

“More trains would take the pressure off at busy times. They nearly all seem to be crowded.”

The railways have never been more popular. The result is that we need more capacity. More trains. Longer trains. We spent £1.7bn in the year on capacity enhancements and plan to invest £12bn over the five years to 2014

*Passenger comment, December 2010

Helping Britain run better

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“Projects designed to increase capacity and improve services range from the new Airdrie-Bathgate rail link in Scotland to Thameslink across London, from platform lengthening on the East Coast to the redevelopment of Reading and entirely new stations such as Newport.”



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Annual Return

Reporting on the year 2010/11

Executive Summary

Introduction

This Annual Return reports on our achievements, developments and challenges during 2010/11, year two of Control Period 4 (CP4), and is the primary means by which we report progress in delivering outputs established in the Periodic Review 2008 (PR08).

The Annual Return is a public document that provides an important reference for stakeholders. This and previous editions of the Annual Return are available on the Network Rail website.

The Annual Return includes the following sections:

- operational performance and stakeholder relationships;
- network capability and network availability;
- asset management;
- activity volumes;
- safety & environment; and
- enhancement schemes.

Unlike previous years, this Annual Return will not report on expenditure and efficiency. The detail of this information is now included in the Regulated Financial Statements as well as the Annual Report and Accounts.

For most measures we have provided information for Scotland and England & Wales together with the network total where appropriate, although there are some measures which only have network-wide information and cannot be disaggregated further. This Annual Return follows the agreed form as approved by the Office of Rail Regulation (ORR) in 2010 and is prepared in accordance with Condition 12 of our network licence.

Overall performance in 2010/11

Most of our regulatory train performance targets have been missed as a result of the severe winter weather. However, we remain confident that the targets for the rest of CP4 will be met. Despite continuous improvements in safety and improvements in the passenger safety indicator, there was unfortunately one workforce fatality during the year. As regards other areas of our CP4 commitments, such as enhancement milestones, asset stewardship and network availability, most of our annual targets have been met.

During the earlier part of the year, the ORR found Network Rail in breach of two network licence conditions, as a result of the problems related to the roll out of the Integrated Train Planning System (ITPS).

The comprehensive spending review reaffirmed that governments in both Westminster and Holyrood continue to support investing in rail as the majority of projects and funding for them was confirmed.

In 2010/11 Network Rail started devolving responsibility to Route Managing Directors with the aim of being more responsive to customers and stakeholders and increasing local accountability and ownership.

Highlights for the year include:

- improvements in asset stewardship with a seven per cent reduction in the number of infrastructure incidents causing delay;
- continued high investment on our assets whilst achieving further efficiencies;
- steady progress with our enhancement programme;
- completion of our Infrastructure Capability Programme with all except one short term network change established; and
- network availability measures (PDI-P and PDI-F) are ahead of the CP4 regulatory targets.

A summary of the year's performance is shown in Table 1 and later sections of this Annual Return provide more detailed information.

Table 1: Performance against CP4 regulatory targets			
Measure	Target 2010/11	Performance in 2010/11	CP4 target
Passenger safety indicator (MAA)	0.246	0.171	0.246
Workforce fatalities and weighted injuries (MAA)	0.096	0.126	0.096
	Regulatory target 2010/11	Performance in 2010/11	CP4 target
PPM (% MAA) England & Wales long distance	89.8	87.7	92.0
PPM (% MAA) England & Wales London & South East	92.0	91.1	93.0
PPM (% MAA) England & Wales Regional	91.0	91.5	92.0
PPM (% MAA) England & Wales Total	91.5	90.9	92.6
PPM (% MAA) Scotland Total (ScotRail)	91.3	90.1	92.0
Cancellations & significant lateness (% MAA) England & Wales long distance	4.5	5.0	3.9
Cancellations & significant lateness (% MAA) London & South East	2.2	2.6	2.0
Cancellations & significant lateness (% MAA) Regional	2.5	2.4	2.3
Delay mins – passenger (000's) England & Wales	5,790	6,859	4,980
Delay mins – passenger (000's) Scotland (ScotRail)	410	541	382
Delay mins per 100 train km – freight	3.41	4.29	2.94
PDI – passenger (MAA)	0.91	0.52	0.91
PDI – freight (MAA)	1.00	0.89	1.00
Station Stewardship Measure (by category)			
A	2.48	2.30	2.48
B	2.60	2.40	2.60
C	2.65	2.47	2.65
D	2.69	2.47	2.69
E	2.74	2.50	2.74
F	2.71	2.50	2.71
Scotland (all stations)	2.39	2.33	2.39
Network Capacity – Generally good progress, see section 6 for progress with the enhancement programme			
Network Capability – No deterioration, see section 2 for details			

Note: MAA is the Moving Annual Average

Operational performance and stakeholder relationships

At the start of the year train performance targets were being met, however we have ended the year with all but the regional PPM and CaSL regulatory targets being missed, mostly due to the impact of the severe winter weather significantly beyond the norm. We acknowledge that we should have managed the autumn weather better but during the severe winter

weather we worked hard to keep the network running (sometimes to the known detriment of PPM and delay), this being recognised and appreciated by ORR and the TOCs.

Major problem areas during the year were externally caused delay (especially cable theft), autumn delay beyond plan, operational planning and delay per incident.

Table 2: Trends for train performance KPIs for the last six years

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Public Performance Measure (PPM)	86.4%	88.1%	89.9%	90.6%	91.5%	90.9%
Total delay minutes (millions)	10.46	10.53	9.50	8.84	8.18	8.95
Passenger train delay minutes per 100 train km	1.92	1.91	1.74	1.59	1.42	1.56
Freight train delay minutes per 100 train km	4.36	4.61	4.33	4.01	4.02	4.29
Cancellations and significant lateness for England & Wales	3.12	3.08	2.80	2.76	2.58	2.76
Passenger and freight traffic (million train kms)	487	488	486	498	513	516

Table 3: Network availability measures

	Actual 2009/10	Actual 2010/11	2010/11 regulatory target
PDI-P	0.63	0.52	0.91
PDI-F	0.82	0.89	1.00

Although performance on the West Coast Main Line has improved during the year, performance on the East Coast Main Line was very poor.

At the end of the year, whilst performance had returned from the winter low to historic levels, more improvement will be needed to deliver the increasingly hard targets in 2011/12 and beyond. The 2011 Joint Performance Improvement Plans (JPIPs) have been finalised. These targets align with achievement of the CP4 year three regulatory output of 92.0 per cent.

Table 2 provides a summary of the historic trends for the train performance KPIs.

The overall passenger satisfaction score from the 2010 autumn survey commissioned by Passenger Focus was 84 per cent, one per cent better than the previous year.

However, overall Customer Satisfaction, which is based on surveys of freight and train operators, has deteriorated compared to the year before despite the freight operators score increasing. We aim to address these issues at a local level during the year and expect our plans for devolution to a route level to be a key part of this improvement. We are also working with ORR and our customers to develop a customer service maturity model.

Network capability and network availability

It is Network Rail's duty to maintain, renew and enhance the network whilst at the same time providing an operational railway. This requires good possession planning to reduce any disruption to the network. We use the Possession Disruption Indices for passenger and freight (PDI-P and PDI-F) as the principal measures to indicate this. During 2010/11 both measures were ahead of the year-end target. Table 3 provides this year's results compared to the regulatory target and our performance last year.

