

# Section 3

## Enhancements and major projects

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## Introduction

Network Rail is focused primarily on the operation, maintenance and renewal of the network. While in future most major enhancements will be delivered by third parties, either directly or by way of an SPV, we have an important role in helping to facilitate these schemes. We also undertake smaller enhancements to meet the reasonable requirements of our customers. We currently undertake the following types of enhancements projects:

- construction or completion of committed “legacy” projects;
- schemes arising from the Safety and Environment Plan;
- schemes sponsored by SRA, particularly where the opportunity for the enhancement is as a result of a planned signalling renewal; and
- schemes sponsored and funded by other parties, principally PTEs, local authorities and train operators.

As part of the interim review settlement, we have been funded to deliver specific safety enhancement schemes, including the S&E plan, European Rail Traffic Management System (ERTMS) development and Train Protection Warning System - Plus. (TPWS+) In addition, we have been funded to deliver West Coast enhancements and a number of “transition” projects, which include implementation of the Southern Region New Trains Programme (SRNTP), some further development of Thameslink 2000 and the CTRL Blockade works in the St Pancras area.

Other enhancements schemes that are funded outside the interim review include:

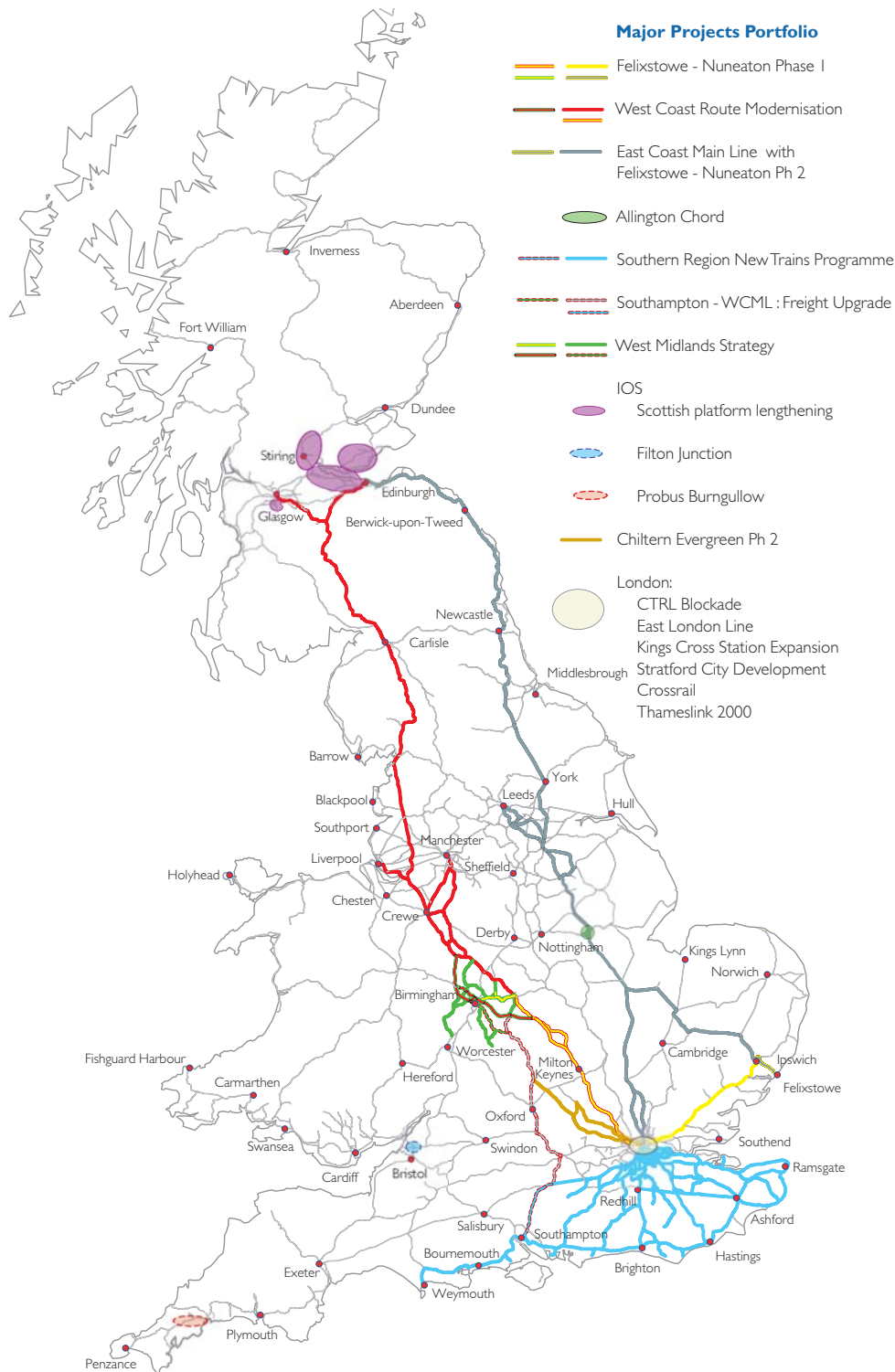
- SRA sponsored schemes – for these schemes we will be generally reimbursed for actual expenditure in cash on a period basis, although there are also incentives to deliver these projects efficiently and economically;
- Special Purpose Vehicles – the exact process by which Network Rail will be reimbursed for costs associated with these projects will be discussed with the ORR;
- non-SRA sponsored schemes – Network Rail expects that it will generally be remunerated for these on a “pay as you go” basis. The expenditure shown against this category refers, in some cases, just to the interface cost (where the third party is paying directly), and in others to the actual scheme cost (where we are paying for the work and then being subsequently reimbursed); and
- schemes funded by Network Rail or by Network Rail in a joint venture with a third party – mainly station retail schemes and property where there is a sound business case to support these self-funded schemes.

