western, Wales & Wessex
Project reference code: W009
Previous project reference code: WW031
Last updated: December 2013
Output: Improved capability – stations and gauge

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

Network Rail believes that 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.
- A remit is required from the DfT to progress this project.
- Network Rail has assumed that the cascaded Class 165 and 166 units will operate over extensive parts of the Western, Wales and Wessex Routes:

Significant interfaces

- Electrification.
- Intercity Express Programme.
- Signalling renewals.
- CP5 enhancement schemes (Greater Bristol Programme, Oxford Corridor capacity and Strategic Freight Network schemes).

Key assumptions

- All depot and depot access works are not part of this submission, these are funded by the Greater Western Franchisee.
- 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**	**Output**
GRIP 4 completion	Single option scope defined	Tbc	Indicative
GRIP 6 start	Start on site	December 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	June 2017	Indicative

Swindon to Kemble redoubling

Details
Operating route(s): Western
Project reference code: W010
Previous project reference code:102.00
Last updated: December 2013
Output: Capacity

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 an 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 is to be provided between Kemble and St Mary's crossing, and between this crossing and Standish junction. This new signalling 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 diversion 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 potential 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	April 2014	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
Operating route(s): Wales
Project reference code: WL001
Previous project reference code:DP016
Last updated: December 2013
Output: Electrification

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 scheme is an enabler of 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**	**Output**
GRIP 4 completion	Single option scope defined	April 2016	Indicative
GRIP 6 start	Start on site	November 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; and has requested an alternative delivery profile if it is more cost efficient.

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
Operating route(s): Wales
Project reference code: WL002
Previous project reference code:26.01
Last updated: December 2013
Output: Capacity

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 March 2015. The construction of the additional through platform and associated track at Cardiff Central station will be completed by March 2015 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 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 4 – Cardiff East	Major signaling commissioning and permanent way remodeling Cardiff East	May 2014	Indicator
Phase 5 – Cardiff Central	Major signaling commissioning and permanent way Cardiff Central including commissioning of the West of Cardiff. Leckwith – Llanharran	December 2014	Indicator
Phase 6 – Cardiff platform 8 works	Cardiff Central platform 8 works and Southern entrance	March 2015	Indicator
Phase 7 – recoveries	Permanent way and signaling recoveries	September 2015	Indicator
GRIP 6 completion	**Infrastructure ready for use**	**October 2015**	**Output**
GRIP 7 completion	-	March 2016	-
GRIP 8 completion	-	October 2017	-

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 North Trans-Pennine electrification East
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 Huddersfield station capacity improvements
LNE006 Leeds and Sheffield capacity
LNE007 Bradford Mill Lane capacity
LNE008 East of Leeds capacity
LNE009 Capacity relief to the ECML (GN/GE joint line)
LNE010 North Doncaster Chord
LNE011 Liverpool – Leeds journey time improvements

North Trans-Pennine Electrification East

Details
Operating route(s): LNE, East Midlands, LNW
Project reference code: LNE001
Previous project reference code:DP022
Last updated: December 2013
Output: Electrification

CP5 output driver

This project facilitates the introduction of electric train operation on passenger and freight services. The current programme will support a target date for completion of December 2018, with the provision of an electrified route to provide the opportunity for the operation of electric traction between the following points:

- Stalybridge to Leeds;
- Leeds to York; and
- Leeds to Selby.

The project's western boundary meets the extent of North Trans-Pennine Electrification West, which is defined in a separate entry.

This project will provide electrified East Coast Main Line diversionary routes from Doncaster to York via Leeds and from Doncaster to Leeds via Hambleton South and West Junctions. This project offers the opportunity to increase capacity and reduce journey times by the introduction of enhanced performance electric units. It has the potential to reduce the cost of operation of rail services and carbon emissions.

Electrification of these routes 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 economic growth.

Scope of works

The scope of each programme 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 (exc) to Copley Hill East Junction.
- Neville Hill West Junction to Colton Junction.
- Micklefield Junction to Selby Station.
- Hambleton East Junction to Hambleton North Junction.
- Hambleton South Junction to Hambleton West Junction.

Other works will include signalling immunisation, track lowering and bridge reconstructions on the above routes.

Significant interfaces

- North Trans-Pennine electrification West.
- Northern Urban Centres.
- Strategic Freight Network.
- National SCADA renewal.
- Huddersfield Station capacity enhancement.
- Huddersfield signal recontrol.
- Micklefield turnback.
- East Coast Main Line power supply upgrade Phase 2.
- GSM-R and FTN.

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.
- No ancillary works (e.g. rolling stock clearance, depots / stabling works or platform lengthening) created by the introduction of electric rolling stock are delivered by the North Trans-Pennine Electrification programme.
- 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.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	**Single option selection**	**March 2015**	**Output**
GRIP 4 completion	Single option scope defined	September 2016	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

The timetable change date is anticipated to be December 2018.