In addition we have continued to work with all customers to establish Joint Network Availability Plans (JNAPs) to outline future aspirations and the workstreams required to deliver these aspirations. Most passenger operators now have at least a draft JNAP in place and there is a joint JNAP covering all freight customers.

The Network Availability Reporting System (NARS) was brought into use during this year. The system has the capability to calculate the actual PDI figures and to assess different access strategies for their relative disruptive impact.

The Infrastructure Capability Programme (ICP) was completed during the year. Therefore all short term network changes (STNC) as a result of the ICP have been established except for one which is being resolved.

Asset management

Overall asset reliability and condition improved from the previous year. Through our asset policies we have maintained a similar level of renewals investment as the previous year whilst still delivering efficiencies which has resulted in improvements to asset condition. Table 4 provides a summary of our asset condition and reliability measures.

The number of infrastructure incidents causing delay reduced by seven per cent compared to the previous year, which shows continued improvement on the reliability of our assets. Unfortunately signalling systems and power supply failures have increased compared to the previous year and we will continue our initiatives to improve these areas.

Condition of track measured by track geometry, broken rails and rail defects indicate that during the year there was a deterioration in condition, partly affected by the severe winter weather. Towards the end of 2010/11 track condition started to improve.

The number of TSRs, earthworks and signalling failures have all improved during the year as has tunnel condition.

Signalling asset condition deteriorated slightly during the year because there was a short delay in commissioning the Newport scheme which was completed in May 2011.

Table 4: Comparison of asset measures with previous years

Measure	2006/07	2007/08	2008/09	2009/10	2010/11
Broken rails (No.)	192	181	165	152	171
Immediate action rail defects per 100 km	n/a	n/a	6.28	5.45	3.94
	(new measure for Control Period 4)				
TSRs (No.)	4,394	4,550	4,436	1,729	1,348
Track geometry	See section 3 for results				
Earthworks failures (No.)	90	107	61	57	42
Tunnels condition	n/a	n/a	n/a	Bore 87.8	Bore 88.6
	(new measure for 2009/10)			Portal 92.2	Portal 91.9
Bridge condition score	2.12	2.09	2.08	2.08	2.10
Signalling failures causing delays of more than 10 mins. (No.)	22,718	19,923	19,607	18,323	16,501
Signalling asset condition	2.39	2.38	2.39	2.37	2.41
AC power incidents (No.)	69	63	66	46	61
DC power incidents (No.)	11	9	14	14	14
AC traction feeder stations and track sectioning points condition	–	3.53	2.78	2.70	2.56
DC traction feeder stations and track sectioning points condition	–	3.61	2.53	2.32	2.37
AC contact systems condition	1.7	1.7	1.6	1.6	1.6
DC contact systems condition	1.9	1.9	1.9	1.9	1.9
Station stewardship measure	Results by category are in Table 1, above				
Light maintenance depot stewardship measure	2.58	2.49	2.52	2.50	2.48
Asset reliability (No. of infrastructure incidents causing delay)	58,323	54,760	52,270	46,091	42,135

Note: For all measures in this table a lower figure indicates improvement. Some historical data has been restated due to refinement in the reporting systems.

The volume of renewal activity in 2010/11 is shown in Table 5. There was some under-delivery compared to plan for plain line track renewals due to the severe weather and the late delivery of the new high output system. However, we plan to increase the volume over the next three years such that the original CP4 total is still delivered. Following the revisions to our asset policies there has been a change in emphasis from full renewal activity to more targeted refurbishment and partial renewals on more lightly used parts of the network. This refurbishment work is not counted in the plain line volume measures reported in the tables.

There was also some under-delivery in the year on signalling renewals due to a small delay in commissioning the Newport scheme (completed in May 2011), however we remain on course to deliver the CP4 plan.

Changes to our workbanks are managed through a change control process that includes evaluation by the relevant route asset manager.

Safety and environment

The industry target is to achieve a three per cent reduction in the risk of death or injury from accidents on the railway for passengers and rail workers over CP4. Network Rail's part in achieving the above industry target is measured by the Passenger Safety Indicator and the Fatalities and Weighted Injuries measure. Although passenger safety has improved, there was unfortunately one workforce fatality during the year. Table 6 has the results for these KPIs and our supporting safety measures.

Passenger Safety Indicator

Passenger safety has been improving this year with the measure indicating that we are ahead of the annual target as well as ahead of the CP4 target. There have been no fatalities at our managed stations although slips, trips and falls remain an issue for which safety enhancements have been made to mitigate these risks.

Table 5: Activity volumes

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Rail (km of track renewed)	1,120	1,028	1,039	1,206	810	587
Sleeper (km of track renewed)	744	738	763	735	438	445
Ballast (km of track renewed)	798	850	837	763	509	525
Switch & crossings (No. of full units replaced)	520	442	436	419	231	269
Signalling (SEUs) ¹	278	481	1,441	981	813	802
Bridge renewals (No.) ²	151	149	358	358	248	340
Culvert renewals (No.) ²	9	11	44	33	25	25
Retaining wall renewals (No.) ²	10	8	18	15	5	11
Earthwork renewals (No.) ²	67	54	163	157	113	103
Tunnel renewals (No.) ²	40	20	43	44	24	49

Notes:

1. Signalling equivalent units are counted once a scheme is actually commissioned
2. These measures refer to the number of renewal projects above a threshold value

Table 6: Summary of safety measures

Measure	2006/07	2007/08	2008/09	2009/10	2010/11
Workforce safety – Fatalities and weighted injuries MAA		0.129	0.152	0.127	0.126
Infrastructure wrong side failures (No.)	66	60	50	67	88
Level crossing misuse – incidents MAA	26.38	28.46	31.31	28.38	29.23
Category A signals passed at danger (No.)	334	354	293	274	299
Irregular working – incidents MAA	70.85	57.38	32.61	21.69	17.69
Malicious acts per 100 route miles (No.)	6.285	5.539	5.220	4.418	4.416
Passenger Safety Indicator MAA			0.252	0.215	0.171

Note: MAA is the moving annual average

Some of the 2009/10 figures have been restated as all numbers are taken at a specific point in time and with further refinements during the year some of these numbers change.

Workforce safety

The Fatalities and Weighted Injuries measure, which measures workforce safety, is currently behind target, although it is now improving. During 2010/11, it has been necessary to review and re-align the data as a result of Network Rail's own investigations and the RSSB's independent review found we had been under-reporting RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations) incidents.

Expenditure and efficiency

Full details of expenditure and efficiency achieved during the year are reported in our regulatory financial statements that are

published on the Network Rail website.

However, for completeness a summary is given in Table 7 and Table 8.

The Real Economic Efficiency measure is designed to record how our operating, maintenance and renewal costs change over the control period from a baseline position in 2008/09. During the year we achieved savings in operating costs, maintenance and renewals and we remain on course to meet our target of 23 per cent saving by the end of CP4. If this target is met, then over a ten year period we will have reduced costs by 44 per cent in real terms as illustrated in the graph below (Figure 1).