The table below sets out the projections for committed and planned enhancement activities.

<b>Figure 3.1 Total committed and planned enhancement expenditure</b>					
<b>£ m 2003/04 prices</b>	<b>2004/05</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>
Funded by interim review:					
Safety schemes	178	159	133	123	115
WCRM	252	181	116	51	8
Transition projects	636	88	20	-	-
SRA funded	88	22	0	-	-
SPV schemes	-	0	76	5	4
Non SRA funded	96	49	29	-	-
Network Rail (or joint venture funded)	59	53	54	52	62
<b>Total</b>	<b>1,308</b>	<b>551</b>	<b>429</b>	<b>231</b>	<b>188</b>

We have included further analysis in the following sections of the individual schemes that are included in these enhancement categories. This includes identification of schemes where we are committed to implementation of the project and those where we are only funded to plan the project. For the major projects, we have included a summary of the project in this chapter as many of these projects cross more than one route. We have shown the location of the major projects below.

**Figure 3.2 Map showing location of major projects**



In addition, we have identified at the end of this section a number of key potential schemes that are currently unplanned. This includes the scheme to provide a new concourse at Kings Cross and work to increase capacity at certain major stations which we believe will be required to accommodate forecast passenger growth.

# Our major projects portfolio

## Interim review funded schemes

These are schemes for which the Regulator allowed funding in the interim review final conclusions, either to implement schemes through to completion (shown as "committed" in the table below), or to carry out development to an agreed level but with no commitment or funding to progress beyond that point (shown as "planned" below).

**Figure 3.3 Enhancements funded by interim review**

£m 2003/04 prices	Route(s) <sup>2</sup>	Estimated cost <sup>1,3</sup>	Expected year of completion
<b>Committed</b>			
S&E Plan and other specific safety driven schemes	NW	617	2008/09 and beyond
WCRM	17,18,20,24,26	608	2008/09 and beyond
Southern Region New Trains programme	1,2,3,13	594	2005/06
CTRL Blockade Works	2,19	118	2005/06
Paddington Long Term Vehicular Access	13	9	2006/07
Sunderland Tyne and Wear Metro Extension	10	6	2005/06
Other		21	2008/09 and beyond
<b>Planned</b>			
ERTMS	NW	214	2008/09 and beyond
Thameslink 2000 development	1,2,19	32	2004/05
<b>Total</b>		<b>2,220</b>	

<sup>1</sup> This is the estimated future cost for the enhancement element of the scheme.

<sup>2</sup> NW = network wide

<sup>3</sup> Only schemes with a value of £5 million or over are shown

## Committed

### Safety and Environment Plan and other safety-driven schemes

There are three significant projects within the programmes of safety schemes that are described below.

#### *Pollution prevention*

This national programme of works relates to securing compliance with recent environmental legislation concerning oil disposal primarily at light maintenance depots (LMDs). We have prepared and issued remedial work schedules for each LMD depot.

In the last year we have:

- achieved compliance with "sensitive sites" regulations at five locations in Great Western, Southern, East Anglia, London North Eastern and Midlands regions;
- prepared and issued a national tank and pipeline testing contract; and
- commenced design and build works with Midland region on Derby Etches Park and Birmingham Tyseley depots.

We plan to continue this work with the following programme:

- emergency works where contamination is occurring;
- works to improve existing asset condition and to address risks highlighted in the surveys. This will partially address the concerns of the depot facility operators (DFOs);
- work to address the obligatory Oil Storage Regulations requirements on the 38 English depots, will be implemented ahead of the September 2005 deadline;
- remaining work to oil storage related assets at English depots, and all oil storage work at Scottish and Welsh depots will follow on during late 2005 and up to 2008 as agreement with the TOCs/DFOs is reached, subject to the introduction of regulations in those countries. This would bring all oil storage assets up to the required standards;
- prioritised works to drainage systems to mitigate contravention of the Ground Water Regulations and to meet the required standards, commencing in 2006 through to the end of 2008 and as agreement with the TOCs/DFOs is reached; and
- advance implementation work to Birmingham Tyseley depot will be completed.

#### *Contaminated Land*

This programme is also driven by the need to comply with environmental legislation relating to containment of contaminated land. Highlights in the last year include:

- investigations of Ayr, Edinburgh Haymarket and Largs stations, and of depots at Nottingham Eastcroft, Shipley EWS, Bow Midland East, Edinburgh Haymarket, Reading, Swansea, Bristol St. Phillips Marsh, Littlehampton and Cardiff Canton have been concluded. Scopes of work are now being prepared for these sites;
- temporary effluent treatment plants are in operation at Ipswich Station, Manchester Longsight depot and Manchester Newton Heath depot;
- we have designed permanent effluent treatment plants for Manchester Longsight and Manchester Newton Heath, which will save on operational costs for temporary plants. Installation is due to be completed by July 2004;
- we are continuing with the implementation of works to clean up at Plymouth Laira depot. We have concluded phase 2 of our work successfully and are now commencing phase 3 design;
- substantial completion of fencing to a 25 hectare former asbestos tip at Gartsherrie has been achieved; and
- remedial designs have been produced and we have started the implementation for cleaning up land at Cambridge RES depot and Bletchley depot.

We shall continue this progress by completing the following schemes:

- effluent treatment plants at Manchester Newton Heath and Manchester Longsight;
- containment/catchment system at Cambridge RES; and
- ballast removal at Bletchley.

We shall start the following schemes:

- effluent treatment plant at Ipswich;
- containment/catchment system at Bletchley;

- pump and treat works at Edinburgh Haymarket, Ayr, Plymouth Laira Phase 3, Newcastle Heaton, Leeds Holbeck, Nottingham Eastcroft and Swansea Landore; and
- feasibility (final trials), at Bow Midland, Cardiff Canton, Lincoln, Shrewsbury, Pantyffynnon and Coatbridge Gartsherrie.