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 (IEP) – East Coast capability

Details
Operating route(s): LNE and East Midlands
Project reference code: LNE002a
Previous project reference code:NE001
Last updated: December 2013
Output: Capability

CP5 output driver

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 work 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;
  - 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.
- Pantogragh 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 3 completion	**Single option selection**	**November 2013**	**Output**
GRIP 4 completion	Single option scope defined	August 2014	Indicative
GRIP 6 start	Start on site	March 2015	Indicative
GRIP 6 completion	Infrastructure ready for use	August 2017	Indicative

Gauging

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

Stations – Phase 1

Milestone	Description	Date	Status
GRIP 6 completion	Infrastructure ready for use	August 2017	Indicative

Stations – Phase 2

Milestone	Description	Date	Status
GRIP 3 completion	**Single option selection**	**August 2014**	**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
Operating route(s): LNE & East Midlands
Project reference code: LNE002b
Previous project reference code: NE028
Last updated: December 2013
Output: Capacity enabler

CP5 output driver

The output is traction power supply capability to meet 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

- Sufficient funding will be available from Thameslink Programme to deliver their requirements.
- 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 start	Start on site	December 2013	Indicative
GRIP 6 completion	Infrastructure ready for use	October 2015	Indicative

ECML Power Supply Upgrade – Phase 1

Milestone	Description	Date	Status
GRIP 4 completion	Single option scope defined	August 2014	Indicative
GRIP 6 start	Start on site	November 2013	Indicative
GRIP 6 completion – Corey's Mill to Welwyn (Thameslink requirement)	Infrastructure ready for use	March 2016	Indicative
GRIP 6 completion – Wood Green to St Neots	Infrastructure ready for use	April 2016	Indicative
GRIP 6 completion – St Neots to Bawtry	Infrastructure ready for use	August 2017	Indicative

LNE routes traction power supply upgrade

Details
Operating route(s): LNE & East Midlands
Project reference code: LNE003
Previous project reference code: DP007
Last updated: December 2013
Output: Capacity enabler

CP5 output driver

The aim of this project is to provide improvements to the existing traction power capability to support the forecast increase in electrically operated rolling stock on the ECML.

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 projects 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**	**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
Operating route(s): LNE
Project reference code: LNE004
Previous project reference code:NE004
Last updated: December 2013
Output: Capacity

CP5 output driver

Provide 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**	**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.

Huddersfield station capacity improvement

Details
Operating route(s): LNE & East Midlands
Project reference code: LNE005
Previous project reference code: NE021
Last updated: December 2013
Output: Capacity

CP5 output driver

This named scheme maximises the value of Trans Pennine Electrification and provides the capacity into Leeds and Sheffield to meet the capacity metric.

Scope of works

The current scope of work provides for 4 x 23 metre trains to operate to/from Leeds and Manchester and 3 car trains between Huddersfield and Sheffield and currently includes:

- potential extension of platform 1 Eastwards to provide a longer Penistone bay (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.

Significant interfaces

- Northern Hub.
- North Trans-Pennine Electrification.
- Leeds and Sheffield capacity.
- Track renewals planned in CP5.
- Renewal of Huddersfield station roof in early CP5.
- Huddersfield signalling recontrol in CP5.

Key assumptions

- Disruptive track access will be available.
- No land purchase is required.
- Listed Building Consent will be obtained.
- No significant works will be required to the viaduct to the east of the station.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	**Single option selection**	**November 2014**	**Output**
GRIP 4 completion	Single option scope defined	May 2015	Indicative
GRIP 6 start	Start on site	November 2016	Indicative
GRIP 6 completion – stage 1	Infrastructure ready for use	September 2017	Indicative

The timetable change date is anticipated to be in December 2018.

Leeds and Sheffield capacity

Details
Operating route(s): LNE & East Midlands
Project reference code: LE006
Previous project reference code: NE016, 018, 019, 025, 026
Last updated: December 2013
Output: Capacity

CP5 output driver

To provide for the capacity metric into Leeds and Sheffield by:

- accommodating additional services; and
- accommodating longer trains.

Scope of works

- 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.

Significant interfaces

- Huddersfield Station capacity improvement.
- Northern Hub.
- North Trans Pennine electrification.
- East Coast Main Line Connectivity.
- East of Leeds capacity.
- Leeds Southern entrance.
- Leeds Station Master Plan.

Key assumptions

- Additional land purchase will not be required.
- Disruptive track access will be available.
- 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 required at Sheffield Station to delivery capacity metrics.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	**Single option selection**	**March 2015**	**Output**
GRIP 4 completion	Single option scope defined	January 2016	Indicative
GRIP 6 start	Start on site	July 2017	Indicative
GRIP 6 completion	Infrastructure ready for use	November 2018	Indicative

The timetable change is anticipated to be December 2018.

Bradford Mill Lane capacity

Details
Operating route(s): LNE & East Midlands
Project reference code: LNE007
Previous project reference code: DP019
Last updated: December 2013
Output: Capacity

CP5 output driver

To accommodate the capacity metric into Leeds through an additional hourly service from Halifax to Leeds.

Scope of works

Provision of parallel moves into Bradford Interchange 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.

Significant interfaces

- Signalling renewal at Bradford Mill Lane.
- Northern Hub.
- Leeds and Sheffield capacity.

Key assumptions

- Completion with the planned signalling renewal in CP5.
- Current freight run-round capability will be maintained.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	**Single option selection**	**January 2015**	**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	November 2017	Indicative

Timetable change date is anticipated to be December 2018.

East of Leeds capacity

Details
Operating route(s): LNE and East Midlands
Project reference code: LNE008
Previous project reference code: NE030
Last updated: December 2013
Output: Capacity

CP5 output driver

Provision of the capacity metric into Leeds through enhanced capacity on the corridor to the east of Leeds.