Table 7: Expenditure comparison in outturn prices (£m)

	2006/07	2007/08	2008/09	2009/10	2010/11
Operating costs (controllable)	878	878	908	991	909
Maintenance	1,146	1,118	1,104	1,071	1,068
Renewals	2,777	2,894	3,144	2,304	2,234
Enhancements	569	1,061	1,553	1,591	1,730

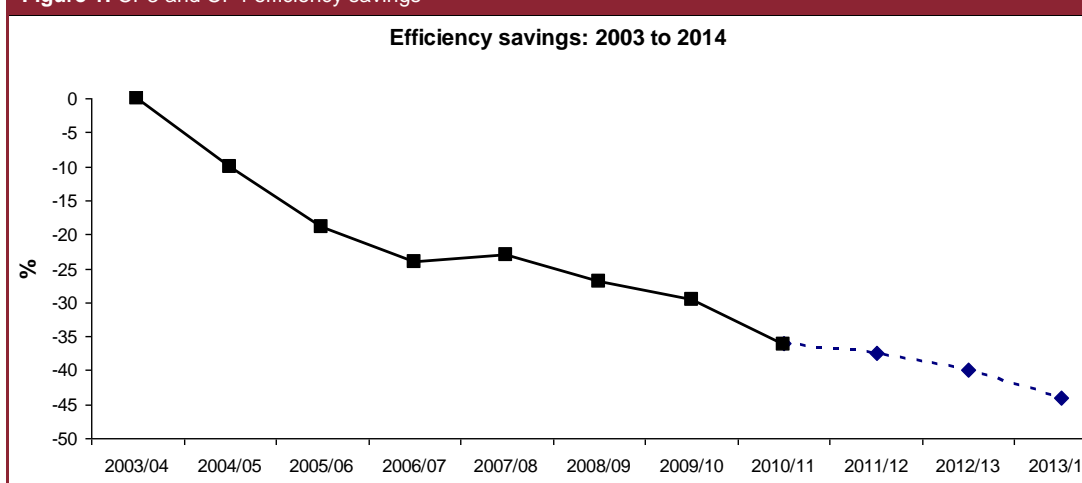
Notes:

- Operating costs, maintenance and renewals are consistent with the regulatory accounts;
- Operating costs exclude items classified as non-controllable (e.g. ORR licence fee, British Transport Police, electricity traction costs, safety levy and cumulo rates); and
- Enhancements include investments funded by third parties.

Table 8: Real Economic Efficiency

	2009/10		2010/11		Cumulative	
	£m	%	£m	%	£m	%
2010/11 prices						
Controllable opex	(34)	(3.4%)	67	6.7%	33	3.5%
Maintenance	26	2.2%	138	11.3%	164	13.3%
Renewals	180	7.1%	243	9.9%	423	16.3%
Overall OMR efficiency	172	3.6%	448	9.7%	620	13.0%

Figure 1: CP3 and CP4 efficiency savings



Enhancements schemes

We have made steady progress during the year in delivering the enhancement schemes that we have committed to during CP4 and are broadly on schedule for the various milestones we set by the end of 2010/11. Some highlights for the year include:

Airdrie – Bathgate: This new rail link opened on 12 December 2010. It was delivered in just over four years and sees four additional trains an hour run between Edinburgh and Glasgow. New stations were also built. The project re-establishes a link lost in the 1950s and increases the options for people travelling between Scotland's two main cities.

Thameslink: Work continued in several locations in the South East to deliver the multi-billion pound Thameslink programme with the main focus of progress in three locations across London.

- **Blackfriars:** Work to lay a new through track began in November, which is a key strategic point on the route. Steady progress was also made on the construction of the new station which, when complete, will span the Thames;
- **Borough Market:** A new viaduct structure was moved into place in October 2010; and
- **Farringdon Station:** Foundation work began for the new multi-storey integrated ticket hall.

Access for all: This programme is designed to improve access to the railway for everyone through the installation of new lifts, footbridges and tactile platform paving. During the year work was completed at ten stations.

Reading: Reading is one of the busiest parts of the country's rail network and its complicated track layout constricts the number of trains that can run. A major piece of work was completed in the Christmas holiday when a new bridge was slid into place at Caversham Road.

Capacity improvements on the East Coast: Platform lengthening works continued this year with the successful opening of longer platforms at Royston for 12-car trains. We were also granted a Transport and Works Act order to build a flyover at Hitchin which will remove a substantial bottleneck on the network.

Newport: In September, we opened a new station in Newport, in time to serve the needs of passengers travelling to watch the Ryder Cup. The station design is highly innovative and is built from the same type of material used to construct the Eden Project. It has already won an ICE (Wales) award for sustainable design. The project was delivered to time and to budget and has increased the capacity at the station.

King's Cross: A new platform was opened and good progress was made on the new western concourse. The project remains on schedule for completion before the Olympics.

Paisley corridor improvements: This scheme is designed to improve commuter journeys into Glasgow from Ayrshire and the Clyde coast. During the year a substantial number of advance and enabling works were completed, including the commissioning of two new platforms at Glasgow station and track work on the Elderslie loop.

Additional CP4 schemes: We have been asked to deliver a number of other projects over and above those set out in the original funding for CP4, thus demonstrating the confidence that government and other funders have in our capability. The main additional schemes where development work progressed during the year are: Crossrail (on-network works), Edinburgh to Glasgow improvement programme, electrification of the Great Western main line and the North West electrification programme.

In order to become more efficient, we set up the Efficient Project Governance workstream which reviewed a number of internal processes and procedures. Its purpose was to increase efficiency to reduce both the time and cost of projects for the remainder of CP4, as well as lay solid foundations for the delivery of CP5. This includes a refresh of the GRIP (Governance for Railway Investment Projects) process, which is now a company standard. We also introduced a framework for tier one contractors as well as introducing new contractual arrangements such as guaranteed maximum price/ partnership contracts, and are making best use of modular solutions, especially with regard to signalling.

Introduction

The Annual Return reports on Network Rail's stewardship of the rail network in 2010/11. The map of the network is included at the end of this section for information in Figure 2. The Annual Return describes our operational performance, network capability and availability, asset management, renewal activity volumes, safety and environmental performance and progress on the delivery of our enhancements programme.

We have provided five years of data wherever this is possible for trend and comparative purposes. For some measures that have more than five years of data available, this information can be found in previous Annual Returns. There is also information and commentary on variances and issues of interest from the year.

It should be noted that some of the year's figures are not final at the point of publication. As a result a few figures have been subsequently updated. Where figures have been updated we have provided an explanation for this.

Scope of reporting against targets

The targets included within this Annual Return are either regulatory targets as determined in the Periodic Review 2008 and provided in the final determinations of Network Rail's outputs and funding for 2009 to 14; or forecasts included in the Network Rail Control Period 4 Delivery Plan update 2010.

Most asset condition information is based on assessments from a sample of assets and, as more surveys are conducted each year compared to the year before, the reliability of the data reported for each asset category will improve.

Independent Reporter

Since October 2002, the company together with ORR has employed independent Reporters. The role of the Reporters is to provide independent technical audit services for ORR and Network Rail. Whilst undertaking this role, they are expected to deliver benefits to Network Rail through suitable recommendations about how we can improve our business processes. Arup have been appointed to look at our outputs and the processes, systems and data related to the reporting of our performance throughout the year including data in this Annual Return. The Reporter has therefore been considering the quality, accuracy and reliability of the data and related processes that we use for reporting our performance during the year. The Reporter contract provides for audits throughout the year and for the Reporter to focus on specific areas each quarter. As well as this, their quarterly reports include an overview of overall progress in addressing agreed actions resulting from the recommendations (including those from Halcrow, the previous Reporter for the Annual Return). The Arup reports can be found on the ORR's website under "Network Rail Regulation" and "Independent Reporters".