#### *National Telecoms Programme*

This programme will substantially replace the existing operational communications network infrastructure with a new fixed telecoms network (FTN) and a Global System Mobile – Radio system (GSM-R). The programme is currently undergoing a major change to the roll out schedule and a significant change to the organisation structure. The two independent projects will combine organisation into one central team, with three delivery teams located in designated areas and responsible for radio and transmission installations.

The project will complete a section of route in Scotland that is part of the Single Manning Agreement (which allows driver-only operation) by December 2004 to allow a pilot trial to be undertaken for the GSM-R system during 2005.

The project has completed in excess of 85% of all radio site surveys, and has obtained Permitted Development Rights for 732 (36%) sites that will allow construction to commence, of which five have been completed on a national basis that were part of the Dorset Coast resignalling. The building for the master switching centre for the radio equipment has commenced and is slightly ahead of schedule with a completion date of April 2004. Of the 16,000km of transmission route to be completed 4,305km has been surveyed, 588km of copper and 705km of fibre have been installed.

Advance works are being carried out on 22 synergy schemes where there are obvious efficiency benefits in completing works as part of planned signalling and telecoms renewals, ahead of the national agreed programme.

The projects have received a number of commendations regarding safety controls, procedures and management of contractors.

#### **Train Protection Warning System – Plus (TPWS+)**

Network Rail and train operators were mandated to fit TPWS by 31 December 2003 by the Railway Safety Regulations 1999. Network Rail was responsible for fitment of TPWS to the track and train operators were responsible for the fitment of equipment to their trains. Network Rail also fitted TPWS equipment to engineering trains that it owns. This obligation was met to time and budget.

By early 2003 we had a good understanding of the technical issues, costs and safety benefits arising from TPWS. It became apparent that there was a very low safety benefit to be gained from fitting TPWS in some of the remaining situations. This was particularly the case for fitting TPWS to speed restrictions at diverging junctions where the approaching speed of trains is controlled by the signalling system. We had extensive discussions with HMRI about these fitments, and applied to HMRI for an exemption from the Railway Safety Regulations for fitting TPWS in these circumstances. We proposed that, if the exemption was granted, resources would be freed to deliver work with a greater safety benefit. This work could include implementation of TPWS+, which is designed to protect trains that are travelling at faster than 75mph. This is achieved by fitting an additional overspeed loop at an existing TPWS installation. HMRI undertook a consultation exercise with industry parties that established a consensus for granting the exemption application, and to bring forward the implementation of TPWS+.

Five TPWS+ prototype installations had been installed in late 2001 on the East Coast Main Line (ECML), and a further 20 pilot sites went into operation in May 2003. These sites allowed the TPWS+ design to be finalised to give protection at speeds up to 100mph. During late 2003, 3,000 candidate signals were identified at junctions with approach speeds greater than 75mph. Of these, 1,700 were shown to benefit from TPWS+ protection, and these were assessed using the signal assessment tool to calculate a risk ranking score for each signal. The costs and benefits of fitting TPWS+ were considered to identify the quantity of signals that could be justified for TPWS+ fitment using the ALARP methodology that is required by the Network Rail safety case. This set the number of the signals to be fitted, and the highest scoring signals in the risk ranking were listed. An additional 30% of signals were added to the lists, and the individual signals were considered at workshops held in the regions that were attended by train operators representatives and Network Rail operations staff. The workshops adjusted the list of signals to take account of risk factors that could not be calculated by the signal assessment tool. A final list of 424 signals has now been agreed nationally, and this list and the methodology to establish it, is being ratified with HMRI. We will tender the design work for the fitments shortly, and expect fitments to be commissioned by mid-2005.

### West Coast Route Modernisation

On assuming responsibility for the sponsorship of network enhancement projects following Railtrack's entry into Railway Administration in October 2001, the SRA subsequently endorsed the conclusion that it was not possible to satisfy all of the commitments which had been given under the Passenger Upgrade 2 (PUG2) agreement on any realistically affordable infrastructure. Consequently, it immediately put together a joint industry working-group to agree revised output objectives for the route.

This approach led to the publication of the SRA strategy for the WCML in June 2003. It followed 18 months of industry consultation and reflected a broad consensus on a mix of outputs which are realistically deliverable. The strategy was again consulted on by the Regulator as part of the interim review. The Regulator's final conclusion was that the outputs specified in the SRA's strategy should be taken as constituting the reasonable requirements of customers on the route.

The Regulator has allowed £2.8 billion for completion of the programme in the next control period. He has also required us to finalise the scope of the programme on the basis of value for money criteria taking into account other network priorities and within the overall funding provided for WCRM.

Full details of our current proposals can be found in Route 18.

### Southern Region New Trains Programme (SRNTP)

Under the Railway Safety Regulations 1999, all Mark 1 slam-door vehicles (of which there are around 1,750) are required to be withdrawn from service by the end of December 2004. More than 2,000 new vehicles have been ordered to replace the Mark 1 fleet and to provide capacity for future growth. Around a third of the present operational fleet running in Southern region will be replaced over the next two years – an unprecedented scale of fleet replacement. At the time of writing around 540 new vehicles are in revenue service and 260 Mark 1 vehicles have been removed.

The new trains have a higher electrical draw than the Mark 1 stock, as they are heavier and have more on-board systems, such as CCTV, sliding doors, air conditioning and computer equipment. This creates the need for significant enhancements to the power supply to meet these higher electrical demands.

Scoping and system design of the power supply has now been completed. The works will include approximately 100 new and upgraded substations, track paralleling (TP) huts and switching stations. There will be around 375-route km of new or upgraded high voltage cables laid and increased capacity provided at 24 grid points. Upgrading of electrical track equipment and impedance bonds will also be undertaken.