Scope of works

The feasibility study will determine the exact scope of works. Options to be considered include, but are not restricted to:

- improved access to/from Neville Hill, including the conversion of the Goods lines to passenger use, east end access and bi-directional signal operations;
- Micklefield Junction layout improvements;
- Micklefield turnback facility; and
- review of signalling headways.

Significant interfaces

- Northern Hub.
- Leeds and Sheffield capacity.
- North Trans Pennine electrification.
- ECML Connectivity.
- 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.

Key assumptions

- In the absence of an operational plan, scope is based on an Indicative Train Service Specification approved by Northern Programmes Infrastructure Plan Group.
- Disruptive track access will be available.
- Scope is subject to further development.
- No land purchase will be required.
- A Transport & Works Act Order will not be required.

Activities and milestones

Milestone	Description	Date	Status
GRIP 2 completion	Feasibility complete	May 2014	Indicator
GRIP 3 completion	**Single option selection**	**February 2015**	**Output**
GRIP 4 completion	Single option scope defined	April 2016	Indicative
GRIP 6 start	Start on site	October 2016	Indicative
GRIP 6 completion – stage 1	Infrastructure ready for use	April 2018	Indicative

The timetable change date is anticipated to be December 2018.

Capacity relief to the ECML (GN/GE Joint Line)

Details
Operating route(s): LNE and East Midlands
Project reference code: NE009
Previous project reference code:18.01
Last updated: December 2013
Output: Capacity

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 are 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).

An Infrastructure Planning Commission (IPC) application will be required if a grade separated option is selected at the south end of GN/GE.

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 ability 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.

- The facility to provide access of the required capacity at the south end of GNGE will continue to be developed during CP4 with delivery assumed in CP5.
- The full CP4 Delivery Plan 18:01 outputs are dependant on the delivery of the full scope of work, including any capacity connections works at the south end of GNGE.

Activities and milestones

Tonnage and gauge capability

Milestone	Description	Date	Status
GRIP 6 completion	**Infrastructure ready for use**	**November 2014**	**Output**

775m train length, capacity and journey time capability

Milestone	Description	Date	Status
GRIP 6 completion	**Infrastructure ready for use**	**November 2014**	**Output**

Capacity and journey time capability (as provided by a southern access connection)

Milestone	Description	Date	Status
GRIP 4 completion	Single option scope defined	Tbc	Indicative
GRIP 6 start	Start on site	Tbc	Indicative
GRIP 6 completion	Infrastructure ready for use	Tbc	Indicative

North Doncaster Chord

Details
Operating route(s): LNE & East Midlands
Project reference code: LNE010
Previous project reference code: 18.08
Last updated: December 2013
Output: Capacity

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 where identified as gaps in the Freight RUS.

The scheme also reduces the number of potential junction conflicts between high speed passenger trains and freight services thereby reducing junction layout safety risk.

The 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 3000 tonnes trailing loads; and
- retention of the Joan Croft to Applehurst junction and Shaftholme junctions to Askern (and vice versa in both cases) is required.

Significant interfaces

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

Key assumptions

A key assumption is that the 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	April 2014	Outpu

In line with previously recognised dependencies, the milestone has been moved to early CP5 following an IPC process that was longer than anticipated, together with delays associated with hibernating protected species.

Liverpool - Leeds journey time improvements

Details
Operating route(s): LNE
Project reference code: LNE011
Previous project reference code: 25,00
Last updated: December 2013
Output: Journey time improvements

CP5 output driver

Liverpool to Manchester
The primary output is to contribute to the CP4 HLOS passenger kilometre metrics by accommodating further passenger demand by improving journey times between Liverpool and Manchester via Chat Moss.

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

The line speed improvements will manifest as revised Sectional Running Times over the section between Liverpool Lime Street and Manchester. The scope of infrastructure and timetabling works required to achieve these time savings are to be designed and delivered as part of this project.

Specific infrastructure interventions for increases to permissible increased speeds (in both directions) include:

- Edge Hill to Astley increased permissible speed - Increase from 75mph to 80mph between 3m 0ch to 3m to 72ch and 75mph to 90 mph between 3m 72ch to 21m 60ch on the Up Main. Down Main 3m 0ch to 21m 60ch; and
- Astley to Patricroft (exclusive) increased permissible speed - increase from 40/60mph to 75mph between approximate mileage 22m 40ch to 25m 40/43ch.

Manchester to Leeds
The primary output is to contribute to the CP4 HLOS passenger kilometre metrics by accommodating further passenger demand by improving journey times between Leeds and Manchester via Diggle.

Reductions in journey times between these cities are a move towards the Government's target journey time of 43 minutes between Manchester and Leeds.

The key is to recognise that achieving improved journey times will require both the defined infrastructure interventions, combined with an industry agreed timetabling intervention.

The journey time improvements will manifest as Sectional Running Times changes or reductions / removal of approach control and pathing allowances over the section between Manchester and Leeds. The scope of infrastructure and timetabling works required to achieve these time savings will be subject to further development.

- Relax the approach control to the down passenger loop at Dewsbury - 1 minute saving by implementing flashing yellow aspects.
- Relax the approach control at Mirfield East Junction - time saving in both east and west bound trains.

Manchester Victoria - Stalybridge
This will support the move towards a target journey time of 43 minutes between Manchester and Leeds.

Scope of works

Liverpool to Manchester
The project scope is to develop and deliver track, signalling, structures and earthworks alterations to take place at identified locations between Liverpool Lime Street station and Manchester via the Chat Moss route in order to move towards a journey time of 30 minutes between Liverpool and Manchester.