Table 9: Reliability band description

A	Sound textual records, procedures, investigations or analysis properly documented and recognised as the best method of assessment.
B	As A but with minor shortcomings. Examples include old assessment, some missing documentation, some reliance on unconfirmed reports, some use of extrapolation.
C	Extrapolation from limited sample for which Grade A or B data is available.
D	Unconfirmed verbal reports, cursory inspections or analysis.

Table 10: Accuracy band

	Accuracy to within +/-
1	1%
2	>1 to 5%
3	>5 to 10%
4	> 10 to 25%
5	>25 to 50%
6	>50 to 100%
X	Accuracy outside +/- 100 %

Table 11: Compatible confidence grades

Accuracy band	Reliability Band			
	A	B	C	D
1	A1			
2	A2	B2	C2	
3	A3	B3	C3	D3
4	A4	B4	C4	D4
5			C5	D5
6				D6
X	AX	BX	CX	DX

Confidence reporting

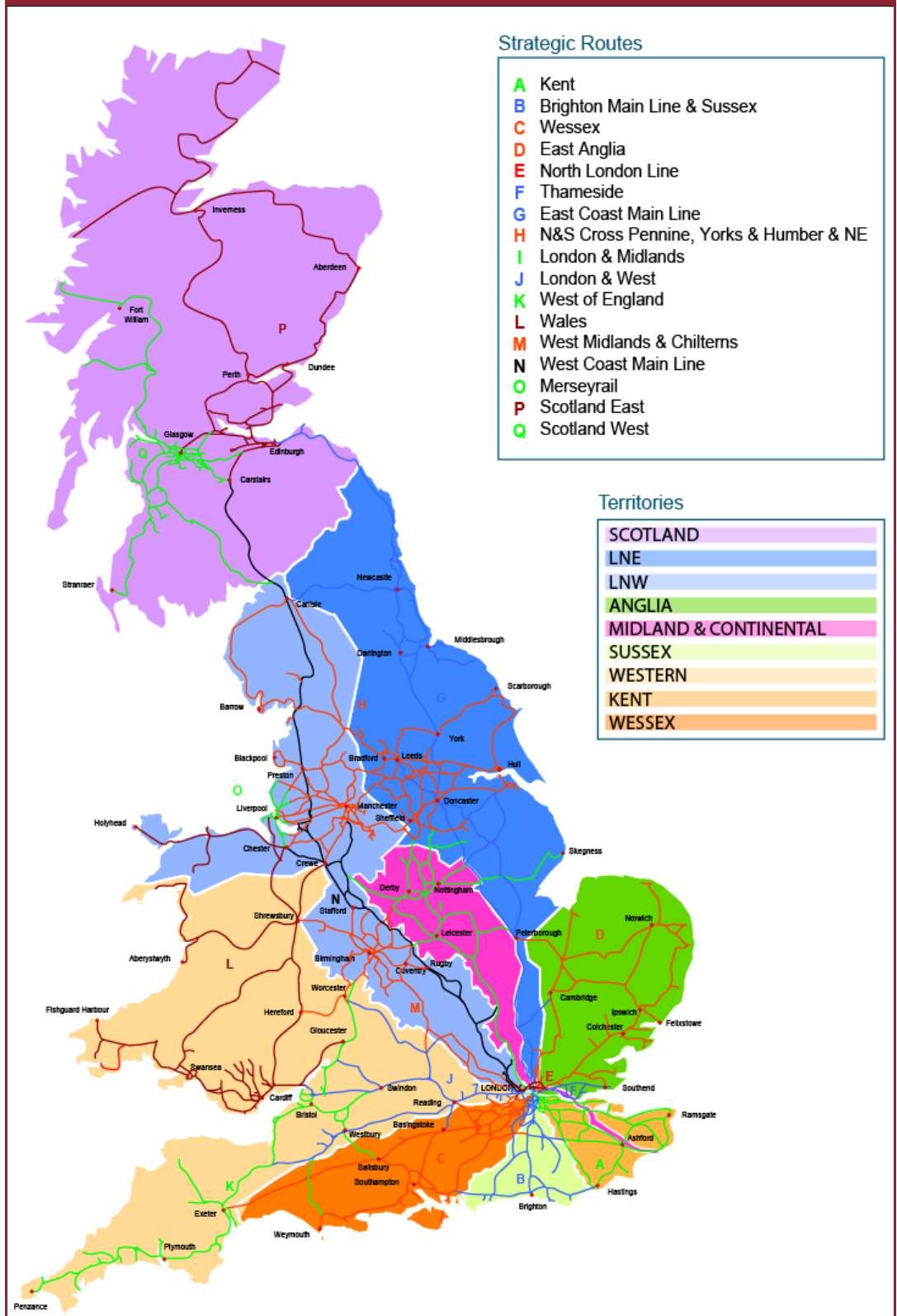
We have included confidence grades for the measures in the Annual Return, where appropriate. These reflect the confidence grades from Arup following their most recent audits.

The confidence grades consist of two aspects: a letter indicating the reliability of the data (A–D) where A is the most reliable, being based on sound documented records, procedures, investigations and/or analysis, and D relies on unconfirmed verbal reports, cursory inspections or analysis; and a number describing the accuracy (1–6 where 1 is within ± 1 per cent and 6 indicates poor accuracy defined as within the band ± 50 per cent – ± 100 per cent). Most measures are reported as at A2, A3, B2 or B3 confidence; however, there are some reported outside this typical range. For small numbers where accuracy cannot be properly ascribed an 'X' is substituted in the numeric part of the confidence grade. The tables above summarise the reliability and accuracy bands and confidence grades.

Regulatory Accounts

The network licence includes a requirement to prepare a set of Regulatory Accounts to report information that is relevant to setting access charges and which allows Network Rail's financial performance compared to the Periodic Review 2008 to be monitored. Regulatory Accounts for 2010/11 are not included in this Annual Return, but are published separately.

Figure 2: Map of the network



Section 1 – Operational performance and stakeholder relationships

Introduction

The main cross-industry measure of operational performance for franchised passenger services is the Public Performance Measure (PPM), which is a measure of the overall punctuality of train services delivered to passengers. Network Rail is accountable for the reporting of industry train performance, and PPM figures are shown in this section at national and sector level.

Delay minutes remain the main operational performance measure underpinning the punctuality of passenger and freight train services in order to bring focus onto the causes of disruption and thereby enable performance improvement. Delays to train journeys experienced by passenger and freight companies are broken down into Network Rail attributed delays and those attributed to train operators. Those attributable to Network Rail typically relate to infrastructure, timetabling and operation of the network, and also include external events impacting the network where Network Rail's role is to control or mitigate impacts. Those attributable to train operators typically relate to train operations, station operations, fleet reliability, problems with train crew resources or external causes affecting trains. The Annual Return provides data on Network Rail attributed delays only with specific focus on infrastructure related delays given Network Rail's asset management responsibilities. Figures for 2010/11 are presented for delay minutes and delay minutes per 100 train kilometres, with disaggregated results split by cause, and into those delays affecting passenger and freight trains.