A number of works have already been completed which include:

- high voltage cables installed in the inner London area (17 km);
- new conductor rail installed between Alton and Farnham (17 km);
- upgrades to the uninterrupted power supply at six substations between Tonbridge and Hastings;
- installation of new substations at Farnham, Littlehampton, Hove and Brighton; and
- long lead equipment has been ordered for 75% of the substations for delivery to site from March 2004 onwards.

Comprehensive delivery plans are being developed, with the sites most critical for new train introduction scheduled for completion between April and July 2004 and the remainder following between September and December. Works to provide resilience to the enhanced power supply network will continue until Spring 2005.

Significant elements of the work can be carried out without possessions or in train-free periods. However, some disruptive possessions will be required at relatively short notice. We are working closely with the SRA and the affected train operating companies and passenger groups to minimise the disruption to passenger services.

It will also be necessary to lengthen station platforms at locations where selective door operation is not considered to be an acceptable long-term solution. Following a period of consultation with the SRA, HSE and TOCs the scope of this workstream is nearing agreement. Work is required at a total of 30 stations although in many cases this does not need to be completed before new trains are introduced.

Our primary focus is on delivery of 24 priority sites in the Kent and Wessex areas by December 2004. We continue to work closely with the SRA to produce a sustainable programme for the remainder of the platforms.

In addition, there is a comprehensive development programme to upgrade depot and stabling facilities, including the provision of new controlled emission toilet equipment, new or upgraded carriage washing machines, improved security arrangements and modifications to buffer stops.

### **CTRL blockade works**

Following the successful September 2003 opening of the CTRL Phase 1, including infrastructure work on the traditional network at Shortlands, Fawkham Junction and Ashford, work is now underway on phase 2 of the project. Our main involvement is where CTRL interfaces with the rest of the network.

The cross-London tunnel section of the Thameslink route is planned for closure from September 2004 to March 2005 to permit the construction of a new Thameslink station "box" at St Pancras. The new station is part of the Thameslink 2000 project and is proposed to be built by Union Railways.

A series of infrastructure modifications are necessary to allow the temporary closure of the Thameslink route. These are already being implemented and include a new train maintenance depot at Bedford and track and signalling improvements at Belsize and Clerkenwell tunnels.

These measures will allow the overall number of passenger seats on Midland Mainline and Thameslink to be maintained during the peak periods. Southbound trains will terminate at St Pancras and Thameslink Brighton/Sutton northbound trains at Kings Cross Thameslink.

## Planned Schemes

### ERTMS

The European Union's Technical Specifications Interoperability (TSIs) for ERTMS (European Rail Traffic Management System) and ETCS (European Train Control System) define the requirements for train-signalling control for the Trans-European Network (TEN). This series of specifications defines the functionality and interfaces between infrastructure and rolling stock sub-systems.

The rail industry, including Network Rail, expects ERTMS to be the technology of choice for re-signalling schemes by the end of this decade. Although initial applications have been demonstrated in Switzerland and Germany, a successful application of ERTMS to our network has yet to be proven.

We shall continue to work with the National ERTMS Programme Team (NEP) which is under the strategic direction of the SRA. The industry has agreed to focus on developing the application, within the next five years, through an early deployment on the Cambrian Lines in mid-Wales. A linked series of testing and validation projects will provide further support to de-risk the future national ERTMS implementation.

ORR supports our proposals for a series of programme development activities and projects to take forward the UK ERTMS application.

In future years Network Rail and the NEP team will also consider the requirement for a further phase of application testing and deployment to refine the business case for national implementation.

### Automatic Track Warning System (ATWS)

The Automatic Track Warning System (ATWS) issues a warning to track workers of approaching trains. ATWS is used in so called "red zones" where track workers carry out inspection or maintenance work when trains are running, and is used within strict operating procedures to ensure that track workers can work safely. Red Zone working avoids closing lines and disrupting train services.

Portable ATWS, that is provided for a shift or a few days at a particular location, is used by our contractors to a limited extent. Network Rail has also installed Semi-Permanent ATWS at Leighton Buzzard on the West Coast Main Line and at Hatfield on the East Coast Main Line to facilitate easier access for track workers. At these installations the equipment has been installed and will be left in place for long term use. It may also be possible to develop ATWS in fixed form that is integrated into the signalling systems.

We are assessing the benefits and costs of ATWS. The results of the assessment will determine the extent to which we will invest in Portable ATWS, establish if further sites should be provided with Semi-Permanent ATWS, and determine if Fixed ATWS should be developed.

### Thameslink 2000 further development

Thameslink 2000 is identified as a priority project in the SRA's Strategic Plan. However, we have currently only been funded through the interim review settlement for development work during 2004/05.

It should be noted that the CTRL Blockade Works (the signalling, track and station alterations to allow a revised Thameslink train service to operate during the September 2004 to March 2005 CTRL Blockade) are continuing and are unaffected by the situation regarding non-receipt of TWA powers. Work since January 2003 has been focused on the following key areas:

- seeking resolution of the 'deficiencies' associated with the replacement buildings at Blackfriars and Borough High Street that were identified by the Office of the Deputy Prime Minister;

- evaluation of the feasibility of incorporating the masterplan proposals into a schedule of work for London Bridge Station;
- validation of a 3-aspect signalling design through the inner core area; and
- development of a new, robust cost plan for Thameslink 2000.

This work will enable a submission of supplementary TWA documentation to be made in June 2004 with a target date for commencement of implementation of 2007.

## SRA funded schemes

These are schemes where the SRA is funding us to carry out works for them – either to implementation and completion in the case of schemes marked as “committed” below or, in the case of schemes marked as “planned” below, to an agreed level of development (which may be as simple as carrying out what-if train-planning modelling).