GRIP 4 has concluded the design of options selected in order to achieve linespeed improvements between Olive Mount Cutting and Ordsall Lane Junction.

Manchester to Leeds
The project scope is to develop and deliver journey time opportunities which involve capacity improvements to move towards a journey time of 43 minutes between Manchester and Leeds via Diggle in CP4.

On completion of the development stage the following single options have been selected for design and implementation:

- relax the approach control through signalling interventions to the down passenger loop at Dewsbury; and
- relax the approach control at Mirfield East Junction.

Manchester Victoria - Stalybridge
This scheme is in early development GRIP stage but assumes delivery of journey time savings through development of track and signalling work scope as well as exploring options at level crossings. It is intended that this will be delivered in conjunction with proposed electrification works in the same area.

Significant interfaces

Liverpool to Manchester
There are interfaces with stakeholders including DfT, TOCs, FOCs, Merseytravel, TFGM, South Yorkshire PTE and West Yorkshire PTE. There are interdependencies with other projects including the seven day railway, track and signalling renewals, North West Electrification, W10 gauge clearance, and Northern Hub.

Manchester to Leeds
There are interfaces with stakeholders including DfT, TOCs, FOCs, TFGM, and West Yorkshire PTE. There are interdependencies with other projects including the seven day railway track and signalling renewals schemes, West Yorkshire platform extensions and North Trans-Pennine Electrification.

The outputs will facilitate future plans to electrify the route.

Key assumptions

Liverpool to Manchester
The key assumption is that the current rolling stock will continue to operate on the route and that the route will be electrified, initially from Earlestown to Manchester.

Network Change will be required. If structural work is needed, especially to strengthen bridges, access from outside the railway may be required.

Manchester to Leeds
The key assumption is that the current rolling stock will continue to operate on the route for the foreseeable future.

Network Change will be required. If structural work is needed, especially to strengthen bridges, access from outside the railway may be required.

Activities and milestones

Liverpool to Manchester

Milestone	Description	Date	Status
GRIP 6 completion excluding DSE 3mp – 6 1/4mp Up and 6 3/4mp Down	Infrastructure ready for use	March 2014	Output
GRIP 6 completion DSE 3mp – 6 1/4mp Up and 6 ¾ mp Down	Infrastructure ready for use – in conjuction with Northern Hub Huyton & Roby	August 2014	Output

Manchester to Leeds

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

The timetable change date is anticipated to be May 2014.

England and Wales projects: East Midlands

England and Wales – East Midlands
EM001 MML long distance high speed services train lengthening

MML long distance high speed services train lengthening

Details
Operating route(s): LNE & EM
Project reference code: EM001
Previous project reference code: NE009
Last updated: December 2013
Output: Capacity

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 Long Distance High Speed (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 at station platforms for LDHS services operating 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 GRIP3, 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 resignalling will be required.
- Planning consents will not be required.

Activities and milestones

Milestone	Description	Date (month and year)	Status
GRIP 3 completion	**Single option selection**	**March 2015**	**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

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 Acton (Great Western Main Line) to Willesden (West Coast Main Line) electrification
LNW007 Walsall to Rugeley electrification
LNW008 Chiltern Main Line train lengthening
LNW009 North West train lengthening
LNW010 Bromsgrove electrification
LNW011 Redditch branch enhancement

North West Electrification

Details
Operating route(s): LNW
Project reference code: LNW002
Previous project reference code: DP022
Last updated: December 2013
Output: Electrification

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.

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), operation control measures at platforms:

- 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; 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 (eg 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.

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 signalbox 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.

A full project programme for the Blackpool Line upgrade, including implementation, will be developed and delivered as part of GRIP 3 outputs.

Activities and milestones

Milestone	Description	Date	Status
Phase 1 GRIP 6 completion	**Phase commissioned**	**December 2013**	**Output**
Phase 2 GRIP 6 completion	Phase commissioned	December 2014	Indicative
Phase 3 GRIP 4 completion	Single option scope defined	April 2014	Indicative
Phase 3 GRIP 6 start	Start on site	December 2014	Indicative
Phase 3 GRIP 6 completion	Phase commissioned	May 2016	Indicative
Phase 4 GRIP 4 completion	Single option scope defined	April 2014	Indicative
Phase 4 GRIP 6 start	Start on site	November 2014	Indicative
Phase 4 GRIP 6 completion	Phase commissioned	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.

North Trans-Pennine Electrification West

Details
Operating route(s): LNE and LNW
Project reference code: LNW002
Previous project reference code: DP022
Last updated: December 2013
Output: Electrification

CP5 output driver

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 is December 2016 to align with outputs of the North West Electrification Programme.

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):
- Guide Bridge West Junction to Stalybridge National Grid feeder station; and
- Ashburys West Junction to Philips Park Junction / Baguley Fold Junctions.

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

Milestone	Description	Date	Status
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.

Stafford Area Improvement Scheme

Details
Operating route(s): LNW
Project reference code: LNW003
Previous project reference code: WW001
Last updated: December 2013
Output: Capacity

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, Doxey 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. This provides two additional fast line paths to/from Euston in the off peak, one additional path per hour in each direction on the Birmingham-Manchester axis and one additional freight path per hour in each direction through Stafford.

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 Norton Bridge.