This section also reports on our stakeholder relationships, including information on our customer satisfaction results. We are also including the Passenger Satisfaction Survey results from the bi-annual survey conducted by Passenger Focus.

We have provided information on our Dependent Persons Code of Practice for parties interested in doing business with Network Rail. The end of the section also reports on regulatory enforcement during the year.

Overview: PPM and delay minutes

PPM punctuality for the overall network reduced by 0.6 percentage points to 90.9 per cent for the full year 2010/11.

This deterioration equates to an increase of seven per cent in the number of trains running late, and is less than the increase in total industry delays to franchised passenger operators (whether attributable to Network Rail or to train operators) of ten per cent after allowing for the change in train kilometres run.

The delay attributable to Network Rail increased by about 0.75 million minutes (nine per cent) compared to the previous year, to 8.95 million minutes in 2010/11. With train miles run increasing by one per cent (in part dampened by reduced running during the winter period) this led to an increase in delay minutes per 100 train km of nine per cent.

The major influence on delay was the extreme winter weather in November and December 2010 which had a very significant impact on train performance across most of the country. In the four-week period leading up to Christmas (across Periods 9 and 10) PPM dropped to 75 per cent, compared to 80 per cent in the corresponding period of 2009/10 (itself much worse than other recent winters), with the worst of the weather in the South East, along the eastern side of England and in Scotland

Table 1.1: Public Performance Measure (PPM) for franchised passenger services

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
PPM (%)	86.4	88.1	89.9	90.6	91.5	90.9

Table 1.2: Delays to all train services

Network Rail-attributed delays	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Total delay minutes (incl. minor operators)	10,464,387	10,531,216	9,499,583	8,838,885	8,184,797	8,948,775
Train km	487,317,190	487,603,246	486,224,904	497,696,635	513,367,454	516,296,995
Delay per 100 train km	2.15	2.16	1.95	1.78	1.59	1.73

Notes:

- Total delay minutes include delays to a number of minor operators and some unallocated minutes, which are excluded from the main measure of major operators (passenger and freight). They are nevertheless included in the total Network Rail delay minutes. These include delays caused to LUL Bakerloo line services, NEXUS, charter operations and miscellaneous services.
- The number of train kilometres run excludes empty coaching stock movements, locomotive movements and engineering trains, and is as recorded in the performance database (PALADIN).
- The delay per 100 train km is based on total delay minutes, divided by the train kilometres run, multiplied by 100.

Table 1.3: PPM (%) by sector for England & Wales and Scotland

Full year results 2010/11 (franchised passenger and open access operators)		
By sector	PPM Actual	PPM Target
London & South East	91.1	92.0
Long Distance	87.7	89.8
Regional	91.5	91.0
England & Wales (total)	90.9	91.5
Scotland	90.1	91.3

Prior to the onset of this severe weather, and in part the more challenging autumn conditions than have recently been seen, Network Rail had been on track to meet or exceed all of its performance targets. Britain then faced a severe winter, even harsher than the winter of 2009/10 and coming early, directly after the main part of the autumn in late November. The winter conditions came in two phases with the first phase covering Scotland, the east coast of England and most of the south east area and the second phase covering a more widespread area of the country affecting nearly all train services. In Scotland, the two winter phases were effectively merged, with snow, ice and sub-zero temperatures lasting for a prolonged period of time. The severe weather caused widespread disruption to all modes of transport across the country. Train performance dipped sharply.

The impact of the poor winter weather was particularly acute for London & South East and Long Distance services, and for Scotland, and sufficiently widespread that very few individual operators provided punctuality close to normal levels.

Network Rail delay to freight services (measured as delay per 100 train km) was also severely impacted, with delay per 100 train km increasing by seven per cent to 4.29 minutes of delay per 100 train km.

Public Performance Measure (PPM)

PPM combines figures for punctuality and reliability into a single performance measure covering all scheduled services operated by franchised passenger operators and four open access operators. PPM measures the performance of individual trains against their planned timetable for the day, and shows the percentage of trains 'on time' compared to the total number of trains planned. PPM for the year is expressed as a moving annual average (MAA).

A train is defined as 'on time' if it arrives at its planned destination station within five minutes (i.e. 4 minutes 59 seconds or less) of the planned arrival time. For longer distance operators a criterion of arrivals within ten minutes (i.e. 9 minutes 59 seconds or less) is used. Where an operator runs a mixed service (shorter and longer distance), an aggregation of within five minutes and within ten minutes is used for 'on time' (i.e. taking the number of trains that actually arrive within the five minutes (short distance) and adding this to the number of trains actually arriving within ten minutes (long distance) and then dividing by the total number of trains booked).

The overall network PPM for 2010/11 was 90.9 per cent down from 91.5 per cent in the previous year.

Commentary

The results for PPM were significantly worse than the regulatory targets for all but the Regional sector. The main cause of the underdelivery was the impact of the winter conditions (including some prolongation in recovery from the winter conditions in early 2011) with about 0.9 per cent deterioration in PPM seen during this time; the Regional sector outputs remained ahead of target mostly due to performance during the winter period being better for these operators than for other operators. In the wider context, PPM in the early part of the year had continued to track about 1-2 years ahead of targets with poor autumn delivery initiating the decline then followed by the winter conditions causing performance to fall below both regulatory targets and delivery in 2009/10.

Summarised network-wide data (delays to major operators)

The delay minutes data presented in the remainder of this section are Network Rail attributed delays affecting the main scheduled passenger train services (including four open access operators as set out in our CP4 Delivery Plan) and freight operators. This is similar to data presented for previous years and excludes delays to other types of operator (such as London Underground services, NEXUS Metro and charter operations), which account for a further approximately 0.8 per cent of the total Network Rail attributed delays.

Network-wide total delays to passenger train services

Total Network Rail attributed delays to passenger trains increased by ten per cent. Traffic volumes, measured in train kilometres run, increased by one per cent compared to 2009/10, this increase being less than planned due to reduced running during the severe winter weather. This resulted in a combined impact of a ten per cent deterioration in delay minutes per 100 train km, which rose to 1.56 minutes. (The trend since 2005/06 is summarised in Table 1.4).

The trends in delays to passenger trains (measured as delay per 100 train km) over the last six years is illustrated in Figure 1.1. This highlights the challenge to delivery during 2010/11 with particular problems during the winter period, which can clearly be seen as more significant than previous winters.

England & Wales delays to passenger train services

Total Network Rail attributed delays in England & Wales to passenger trains increased in 2010/11 by 11 per cent. Traffic volumes, measured in train kilometres run, increased by 0.8 per cent compared to 2009/10. This resulted in a combined impact of a 10 per cent deterioration in delay minutes per 100 train km, which increased to 1.58 minutes.