For several schemes the “committed” or “planned” status may only be representative of some portion of the total, with the remainder having some lesser level of commitment. In many cases at least some portion of such a scheme will be being held in abeyance at its current level of development, possibly awaiting funding commitment, the right timing – usually relating to the timing of signalling renewals being due – or the right strategic fit.

**Figure 3.4 Enhancements funded by SRA**

£m prices	Route(s) <sup>2</sup>	Estimated cost <sup>1,3</sup>	Expected year of completion
<b>Committed</b>			
Felixstowe – Nuneaton capacity and gauge enhancements phase 1	6,7,18	18	2004/05
Allington Chord	8,11,19	12	2006/07
MFAS	NW	14	2004/05
Incremental Output Statement track and signalling programme (IOS) (first 5 schemes)	13, 24,26	34	2005/06
Southampton – West Coast Main Line: Freight Upgrade (Cherwell Valley)	17	7	2004/05
RPP Scheme – Probus Burngullow	12	9	2004/05
Other		5	2004/05
<b>Planned</b>			
East Coast Main Line improvement project	8,10,11	9	2004/05
Felixstowe – Nuneaton capacity and gauge enhancements phase 2	5,7,8,19		
CTRL Domestic Services (CTRL DS)	1		
Felixstowe – Nuneaton capacity and gauge enhancements phase 2	5,6,7,8,18		
Incremental Output Statement track and signalling programme (IOS) (subsequent 9 schemes)	NW		
Southampton – West Coast Main Line: freight upgrade (gauge)	3,13,17		
<b>Total</b>		<b>108</b>	

<sup>1</sup> This is the estimated future cost for the enhancement element of the scheme.

<sup>2</sup> NW = network wide

<sup>3</sup> Only schemes with a value of £5 million or over are shown

### Committed

#### Felixstowe to Nuneaton capacity and gauge enhancements

Implementation of the initial phase of the SRA funded Felixstowe to Nuneaton project will be completed by November 2004. This will enable 9'6" high containers to be carried on standard freight wagons to and from the ports of Felixstowe and Tilbury to the West Coast Main Line in London and onwards to the Midlands, North West and Scotland. This phase will also specifically gauge clear lines to

the potential future port developments at Bathside Bay, Harwich and Shellhaven as well as the route from Nuneaton to the inland container terminals at Hams Hall and Lawley Street in the Birmingham conurbation.

However, the issues surrounding route capacity remain. Demand for freight paths from Felixstowe continues to grow and consequently the need to address the conflicts between container traffic and passenger schemes in the London area such as Crossrail and the North London Line metro remain.

Whilst the SRA are still not in a position to fund works on the whole cross-country phase of the Felixstowe – Nuneaton scheme it should be noted that the SRA has provided funding for gauge clearance development studies between Ipswich and Peterborough as part of a scheme to provide a 9'6" high container route to Yorkshire via the East Coast Main Line.

### **Allington Chord**

Allington Chord is the key "early" scheme in the ECML improvement project. It enables Skegness services to be separated from the ECML by way of a new 30 mph double line chord provided at Allington Junction to allow trains to and from Skegness to access Grantham without having to traverse the ECML. In addition the existing connecting line at Barkston will be removed, Barkston East signalbox abolished and an underbridge renewed providing operational, safety and maintenance savings.

Completion is planned for the December timetable change in 2005. Funding for this enabling scheme is provided for the enhancement element by the SRA and renewal by Network Rail.

### **Modern facilities at stations**

This project entails implementation of modern facilities at stations (MFAS), including CCTV, toilets, CIS, public address systems, waiting rooms and shelters. Funded works will address the first 68 stations, across three regions (NW, Midlands, East Anglia), as selected by the SRA.

The programme is being delivered for a fixed price and centrally controlled with regional delivery. One national principal contractor has been appointed with a number of other supply contracts, including manufacture of modular designed units.

Design work, pilots and prototypes have been completed. The implementation works have recently commenced for the 68 stations with 16 station site starts in January 2004 in North West region. Works will commence shortly in the other regions.

### **Incremental Output Statement track & signalling programme**

This programme involves the development and implementation of small to medium scale infrastructure schemes, funded directly by the SRA, to deliver improvements to capacity, operational flexibility, journey times and safety. Design development work is primarily managed centrally, with physical works managed by regional project teams.

Five schemes are currently in their implementation phase, for completion during 2004:

*Filton Junction* - providing a second track through the junction plus additional platform and loop work to create additional train paths, improve reliability of the network in this area whilst also mitigating one of the top five SPAD Category 1 risk sites in the UK. It is mentioned further in Route 13.

*Edinburgh to Bathgate route, Fife Circle route, East Kilbride to Glasgow Central route and Edinburgh to Dunblane route* - platform extensions at 25 locations to accommodate longer trains, currently on order by ScotRail. These are mentioned further in Routes 24 and 26.

In addition to the five schemes currently in their implementation phase, nine more schemes are sufficiently developed that, if funding were made available, they could be developed to the single option stage with a view to implementation in 2005-2006.

#### **Southampton-West Coast Main Line: freight upgrade**

Southampton – West Coast Main Line is a two stage programme of projects aimed at, firstly, increasing the gauge on this corridor to allow larger 9'6" containers to be carried, and secondly, to allow more and longer freight trains to run. This is targeted at protecting and then building rail's market share of deep-sea container traffic. The initiative will support the proposed development of Dibden Bay by Associated British Ports.

The programme includes capacity improvement works on the Cherwell Valley, between Leamington Spa and Banbury, which is scheduled for completion in May 2004. This will provide double the available signalling capacity and is timed to be complete to enable additional services to be operated on this route during the West Coast Main Line blockades in 2004.

Completion of the development work for the gauge enhancement work is scheduled for May 2004. Implementation planning is progressing, based on a target completion date of October 2007. This is subject to a funding agreement.