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 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 (month and year)	Status
GRIP 4 completion	Single option scope definition	April 2014	Indicative
GRIP 6 start	Start on site - Norton Bridge	October 2014	Indicative
GRIP 6 completion	Infrastructure ready for use - Stafford	December 2017	Indicative

West Coast Power Supply Upgrade Phase 3B

Details
Operating route(s): LNW
Project reference code: LNW004
Previous project reference code: WW002
Last updated: December 2013
Output: Capacity

CP5 output driver

The overall programme for the power supply upgrade will support the Stafford specification and the North West electrification programme by provision of the required AT infrastructure from Weaver Junction to Wigan Springs Branch Junction along the WCML and from Winwick Junction to Liverpool Edge Hill.

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	Indicative

Phase 3B: Whitmore – Great Strickland

Milestone	Description	Date
GRIP 6 start	Start on site	June 2013
Completion of first commissioning area	Weaver to Springs Branch	November 2014
Completion of second commissioning area	Oxenholme to Carnforth / Oxenholme to Great Strickland	June 2015
Completion of third commissioning area	Springs Branch to Euxton	October 2015
Completion of fourth commissioning area	Weaver to Whitmore	October 2016
GRIP 6 completion	Infrastructure ready for use	February 2017

Birmingham New Street Gateway Project

Details
Project reference code: LNW0054
Previous project reference code: 14.00 (CP4 project reference code)
Last updated: December 2013

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

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**	**March 2015**	**Output**

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

Details
Operating Route: Western / Anglia/ LNW South
Project reference code: LNW006
Previous project reference code: NW013
Last updated: December 2013
Output: Electrification

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.

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 (month and year)	Status
GRIP 3 completion	**Single option selection**	**December 2014**	**Output**
GRIP 4 completion	Single option scope defined	Tbc	Indicative
GRIP 6 start	Start on site	Tbc	Indicative
GRIP 6 completion	Infrastructure ready for use	Tbc	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.

Walsall to Rugeley Trent Valley electrification

Details
Operating Route: LNW
Project reference code: LNW007
Previous project reference code: NW001
Last updated: December 2013
Output: Electrification

CP5 output driver

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. The electrification scheme will assess the cost of W10/W12 clearance, which is not currently in the scope of this project.

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 (month and year)	Status
GRIP 3 completion	**Single option selection**	**September 2014**	**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
Operating Route: LNW
Project reference code: LNW008
Previous project reference code: NW006
Last updated: December 2013
Output: Capacity

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.

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 will be organised and provided outside of this project.
- Potential additional infrastructure changes to improve operational flexibility in the Marylebone throat area are being assessed as an option to deliver the high peak HLOS capacity metric in the most efficient way.
- The operation of 9-car train formations south of Banbury will require Driver Only Operation (DOO) equipment is to be enhanced at the five stations to accommodate longer trains in a safe manner. The impact of this requirement on the wider scheme is being assessed collaboratively with the train operator.

Activities and milestones

Milestone	Description	Date (month and year)	Status
GRIP 2 completion	Feasibility complete	December 2013	Indicator
GRIP 3 completion	**Single option selection**	**December 2014**	**Output**
GRIP 4 completion	Single option scope definition	Tbc	Indicative
GRIP 6 start	Start on site	Tbc	Indicative
GRIP 6 completion	Infrastructure ready for use	Tbc	Indicative

The implementation programme will be confirmed once GRIP 3 is complete.

North West Train Lengthening

Details
Operating Route: LNW
Project reference code: LNW009
Previous project reference code: NE024
Last updated: December 2013
Output: Capacity

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

Platform lengthening at the stations identified:

- 4x 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.

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 (month and year)	Status
GRIP 2 completion	Feasibility complete	August 2012	Indicator
GRIP 3 completion	**Single option selection**	**To be confirmed**	**Output**
GRIP 4 completion	Single option scope defined	To be confirmed	Indicative
GRIP 6 start	Start on site	To be confirmed	Indicative
GRIP 6 completion	Infrastructure ready for use	To be confirmed	Indicative

The implementation programme will be confirmed once GRIP 3 is complete.

Bromsgrove electrification

Details
Project reference code: LNW010
Previous project reference code: 22.01
Last updated: December 2013
Output: Capacity

CP5 output driver

This project increases capacity by extending a service of three trains per hour to Bromsgrove that currently terminate and turn round at Longbridge. The additional services offer a significantly enhanced frequency for passengers in Bromsgrove and further improvements in journey times between Bromsgrove and the intermediate locations e.g. Birmingham University.

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 three car in the Up direction and four car in the Down direction. Due to constraints these cannot be extended so the additional track work cannot be provided at the current site. Options for an efficient layout of the new station are being developed. Funding for the new station may require business case justification for some or all of the funding streams.
- Redditch branch enhancement – these two projects comprise the extension of the Cross City line between Longbridge and Bromsgrove. The current service of six trains per hour, where four turn round at Longbridge and two carry on to Redditch, will be extended so that three trains per hour run to Bromsgrove, where they will turn round and three trains per hour will run to Redditch.
- S&C renewal at Bromsgrove Down goods loop - originally scheduled for 2008, but has been deferred pending the outcome of the station re-location project.
- The introduction of new rolling stock (Class 172s) and additional EMU stock.
- Barnt Green to Westerleigh line speed improvements.
- Other committed journey time improvements.
- West Midlands resignalling programme, scheduled between 2009 and 2018.

Key assumptions

The extension of the Cross City line will only require a minimal increase in rolling stock. Currently the service is operated by Class 323s operated by London Midland in three and six car formations.