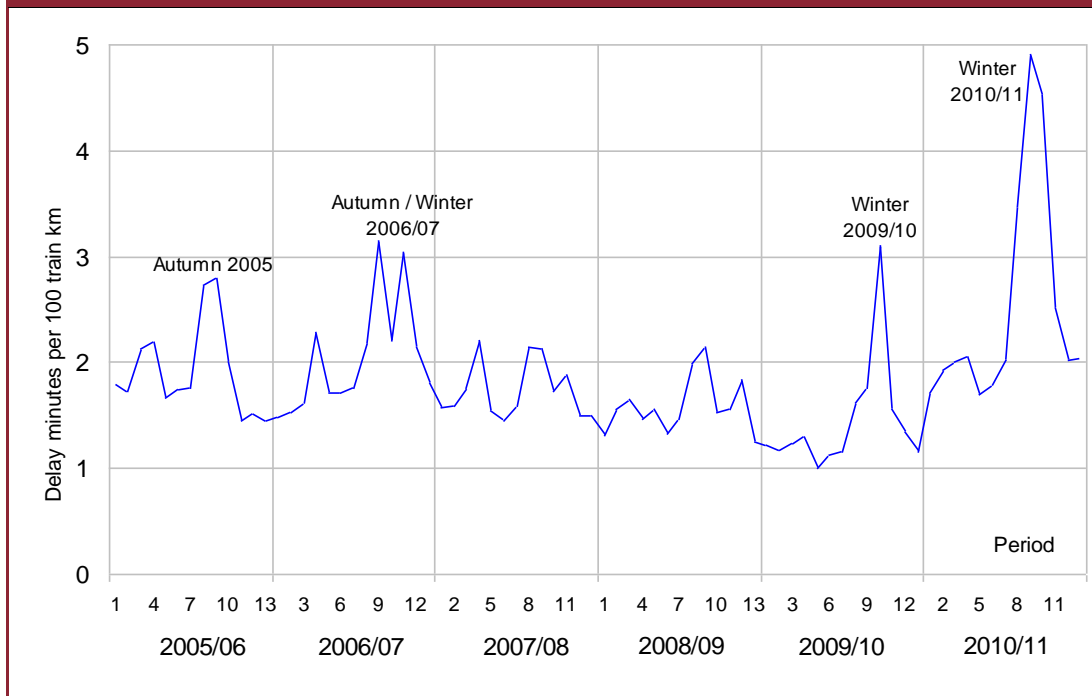
The delays to passenger services were 18 per cent worse than the regulatory target, predominantly caused by problems during the severe winter. The trend since 2005/06 is summarised in Table 1.5.

Table 1.4: Network-wide delays to passenger train services

Network Rail-attributed delays	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Delay minutes	8,386,939	8,403,701	7,695,360	7,208,574	6,700,700	7,400,705
Train km	437,524,953	439,123,839	442,271,678	454,798,388	470,714,609	475,060,899
Delay per 100 train km	1.92	1.91	1.74	1.59	1.42	1.56

Notes:

- The delay minutes totals are based on all PfPI (Process for Performance Improvement) delays, affecting applicable main scheduled passenger operators (franchised operators plus four open access operators Heathrow Express, Grand Central, Wrexham & Shropshire, and First Hull Trains). Wrexham & Shropshire figures are included until they ceased network operations during 2010/11. Note: prior to 2009/10 figures included delays and mileage for NEXUS Metro and Eurostar services; in 2008/09 these accounted for 12,059 minutes of delay.
- Train km run are for trains of applicable operators, excluding empty coaching stock movements and locomotives running "light", as recorded in PALADIN.
- Delays per 100 train km are based on all PfPI delay minutes, divided by the train kilometres run, multiplied by 100.

Figure 1.1: Delay minutes per 100 train km over time**Table 1.5: England & Wales delays to passenger train services**

Network Rail-attributed delays	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Delay minutes	7,754,283	7,854,848	7,223,137	6,701,324	6,152,260	6,859,224
Train km	400,286,709	402,115,175	404,921,582	416,828,459	431,295,163	434,795,367
Delay per 100 train km	1.94	1.95	1.78	1.61	1.43	1.58
Regulatory target (minutes)	-	-	-	-	6,270,000	5,790,000

Scotland delays to passenger train services

Total Network Rail attributed delays affecting Scotland passenger services (First ScotRail) reduced in 2010/11 by one per cent. Traffic volumes, measured in train kilometres run, increased by two per cent compared to 2009/10.

This resulted in a combined impact of a 4 per cent decrease in delay minutes per 100 train km, to 1.34 minutes. The delays to passenger services were 35 per cent worse than the regulatory target. The trend since 2005/06 is summarised in Table 1.6.

The static position on delay at year end to some extent hides change in the year in that real improvements were being seen in a number of areas early in the year, this then being overwhelmed by the impact of the severe winter weather.

The impact of the severe winter weather in Scotland started in Period 9 of 2010/11 not

returning to normal levels at all until after the start of the new year. During the winter there was significant snowfall and prolonged low temperatures beyond the norm with record poor conditions being seen for the second year in a row. The winter was even more severe than in 2009/10, arriving early and affecting all modes of transport significantly. The priority agreed with First ScotRail and stakeholders such as Transport Scotland was to maintain a service on all routes where possible, as rail was often the only mode of transportation available.

Network-wide total delays to freight train services

Network Rail delay to freight services was also severely impacted by weather and increased by seven per cent during the year to 4.29 minutes delay per 100 train km.

This reflected the impact of the winter weather which was as severe for freight services as for passenger operations. Other problems were caused by a return of cable theft problems as the

value of copper started to increase again after a dip during 2009/10, with particular effect on London North Eastern (LNE) Route. Timetable related delay also increased, in part exacerbated by freight services planning becoming an increasing short-term activity tracking market and resourcing conditions. In addition, autumn related problems – mostly related to traction issues – were seen in 2010/11 whereas autumn conditions do not usually cause significant problems to freight service operation. The delays to freight services were 26 per cent worse than the regulatory target. The trend since 2005/06 is summarised in Table 1.7.

their journey, normally have to reach their terminating location as complete trains without scope to provide alternative connections or transport. This can result in large delays and reduced flexibility in operation: a problem that becomes more of an issue as routes become increasingly congested.

Network-wide data by delay category grouping

The trends in delay minutes by broad category groupings are shown below, followed by a commentary focusing on these groups and the individual delay categories.

A key factor for managing freight services is that, unlike passenger services, freight trains, once on

Table 1.6: Scotland delays to passenger train services

Network Rail-attributed delays	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Delay minutes	632,656	548,853	472,223	507,250	548,440	541,481
Train km	37,238,24	37,008,66	37,350,09	37,969,92	39,419,44	40,265,53
	4	4	7	9	6	2
Delay per 100 train km	1.70	1.48	1.26	1.34	1.39	1.34
Regulatory target (minutes)	–	–	–	–	436,000	410,000

Table 1.7: National delays to freight train services

Network Rail-attributed delays	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Delay minutes	2,036,592	2,088,205	1,762,932	1,568,106	1,421,333	1,504,142
Train km	46,727,87	45,258,63	40,700,43	39,086,44	35,395,80	35,044,68
	0	1	5	0	5	3
Delay per 100 train km	4.36	4.61	4.33	4.01	4.02	4.29
Regulatory target (delay per 100 train km)	–	–	–	–	3.68	3.41

Notes:

- The delay minutes totals are based on all PfPI delays affecting applicable freight operators (major scheduled operators).
- Train km run are for trains of applicable operators, excluding locomotives running "light" and non-commercial traffic (such as engineering haulage trains). Source: Network Rail PSS data warehouse.
- Delay minutes per 100 train km are based on all PfPI delay minutes, divided by the train kilometres run, multiplied by 100.