#### **Rail Passenger Partnership (RPP) Scheme**

The Probus - Burngullow scheme entails the redoubling of seven miles of railway on the Cornish main line to Penzance, and is mentioned further in Route 12.

### **Planned**

#### **East Coast Main Line improvement project**

The SRA has produced its Consultation Draft Route Strategy for the ECML for the utilisation and development of the route from Kings Cross to Leeds and Edinburgh for the period 2005 to 2013.

The strategy seeks to reconcile the present and future demands of long distance, cross-country, suburban and freight services using capacity utilisation principles. The priority is to address the current, significant, problems of operational performance, and secondly to provide for growing demand in order to improve the value of the route.

For an investment of around £300 million in infrastructure enhancements over the next 10 years it has been identified as possible to implement the performance improvement schemes giving best value, provide sufficient capacity to serve growing long distance and commuter traffic and provide efficient engineering access. These investments are subject to an affordability review.

In order to take forward these infrastructure enhancements Network Rail and the SRA have formed an integrated project team, the East Coast Main Line Improvement Project (ECMLIP), that have been developing these specific projects under the Enhancement Facilitation Agreement.

The project is developing a staged programme of targeted incremental investments which will, subject to funding being available, improve performance and provide the capacity to deal with growth over the next ten years.

### Channel Tunnel Rail Link Domestic Services (CTRL DS)

This is a scheme to run domestic services from St Pancras over the CTRL and then on to a number of destinations in Kent. The scheme is discussed in more depth in Route 1.

## Schemes being developed with the SRA as SPV

These are schemes where the SRA has determined that the best route for implementation is to use a Special Purpose Vehicle (SPV). This SPV will then carry out appropriate portions of the scheme – for example design, build, fund and transfer (DBFT) whereby the design and construction will be undertaken and financed by an enhancement contractor, and then the completed assets would be transferred to Network Rail on payment of a transfer payment. Network Rail would be remunerated through increased access charges for the capital costs and the increased operation, maintenance and renewal (OMR) costs. The SRA funds the development of the scheme to a point where invitations to tender for the SPV can be issued and acceptance criteria for the completed scheme agreed. We have a role throughout the project, especially in terms of possessions, asset protection and finally bringing into use.

**Figure 3.5 Enhancements Funded by SRA**

£m 2003/04 prices	Route(s)	Estimated cost <sup>1,3</sup>	Expected year of completion
<b>Planned</b>			
East London Line	2,6	6	2008/09 and beyond
Other		4	
<b>Total</b>		<b>85</b>	

<sup>1</sup> This is the estimated future cost for the enhancement element of the scheme.

<sup>2</sup> NW = network wide

<sup>3</sup> Only schemes with a value of £5 million or over are shown

### Planned

#### East London Line

We continue to support the development of the SRA sponsored East London Line Project. Project development continues and the SRA and Network Rail are working together to identify the impact of the project on our stewardship of the network as well as developing the core project proposition. Key activities presently being addressed include timetable feasibility for the SRA's train service aspiration of 4 trains per hour to Crystal Palace, Clapham Junction, New Cross, and West Croydon to the south giving a total of 16 trains per hour through the core section from Surrey Quays to Dalston, with 8 trains per hour continuing over an upgraded NLL infrastructure to Highbury and Islington. We, TfL and the SRA jointly intend to issue an Official Journal of European Union (OJEU) notice this year with construction commencing in 2006/07. The project is proposed to be procured as an SPV. Upon completion the works will be transferred to Network Rail, which will become the network operator for the transferred infrastructure. Completion is anticipated in 2010 when transfer of the asset to Network Rail will take place.

## Non-SRA funded schemes

These are schemes where third parties fund our involvement in an enhancement scheme. That party can be funding us to carry out the works, but often the majority of the work is away from the operational railway, so that they carry out the bulk of the work themselves and fund us for our asset protection duties. Consequently, our involvement in a large scheme can be quite small. Alternatively the third party can fund an SPV in a similar manner to the SRA, which is the case with Laing Rail and Chiltern Evergreen. The table below reflects this distinction in that it reflects our enhancement spend only. For most schemes where our involvement is asset protection, which counts as operational spend, we will have negligible enhancement spend, and the scheme would not appear in the table. We still discuss later, the more significant of these.

**Figure 3.6 Non-SRA funded enhancements**

£m 2003/04 prices	Route(s)	Estimated cost <sup>1,3</sup>	Expected year of completion
<b>Committed</b>			
Chiltern Evergreen	16	75	2006/07
Liverpool South Parkway - Allerton Interchange	20,21	17	2005/06
Larkhall - Milngavie	26	30	2005/06
MPTE Station refurbishments	20,21	17	2005/06
Vale of Glamorgan	13	16	2005/06
Other		38	
<b>Planned</b>			
Frankley Extension of Cross City Line	17	22	2006/07
Holborough Cement Works	1	7	2006/07
Other		30	
<b>Total</b>		<b>172</b>	

<sup>1</sup> This is the estimated future cost for the enhancement element of the scheme.

<sup>2</sup> NW = network wide

<sup>3</sup> Only schemes with a value of £5 million or over are shown

### Committed

#### Chiltern Evergreen 2

The Evergreen 2 project, a core part of the 20 year franchise of M40 Trains, is currently being developed by Laing Rail (acting on behalf of the funders M40 Trains). A DBFT model has been proposed by Laing Rail, and being discussed with the SRA and Network Rail.

The project addresses infrastructure bottlenecks between Bicester North and London Marylebone with the objective of improving capacity and providing more robust train performance. The scheme's main components are:

- additional signals between Bicester and High Wycombe (27 miles), between Princes Risborough and Aylesbury, and around Neasden Junction;
- two additional platforms at Marylebone; and
- removal of a speed restriction at Beaconsfield by alteration of the alignment of the permanent way.