The station relocation needs to happen before electrification to enable the extension of the Cross City Line services. The station relocation is separately funded and constitutes a replacement of the existing two platform station, with longer platforms and with the additional facilities to turn back trains. The additional track work and signalling required to operate the turn back will be provided under this project.

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

Activities and milestones

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 5 commences	Start detailed design	April 2014	Indicator
GRIP 5-8 contracting	Award contract to preferred bidder	November 2014	Indicator
GRIP 6 commences	Start on site	August 2015	Indicator
GRIP 6 complete	**Infrastructure ready for use**	**July 2016**	**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: LNW011
Previous project reference code: 22.02
Last updated: December 2013
Output: Capacity

CP5 output driver

The primary output of this project is increased capacity in the form of an additional train path per hour (creating a standard 20 minute interval), from the current two trains to three trains an hour between Barnt Green and Redditch.

Scope of works

Improving capacity on the Redditch branch has been examined and the current options includes:

- 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 will require a Development Consent Order (DCO) application to the Infrastructure Planning Commission as the scheme falls under the Planning Act 2008. Accommodating the additional platform and new track will require land purchase which may either be by agreement or by compulsory powers in the DCO.

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 current programme assumption is that statutory consultation, the IPC examination processes and land acquisition must be complete before any work can commence on site.

Activity	Output	Date	Status
Development Consent Order granted	Secretary of State issues decision granting the Development Consent Order	November 2013*	Indicator
GRIP 6 commences	Start on site	December 2013	Indicator
GRIP 6 complete	**Infrastructure ready for use**	**August 2014**	**Output**

* Subject to statutory consultation and Planning Inspectorate process

The present timescales are predicated on the presumption that the Development Consent Order will be made no later than November 2013 to allow immediate commencement of the main works in order to achieve completion by August 2014. If the DCO is issued earlier than presently envisaged Network Rail will seek to determine whether the completion date can be brought forward."

Scotland enhancements programme - 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: December 2013

Purpose

The purpose of the fund is to improve the public's access to railway services. To support this objective the 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.

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 and the Scotland Route Investment Review Group involving all relevant train operators and Transport Scotland; or as promoted by the Scottish Ministers.

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 assess a sample of schemes to ensure compliance with the general conditions and that the approach to delivery is efficient. 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 schemes to drawn down from the fund.

Scottish Strategic Rail Freight Investment Fund

Details
Fund reference code: SF002
Last updated: December 2013

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.

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; and
- £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 assess a sample of schemes to ensure compliance with the general conditions and that the approach to delivery is efficient. 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 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: December 2013

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.

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 it the benefit-cost ratio is less than 2 or not yet determined; and
- £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 assess a sample of schemes to ensure compliance with the general conditions and that the approach to delivery is efficient. 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 & 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: December 2013

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.

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 assess a sample of schemes to ensure compliance with the general conditions and that the approach to delivery is efficient. 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 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 are specified in the HLOS and may be considered for further development under this fund.

Strategic Projects
Passenger capacity at Glasgow Central, Glasgow Queen St 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: December 2013

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.

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 assess a sample of schemes to ensure compliance with the general conditions and that the approach to delivery is efficient. 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 and include, amongst others:

- Cornton No. 1 & 2;
- Dingwall No. 1;
- Dalcross;
- Delny;
- St Germains; 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
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
Dalmuir to Cumbernauld via Glasgow Queen St Low Level and Springburn (2 tph) Glasgow Queen Street High Level to Falkirk Grahamston (hourly)
Project reference code: SF001
Previous project reference code: SC001a
Last updated: December 2013
Output: The provision of more frequent and faster rail services between Scotland's two principal cities forms a key part of the Scottish Government's future transport strategy.

CP5 output driver

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 Cowlairs 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 (single track kilometres) 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.

A contract for undertaking GRIP 5-8 for infrastructure works at Springburn and Cumbernauld is expected to be awarded in early 2013, leading into a delivery programme scheduled to commence in mid-2013 and will be complete by June 2014.

Milestone	Description	Date (	Status
GRIP 6 completion	Infrastructure ready for use	February 2014	Output

EGIP – Initial Phase: Key Output 1

Details
Edinburgh to Glasgow (via Falkirk High)
Project reference code: SC002
Previous project reference code: SC001b
Last updated: December 2013
Output: The provision of increased capacity and faster rail services between Scotland's two principal cities forms a key part of the Scottish Government's transport strategy. This element of EGIP delivers the additional network capacity required to operate these enhanced services.

CP5 output driver

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 EMU's will be introduced, operating as 8 car formations during peak periods. These will replace the current 3 car DMU's 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 around 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 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
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 maintenance depot 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 St 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 enhancements 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**	**Output**

EGIP – Initial Phase: Key Outputs 2, 3 & 4

Details
Edinburgh to Glasgow (via Falkirk High)
Project reference code: SC003
Previous project reference code: SC001d
Last updated: December 2013
Output: The provision of increased capacity and faster rail services between Scotland's two principal cities forms a key part of the Scottish Government's transport strategy. This element of EGIP delivers the additional network capacity required to operate these enhanced services.

CP5 output driver

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 EMU's will be introduced, operating as 8 car formations during peak periods. These will replace the current 3 car DMU's 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;
- Carmuirs West S&C renewals; and
- CP5 asset renewals between Polmont – Greenhill Upper Junctionn and Hilton Junction.