Table 1.8: Network delays to passenger and freight trains by summarised category groups (delay minutes)

Category group²	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Track defects and TSRs ³	1,645,279	1,368,171	1,238,050	1,062,288	817,336	826,861
Other asset defects ⁴	3,395,679	3,350,439	2,870,303	2,883,048	2,669,582	2,593,163
Network management/other ⁵	2,986,311	2,746,575	2,634,263	2,331,438	1,967,533	2,529,963
Autumn leaf-fall and adhesion ⁶	285,363	214,222	156,813	241,733	153,229	280,427
Severe weather/structures ⁷	477,833	1,024,655	882,648	584,241	979,852	962,219
External factors ⁸	1,633,065	1,787,843	1,676,215	1,673,932	1,534,501	1,712,214
Total minutes	10,423,531	10,491,906	9,458,292	8,776,680	8,122,033	8,904,847
Train km	484,252,823	484,382,470	482,972,113	493,884,828	506,110,414	510,105,582

Table 1.9: Network delays to passenger and freight trains by summarised category groups (delay minutes per 100 train km)

Category group²	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
Track defects and TSRs ³	0.34	0.28	0.26	0.22	0.16	0.16
Other asset defects ⁴	0.70	0.69	0.59	0.58	0.53	0.51
Network management/other ⁵	0.62	0.57	0.55	0.47	0.39	0.50
Autumn leaf-fall and adhesion ⁶	0.06	0.04	0.03	0.05	0.03	0.05
Severe weather/structures ⁷	0.10	0.21	0.18	0.12	0.19	0.19
External factors ⁸	0.34	0.37	0.35	0.34	0.30	0.34
Total	2.15	2.17	1.96	1.78	1.60	1.75

Notes:

3. To improve the quality of information for performance improvement purposes, some minor changes to the definition of delay category have occurred since the 2010 Annual Return. The previous category 109 (Animals on line) has been dissolved and divided between category 106 (Other infrastructure) for animal related issues involving Network Rail assets, such as damaged fencing, and category 506 (External other) for other animals on the line (e.g. trains striking birds). A new category, 602 (un-investigated delay), has also been created this year. This latter category was attributed some material delay during the Winter season, as the volume of recorded delay events was higher than could be investigated at the time.
4. Delay totals are based on all delays recorded for attribution of responsibility to Network Rail, divided by train kilometres run where applicable.
5. Track defects and TSRs include broken rails, other track faults, speed restrictions for condition of track and rolling contact fatigue, and reactionary delay to planned TSRs.
6. Other asset defects include points, track circuits, axle counters, signal and signalling system failures, overhead power/third rail supply etc.
7. Network management/other delays include possessions, signalling errors, timetabling, dispute resolution, unexplained, and un-investigated.
8. Autumn leaf fall and adhesion include leaf fall related delays and Network Rail's share of industry adhesion delays.
9. Severe weather/structures includes direct delays due to severe weather and all structures delays, which include weather related delays due to embankment instability risks and bridge scour. Heat-related speed restrictions are also shown within this category.
10. External factors include road-related incidents, fires, trespass and vandalism, cable theft, security alerts, suicides and other external events.

Commentary

2010/11 was a relatively challenging year for train performance delivery. Delays caused by Network Rail increased by nine per cent, and delays due to operator causes were broadly static potentially highlighting the need for cross-industry action to deliver improvements.

The prime cause of the deterioration was the significant problems of operation during the winter conditions in late November and December. During this period, conditions were worse than in 2009/10 which were themselves significantly more challenging than normal winter conditions. In overall terms, we believe that train service performance was relatively good given the weather conditions and problems in other transport industries. Many lessons had been learned from 2009/10 and investment made in mitigation work, but still about 500,000 minutes of Network Rail caused delay were recorded beyond the norm with potentially an equal amount of delay through, for example, failures in assets the cause of which was affected by – but not attributed to – the winter conditions.

The winter problems were preceded by poor delivery in the autumn. Conditions for delivery were classed as relatively tough but not abnormal. The key challenge to delivery was the

ability to respond to the more challenging weather conditions than had been seen in recent autumn periods. Although PPM delivery was levelling out at broadly the second best autumn seen in the industry (before the onset of the winter conditions), about 100,000 extra delay minutes were incurred through this period.

Another key challenge was the management of externally caused delay. In particular, the bounce back in the value of scrap copper (broadly a continuous upwards trend through the year, up to levels not previously seen) created a major increase in cable theft problems. This was again concentrated in “traditional” problem areas, such as on the east side of the Pennines, but the problem also spread to new areas such as the Thames Valley, necessitating a widening of response actions and initiation of a more strategic approach to management with ambition to create a network wide response with engagement from BTP and other key parties.

Operational Planning delays broadly doubled during the course of the year. The key challenge was validation of train paths, with the problems being particularly seen during introduction of the new train planning system (ITPS) and during the transfer of Network Rail's train planning teams to Milton Keynes. The impact was most visible in

delivery to freight customers, in part exacerbated by the increasing use of short term planning for freight services.

An underlying concern was in delivery of non-track assets. The underlying trend of incidents has been slow, but continuous, reduction (which is potentially best seen in asset stewardship measurement). Delay caused, however, was about 400,000 delay minutes worse than target and about 150,000 worse than 2009/10. Analysis suggests that delays were exacerbated by the severe winter conditions, with an increase also seen in track related delay, but the key issue is delay per incident.

The key problem for non-track assets – and for many other types of delay – was delay per incident, which moved to being significantly worse than normal expectations, following many years of broadly stable delivery, despite many substantial action plans targetting reduced delay per incident. There are a number of potential causes of this deterioration:

- asset failure coincidentally occurring at more congested parts of the network or at more challenging times of day (e.g. during the peaks);
- slower response and fault fixing (e.g. due to reduced fault team cover or reduced availability of track access); and
- more difficult service management both during fault fixing and recovery after rectification (e.g. due to increased network congestion, reduced contingent resourcing or the reduced scope to cancel trains to help recovery as passenger numbers increase).

Analysis of this problem is currently ongoing; the extent of the problems caused by delay per incident is such that significant cross-industry action may be needed to either bring delay per incident back to acceptable levels or make commensurate change elsewhere (e.g. through increased reduction in incidents) should reduction in delay per incident prove to be difficult to achieve.

There are few categories of delay where improvement was seen; the most significant of these was in reduced impact from TSRs which by their nature have a secondary benefit in providing scope to better manage delay from other causes through improvements to general train running.