The enhanced timetable outputs required are set out in the franchise agreement as a number of stops at key stations on the Chiltern line in certain time bands (morning and evening peak, off-peak and Saturdays between 0700 and 2100, and Sundays between 1200 and 2100). A sample timetable was developed for the franchise agreement, and this timetable has been used for the operational modelling of the project. The total increase in train service proposed under the project is approximately 15%, compared to the current Summer 2003 timetable.

#### **LUL and CTRL interface works – Kings Cross station**

Network Rail asset protection work continues at Kings Cross station to manage the impact of the extensive redevelopment of the underground station and adjacent construction of the St Pancras Channel Tunnel Rail Link terminus. This is ensuring the effect from these major construction projects causes the minimum disruption and inconvenience to our passengers and stakeholders. Work on both projects is currently planned to continue until 2007. The London Underground works involving the construction of the new northern ticket hall are currently under review by the DfT.

### **Planned**

#### **Stratford City development**

A proposed 13 million square feet development called "Stratford City" on the former Stratford Rail Lands site, directly to the north of the existing regional station and the town centre, is being promoted by Chelsfield plc, Stanhope plc, and London & Continental Railways plc. An outline planning application for Stratford City has been submitted to London Borough of Newham and includes proposals for a new northern passenger concourse and ticket office at the regional station and also links to the new Stratford International station and Stratford City development.

We are working with the SRA to review proposals for Stratford regional station. This embraces plans for two new platforms for Docklands Light Railway (DLR), enhancements to the Jubilee Line services, Crossrail links and the proposals for the Olympic bid and Lower Lea Valley regeneration.

London has submitted a bid to host the 2012 Olympic games utilising facilities centred on the lower Lea Valley in East London. The bid envisages the construction of major sporting facilities close to Stratford domestic station as part of a major drive to secure redevelopment of the area.

Following the submission of the initial questionnaire, the International Olympic Committee will now consider which cities it wishes to consider further and a shortlist will be produced in May 2004 whereupon full applications are required by November 2004. Transport is a critical element of the bid and the SRA are co-ordinating rail industry input into the bid and assessing requirements.

Major elements of the transport proposals include enhancement to services on the North London Line, operation of longer distance services into the Olympic zone and achieving greater utilisation of station facilities in and around the Stratford area. If London is successful in its bid, major passenger flows will focus on the Stratford area and it is essential that enhanced services are able to operate within strict performance criteria.

The SRA will shortly be contracting with Network Rail to review service proposals currently being developed and assess system reliability issues.

### Crossrail

Proposals for the construction of an east - west London rail link and the introduction of associated rail services are currently under development by Cross London Rail Link (CLRL Ltd), a joint SRA/Transport for London company. The Crossrail 1 scheme is designed to reduce overcrowding on the London Underground Central Line in addition to creating new journey opportunities and offering faster journey times. Proposals put forward by the promoters are currently being externally assessed.

CLRL is expecting the current review to be completed and a recommendation made to Government during early 2004. Subject to approval being given, further public consultation will take place prior to a hybrid bill being laid before Parliament in November 2004. The published projected timescales assume that construction will commence in 2007 with completion scheduled between 2013 and 2014.

As currently stated, Crossrail 1 proposals envisage services operating from Kingston and Heathrow in the west to Shenfield and Ebbsfleet in the east. To facilitate this, a central London tunnel will be constructed allowing the operation of up to 24 trains per hour in each direction between Paddington and Whitechapel.

Crossrail 1 proposals will significantly interface with our network both during construction and eventual operation. The actual degree of interface will be dependent on the final service proposals put forward by the scheme promoters. The current most notable points of interface during construction will be Pudding Mill Lane (west of Stratford), Custom House on the North London Line, Farringdon Station and the Paddington Station area.

Operationally, Crossrail 1 proposals will have a major impact on a number of our routes including the north Kent line, Great Eastern lines into Liverpool Street and the London end of the Great Western Main Line.

Ongoing discussions with CLRL are taking place to identify and manage both construction and future operational interface issues in the event that the scheme progresses further.

### Eurostar ECS evaluation

Section 2 of the Channel Tunnel Rail Link (CTRL) is programmed to open in 2007 whereupon Eurostar services will start to operate out of St Pancras.

In Britain, the Eurostar fleet is currently maintained at North Pole depot and empty coaching stock transfers take place along the West London Line into Waterloo station. London & Continental Railways (LCR) has yet to finalise the future maintenance and servicing strategy of the Intercapital Eurostar fleet. One option under investigation is to keep maintenance at North Pole depot and transfer some or all of the units between North Pole and St Pancras over the North London Line via Willesden Junction High Level and Kentish Town West.

LCR is developing plans with the DfT to build a new maintenance depot at Temple Mills on the CTRL route, which could reduce the maintenance work at North Pole and the demand for the North London Line paths from St Pancras. We are supporting the option study by carrying out an operational planning study to assess the capacity of the existing network to accept the Eurostar empty carriage stock workings.

## Network Rail (or joint venture) funded schemes

These are schemes, not funded by the interim review, but Network Rail is either funding itself or is funding through a joint venture with a third party, on the basis that there is a sound business case for the potential income generated to support these investments. Almost all these are schemes are property related investments, such as developing retail outlets at managed stations.

## Uncommitted schemes

These are a number of potential schemes for which no enhancement work is currently funded, but where work may be required to address specific issues including:

- planned signalling renewal schemes where we have identified an opportunity for cost effective enhancements to be added, but where development of these enhancements has not yet been pursued – for example, the West Midlands Strategy;
- schemes that have previously been developed to some level, but have since been put on hold awaiting funding, the appropriate timing or strategic fit – for example further stages of Southampton – WCML freight and further IOS schemes; and
- schemes where we have identified an issue, the solution for which may be an enhancement scheme, but where a firm way forward has not been agreed with the other parties involved, for example Kings Cross Station expansion below.