The project will also interface with the following further EGIP works in CP5:

- EGIP Initial Phase Key Output 1.

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.

Activities and milestones

Milestone	Description	Date	Status
GRIP 3 completion	**Single option selection**	**May 2014**	**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

Details
Project reference code: SC004
Previous project reference code: 33.033
Last updated: December 2013

CP5 output driver

This project forms part of the Edinburgh to Glasgow Improvements Programme (EGIP). 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 ;
- 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 Stage 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 are contracting separately with City of Edinburgh Council (CEC) to deliver the tram stop related elements of the Project.

Key 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 projects that are 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 for advanced works	Infrastructure ready for use	December 2014	Output
GRIP 6 completion for interchange	Infrastructure ready for use	March 2017	Output

EGIP – Haymarket station capacity project

Details
Project reference code: SC005
Previous project reference code: 33.07
Last updated: December 2013

Key outputs

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 new 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 copes 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 stage 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 new 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 copes 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 projects that are 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**	**Output**

EGIP 2013 advance route clearance programme (other routes)

Details
Project reference code: SC006
Previous project reference code: 33.11
Last updated: December 2013

Key outputs

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 project is now being delivered on a stand alone basis and does not form part of EGIP.

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; and
- EGIP infrastructure projects.

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	June 2014	Output

Borders Railway

Details
Operating route(s): New Railway South of Newcraighall
Project reference code: SC007
Previous project reference code: SC0015
Last updated: December 2013
Output: the Borders Railway comprises a new railway line linking Midlothian and Scottish Borders Local Authority areas to central Edinburgh and the national rail network.

CP5 output driver

To create a rail route in the Scottish Borders connecting the Borders into 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 into 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 (type 158s) and modelled using Railsys.

Significant interfaces

There are currently no identified significant interfaces with other Network Rail managed projects.

Key assumptions

The project will be delivered and managed by Network Rail. It will be financed by an addition to the RAB, subject to ORR approval. Transport Scotland will fund the repayments.

Activities and milestones

Activity	Date	Status
Commence track laying	June 2014	Indicator
Route available for driver training	**June 2015**	**Output**
Stations ready for handover to TOC	**June 2015**	**Output**
Service commencement by TOC	September 2015	-

Rolling Programme of Electrification (Scotland)

Details
Operating route(s): Scotland
Project reference code: SC008
Previous project reference code: SC004
Last updated: December 2013
Output: Implement a rolling programme of electrification works which will cover around 100 single track kilometres per annum commencing from the completion of EGIP. Following EGIP re-phasing it is anticipated that the overall electrification programme will progress throughout CP5.

CP5 output driver

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 Governments purpose of promoting sustainable economic growth by planning the next 20 years of transport investment for Scotland's rail and trunk road networks.

It is proposed that this programme will include electrification of the following routes during CP5, although sequencing has still to be agreed:

- Greenhill Upper Junction - Greenhill Lower - Carmuirs West Junction - Falkirk Grahamston and Polmont (possibly including Grangemouth Branch funded from the Scottish Strategic Rail Freight Investment Fund);
- Carmuirs West – Stirling – Dunblane – Alloa including Larbert Junction to Carmuirs East); and
- Holytown Junction – Shotts – Midcalder Junction (the Shotts line).

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 proposed works during CP5 is to complete the installation of a 25kV overhead electrification system on the nominated route sections detailed above.

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 may form 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 no specific interfaces with the other electrification projects apart from the need to integrate with the Motherwell North and Carstairs station remodelling projects.

Key assumptions

A number of specific assumptions have been made in development to date in respect of infrastructure, rolling stock, timetable, operations and performance and 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	Indicative
GRIP 6 start	Start on site	June 2014	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2019	Indicative

Aberdeen to Inverness improvements Phase 1

Details
Operating route(s): Scotland
Project reference code: SC009
Previous project reference code: SC002
Last updated: December 2013

Key outpus

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 extent of progress is expected to include construction of 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. Previous work on the project focussed on an incremental approach with development completed to GRIP 3 in June 2012 on the basis of the following prioritised sequence of outputs, as specified by Transport Scotland:

- Phase 1 - provide an hourly service between Aberdeen and Inverness;
- Phase 2 - provide a half hourly service between Inverness and Elgin, stopping at a new station at Dalcross;
- Phase 3 - provide a half hourly service between Inverurie and Aberdeen, stopping at a potential new station at Kintore; and
- Phase 4 - enable journey time improvements to deliver a sub 2 hour typical end to end journey time.

The HLOS, published in June 2012, seeks an alternative prioritisation of the delivery sequence, with emphasis on the two new stations and increased frequency of commuter services as the early deliverables. A more detailed specification of the outputs required was provided by Transport Scotland in March 2013. It 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 Governments 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 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 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: new or extended existing loop provision at Dalcross, Nairn, Forres, Elgin, Huntly, Dyce and Inverurie;
- 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. Timetable development work has recommenced on the revised HLOS sequencing of output requirements and this will continue in parallel with infrastructure development before the optimal scope for the deliverables in CP5 can be confirmed. GRIP 3 completion for the revised output prioritisation sequence is expected by the end of 2013.

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. Due to the HLOS changes mentioned above interfaces with planned renewals projects have not been explored at this time. Once more detail has emerged from the revised development work a clearer picture will emerge.

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.

It is also assumed that final agreement on project scope and costs will be reached with Transport Scotland once the revised GRIP 3 report, which addresses the altered prioritisation of staged implementation, is produced.