While we have not sought in this section to list all potential enhancements that could be considered, we have identified the major potential enhancements below. No funding has been provided for these projects and therefore no expenditure has been included in this plan.

## Capacity issues at managed stations

Many managed stations are reaching a point of utilisation by passengers in the peak where intervention is required to prevent passenger crowding exceeding levels agreed with the HMRI. The intervention would usually take the form of closing off platforms and / or the concourse in a manner similar to that exercised by LUL to avoid overcrowding at London Underground stations. The situation is more acute at some stations than at others. For example, Birmingham New Street station is particularly at risk of this situation developing, as mentioned in Route 17, and as mentioned in Route 3 we are discussing with SWT short term solutions for London Waterloo. The long term solution for all of the stations is likely to involve a substantial enhancement scheme, for which there is currently no funding.

## West Midlands strategy

The West Midlands Route Plan (Route 17) describes the area's significant capacity, performance and asset condition challenges, with a heavy mixed traffic usage on predominantly two track routes. There has been little change in terms of signalling equipment or capacity improvement for many years, reflected in the high capacity utilisation index on much of the route. However, passenger growth is strong, partly as a result of service upgrades (e.g. Cross Country or West Coast Route Modernisation) and partly from the continued expansion of central Birmingham employment. Since 2000 we have worked closely with SRA to identify the enhancement options to accommodate passenger and freight growth and undertake feasibility on individual schemes.

Signalling asset condition is critical to the strategy for the West Midlands hub, with plans to renew, over the next ten years, the signalling of approximately 75% of the route's length. Signalling renewals to maintain current network capability and functionality remain our primary objective. However, in many cases there is an opportunity to incorporate signalling or track layout modifications, with three advantages compared with separate renewal and enhancement projects:

- reduced call on scarce technical resources;
- reduced train service disruption during implementation; and
- potential cost saving for the enhancement element.

In the context of industry funding constraints the focus in our recent development work with SRA has been on the enhancement and modification options for the early signalling renewals projects: Coventry PSB, Salfrey PSB and Stourbridge – Hartlebury. These include relatively minor track layout alterations and reductions in signalling headways. Recent work with the SRA has included development of a process to enable scope integration of modifications with the base Network Rail renewal at GRIP stage 2 to facilitate delivery of modifications, together with an early scope freeze to minimise risk of delay to the critical renewal.

### Kings Cross station expansion

Network Rail and the DfT are continuing the development work on the proposals to expand passenger capacity at Kings Cross Station by replacing the existing temporary southern concourse to the front of the station. This is being done in close collaboration with London & Continental Stations and Properties (LCS&P), the company responsible for developing the railway lands identified as surplus by the DfT.

Funding for a new concourse at Kings Cross station has not currently been agreed and we are exploring funding options with the SRA, ORR and the DfT.

We remain committed to reaching a long-term solution to replace the existing southern concourse and the replacement concourse, which would ideally be located on the west side of the station above the new LUL northern ticket hall.

The timing of any construction work on the concourse will depend on funding and the construction programmes for the CTRL and the London Underground works, which are already underway and due to complete in 2007. The new concourse is planned to be an integrated part of the masterplan for the refurbishment of Kings Cross main line station complementing the Kings Cross Central regeneration scheme, being developed by LCR and its partners, Exel and Argent St George.

### Thameslink 2000 – remaining development, design and implementation

The scheme is sponsored by the SRA and is being designed to enhance and expand the existing Thameslink network throughout London, the east and south east England, as well as creating a substantial increase in train service capacity, benefiting peak hour commuters in particular.

Whilst involving works throughout the area described, the primary focus is on removing bottlenecks and improving station capability between London Bridge, Blackfriars and a new station to be constructed as part of the St Pancras CTRL terminus.

The principal works are likely to be as follows:

- major remodelling of London Bridge, Farringdon and Blackfriars stations;
- new viaduct across Borough Market to eliminate an existing bottleneck at Metropolitan Junction;
- major signalling alterations to control the new track layouts and permit the increased level of train services; and
- outer areas - platform extensions at over 40 stations, clearance for new rolling stock and alterations to electric traction power supply network.

In addition, a new station box at St Pancras Midland Road (replacing the existing Kings Cross Thameslink station) and tunnels connecting to the ECML are being constructed by Union Railways as part of the CTRL scheme.

The Thameslink 2000 scheme is designed to connect locations such as Bedford, Peterborough, Cambridge and Kings Lynn in the north, to Ashford, Eastbourne, Brighton and Littlehampton in the south. Whilst designed primarily to improve network capability for passenger services, the opportunity has been taken to ensure, where practicable, that the new works also provide for potential future freight needs.

#### **TWA powers/ development strategy**

Non-receipt of Transport and Works Act (TWA) powers by the planned date (1 January 2003) and a letter from the ODPM requesting the resolution of a number of 'deficiencies' with the original proposals has resulted in a revised strategy being produced jointly by the SRA and Network Rail.

A short term funding strategy is now in place for the continuation of design development through to 2005 as described earlier. However, the long term funding strategy to cover the completion of design development and the implementation stage is still being developed with the SRA taking the lead.

#### **Southampton – West Coast (capacity)**

As well as the Cherwell Valley works mentioned above other schemes to enhance capacity are likely to be identified and developed. One such is being developed for the Reading station area. Potentially, it includes a flyover at the western end of the station to allow more north-south traffic to cross the Great Western Main Line without conflict. The proposal would also include the redesign of the station itself and provision of additional platforms. Implementation would be scheduled for a time when it could be integrated with a committed signalling renewal scheme.

#### **IOS (subsequent schemes)**

The five schemes referred to above are being implemented. Work has been suspended on all other schemes short-listed from the original programme, including the nine mentioned earlier to be at a more advanced stage of development. Work may resume on these schemes should funding become available.