Activities and milestones

Milestone	Description	Date (	Status
GRIP 3 completion	**Single option selection**	**December 2013**	**Output**
GRIP 4 completion	Single option scope defined	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

Operating route(s): Scotland

Project reference code: SC010

Previous project reference code: SC011

Last updated: December 2013

Output: As part of a longer term programme of improvements on the Highland Main Line, achieve during CP5:

- an hourly train service in each direction between Perth and Inverness extending to either Glasgow or Edinburgh with an average end-to-end journey time reduction of around 10 minutes in both directions, measured against the timetable in place at the time of the HLOS June 2012 statement or any improvements introduced between then and 31st March 2014 when CP4 ends; and
- more efficient freight operations that better respond to the demand from freight customers.

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 Governments 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. This is likely to require new or extended double track sections and considerable track works, including renewal, 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 and into CP6 depending on availability of funding from Scottish Ministers.

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 to meet higher capability requirements;
- track formation treatment;
- bridge strengthening; and
- signalling system alterations.

The scope and cost estimate for HML Phase 2 are indicative only at this stage. The project will require a detailed timetable study to determine the extent of infrastructure required to achieve the outputs specified for CP5. This timetable study will require to be based on the availability of paths from Glasgow and Edinburgh, such paths presently being subject to change from the revised EGIP timetable. Current timetabling work is therefore restricted to that part of the route between Perth and Inverness.

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 St will be determined by the EGIP timetable; and
- 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.

Key assumptions

For this stage of the project, the following assumptions have been made:

- that passenger rolling stock deployed on the route will consist of Class 158 and 170 units, HST units (with possible replacement by IEP units) 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;
- 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 (Monday – Saturday) day at other stations to be as follows (all excluding all sleeper calls);
  - 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
- that 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	**Single option selection**	**June 2014**	**Output**
GRIP 4 completion	Single option scope defined	September 2015	Indicative
GRIP 6 start	Start on site	March 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	March 2019	Indicative

Motherwell area stabling

Details
Operating route(s): Scotland
Project reference code: SC011
Previous project reference code: SC012
Last updated: December 2013
Output: Provide additional stabling at Motherwell for ScotRail services and reduce the number of ECS movements between Yoker and Motherwell

CP5 output driver

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 towards the end of CP4 possibly extending into the first few months of CP5.

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 by the end of 2013. Following review of this GRIP 2 report, a decision on scope to be developed further will be made with Transport Scotland.

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.

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 shop sidings

Milestone	Description	Date (	Status
GRIP 6 completion	Infrastructure ready for use - electrification of Back of Shops No 1 siding	December 2013	Indicative
	- electrification and other works at Back of Shops Nos 4 and 5 sidings	May 2014	Indicative

Phase 2 - Bridge sidings

Milestone	Description	Date (	Status
GRIP 3 completion	**Single option selection**	**November 2014**	**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
Operating route(s): Scotland
Project reference code: SC012
Previous project reference code: SC013
Last updated: December 2013
Output: Increase capacity between Carfin and Holytown through the introduction of additional signalling. This provides flexibility, in addition to working towards 7 day railway through bi-directional working over the West Coast Main Line between Carstairs and Law Junction

CP5 output driver

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.
- No changes to the existing electrification system are anticipated as part of this project.
- No changes are envisaged to the current configuration of existing rolling stock within the area of the project; however this should be confirmed through consultation with the TOC/FOC representative.

Activities and milestones

Part 1 (Motherwell North – Carfin/Holytown)

Milestone	Description	Date (	Status
GRIP 4 completion	Single option scope defined	August 2014	Indicative
GRIP 6 start	Start on site	November 2016	Indicative
GRIP 6 completion	Infrastructure ready for use	February 2018	Indicative

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**	**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
Operating route(s): Scotland
Project reference code: SC013
Last updated: December 2013
Output: Capability and Operational Flexibility

CP5 output driver

The project will deliver W12 gauge clearance within Scotland as part of the national project to provide a W12 route 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.

There 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	TBC	Indicator
GRIP 6 start	Start on site	TBC	Indicator
GRIP 6 completion	**Infrastructure ready for use**	**March 2016.**	**Output**

Rutherglen and Coatbridge (R&C) Electrification

Details
Operating route(s): Scotland
Project reference code: SC014
Last updated: December 2013
Output: Capability and Operational Flexibility

Network Rail's obligation requirements:-

To 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.

The scope includes the below.

Advance works

- Provision of Driver Only Operation (DOO) platform equipment at Carmyle, 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 Control Period 5 (CP5) to reduce emissions and energy consumption, with delivery accelerated to maximise the utilisation of existing electric multiple unit (EMU) rolling stock.

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 being no periods of prolonged severe adverse weather during construction.
- That GSM-R commissioning on the R&C line will be achieved in October 2013.
- That all consents will be provided timeously, and contain no materially adverse conditions.
- The project complies with interoperability requirements.
- That sufficient disruptive access is agreed by all Operators currently using the route to undertake the works within the milestone dates proposed.
- That driver route / traction familiarisation can be contained within a two week period (to support the proposed shuttle service on the route for the Commonwealth Games.

Activities and milestones

Milestone	Description	Date	Status
GRIP 4 completion	Single Option Development	January 2014	Indicative
GRIP 6 start	Start on site	January 2014	Indicative
GRIP 6 completion	Infrastructure ready for use	July 2014	Indicative