Table 1.10: Network wide delays to passenger and freight trains by detailed cause category 2010/11 (delay minutes)							
No	Category	Passenger Trains		Freight Trains		Combined Total	
		Delay Mins	Delay per 100tr km	Delay Mins	Delay per 100tr km	Delay Mins	Delay per 100tr km
101	Points failures	535,561	0.11	107,847	0.31	643,408	0.13
102	Problems with trackside signs including TSR boards	25,563	0.01	2,630	0.01	28,193	0.01
103	Level crossing failures	89,779	0.02	11,515	0.03	101,294	0.02
104A	TSR's Due to Condition of Track	43,276	0.01	52,634	0.15	95,910	0.02
104B	Track faults (including broken rails)	527,709	0.11	126,560	0.36	654,269	0.13
104C	Rolling Contact Fatigue	10,101	0.00	1,095	0.00	11,196	0.00
104D	Reactionary delay to planned TSRs	55,659	0.01	9,827	0.03	65,486	0.01
105	Civil Engineering structures, earthworks & buildings	49,505	0.01	12,389	0.04	61,894	0.01
106	Other infrastructure	157,094	0.03	31,536	0.09	188,630	0.04
106A	Track Patrols & related possessions	26,688	0.01	6,476	0.02	33,164	0.01
107A	Possession over-run and related faults	121,681	0.03	37,369	0.11	159,050	0.03
107B	Other possession related delay	35,134	0.01	6,051	0.02	41,185	0.01
108	Mishap – infrastructure causes	138,013	0.03	18,436	0.05	156,450	0.03
110A	Severe weather	679,953	0.14	137,315	0.39	817,269	0.16
110B	Other weather	75,620	0.02	7,436	0.02	83,056	0.02
111A	Wheel slip due to leaf fall	116,751	0.02	13,358	0.04	130,110	0.03
111B	Vegetation Management failure	16,745	0.00	2,149	0.01	18,894	0.00
112	Fires starting on Network Rail infrastructure	31,630	0.01	2,273	0.01	33,903	0.01
150	Low adhesion inc. Autumn (Network Rail)	129,483	0.03	5,508	0.02	134,991	0.03
201	Overhead line/third rail faults	200,103	0.04	41,559	0.12	241,662	0.05
301A	Signal failures	182,755	0.04	22,838	0.07	205,593	0.04
301B	Track Circuit failures	491,559	0.10	57,924	0.17	549,483	0.11
301C	Axle counter failures	58,053	0.01	8,618	0.02	66,671	0.01
302A	Signalling System & Power Supply failures	450,895	0.09	64,089	0.18	514,984	0.10
302B	Other signal equipment failures	55,892	0.01	12,290	0.04	68,182	0.01
303	Telecoms failures	46,163	0.01	6,993	0.02	53,156	0.01
304	Cable faults (signalling & comms)	125,018	0.03	23,711	0.07	148,728	0.03
305	Track circuit failures – leaf-fall	13,553	0.00	1,773	0.01	15,326	0.00
401	Bridge strikes	150,832	0.03	12,273	0.04	163,105	0.03
402	External infrastructure damage – Vandalism/Theft	389,487	0.08	142,020	0.41	531,507	0.10
403	External level crossing/road incidents (not bridges)	75,852	0.02	7,528	0.02	83,380	0.02
501A	Network Rail Operations – signalling	327,916	0.07	54,200	0.15	382,116	0.07
501B	Network Rail Operations – control	47,667	0.01	24,887	0.07	72,555	0.01
501C	Network Rail Operations – railhead conditioning trains	29,051	0.01	2,123	0.01	31,174	0.01
501D	Network Rail Operations – other	100,697	0.02	24,724	0.07	125,421	0.02
502A	Timetable Planning	227,305	0.05	186,833	0.53	414,138	0.08
502C	Network Rail commercial takeback/other	274,031	0.06	73,946	0.21	347,977	0.07
503	External fatalities and trespass	575,721	0.12	59,555	0.17	635,277	0.12
504	External police on line/security alerts	13,790	0.00	2,570	0.01	16,359	0.00
505	External fires	47,315	0.01	7,879	0.02	55,194	0.01
506	External other	169,727	0.04	23,762	0.07	193,489	0.04
601	Unexplained	327,572	0.07	33,805	0.10	361,378	0.07
602	Un-investigated delay	153,803	0.03	15,837	0.05	169,640	0.03
Total Minutes		7,400,705	1.56	1,504,142	4.29	8,904,847	1.75
Train Kilometres		475,060,899		35,044,683		510,105,582	

Table 1.11: Network total delays to passenger and freight trains by detailed cause category (delay minutes)							
No	Category	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
101	Points failures	834,976	829,316	729,623	744,297	657,883	643,408
102	Problems with trackside signs including TSR boards	43,132	41,673	41,779	26,232	17,564	28,193
103	Level crossing failures	126,421	115,817	107,863	100,534	95,240	101,294
104A	TSR's Due to Condition of Track	566,211	347,642	284,200	204,831	133,996	95,910
104B	Track faults (including broken rails)	925,259	924,108	835,024	727,716	614,542	654,269
104C	Rolling Contact Fatigue	14,477	9,253	15,616	22,450	11,867	11,196
104D	Reactionary delay to planned TSRs	139,332	87,168	103,210	107,291	56,932	65,486
105	Civil Engineering structures, earthworks & buildings	103,647	124,324	126,433	77,833	78,289	61,894
106	Other infrastructure	289,629	263,356	282,233	232,442	155,880	188,630
106A	Track Patrols & related possessions	94,339	81,290	77,838	67,900	33,693	33,164
107A	Possession over-run and related faults	256,586	277,269	271,206	155,781	132,324	159,050
107B	Other possession related delay	90,826	85,259	58,846	51,267	35,750	41,185
108	Mishap – infrastructure causes	124,441	160,143	160,757	194,577	153,580	156,450
110A	Severe weather (beyond design capability of infrastructure)	243,014	578,610	626,972	346,845	810,259	817,269
110B	Other weather (impact on infrastructure or network operation)	131,172	321,721	129,243	159,563	91,304	83,056
111A	Wheel slip due to leaf fall	68,367	51,160	54,085	76,451	45,110	130,110
111B	Vegetation Management failure	11,709	13,056	16,289	22,836	25,023	18,894
112	Fires starting on Network Rail infrastructure	41,766	33,513	26,613	16,920	32,284	33,903
150	Low adhesion inc. Autumn (Network Rail)	195,089	148,957	97,544	142,690	94,223	134,991
201	Overhead line/third rail faults	244,346	336,596	214,086	214,291	247,508	241,662
301A	Signal failures	390,671	345,314	288,006	308,811	242,661	205,593
301B	Track Circuit failures	913,227	768,844	638,878	556,595	514,100	549,483
301C	Axle counter failures	72,308	49,517	77,458	142,373	105,824	66,671
302A	Signalling System & Power Supply failures	368,535	434,195	391,769	431,539	416,581	514,984
302B	Other signal equipment failures	84,349	91,911	67,560	62,157	64,552	68,182
303	Telecoms failures	63,825	50,901	66,026	66,387	69,825	53,156
304	Cable faults (signalling & comms)	155,919	175,480	173,706	143,717	168,587	148,728
305	Track circuit failures – leaf fall	21,907	14,105	5,184	22,592	13,896	15,326
401	Bridge strikes	245,463	255,753	221,268	171,195	143,567	163,105
402	External infrastructure damage– Vandalism/Theft	338,433	504,472	473,606	503,286	473,394	531,507
403	External level crossing/road incidents (not bridges)	89,014	80,857	79,180	76,050	70,320	83,380
501A	Network Rail Operations – signalling	497,331	456,276	454,885	407,013	362,990	382,116
501B	Network Rail Operations – control	91,149	88,754	86,460	83,925	65,927	72,555
501C	Network Rail Operations – railhead conditioning trains	28,671	18,810	26,031	24,003	28,303	31,174
501D	Network Rail Operations – other	153,196	172,499	207,412	175,761	119,526	125,421
502A	Timetable Planning	429,521	316,823	281,035	241,090	243,465	414,138
502C	Network Rail commercial takeback/other	596,721	513,787	379,912	340,003	298,135	347,977
503	External fatalities and trespass	641,675	610,890	624,978	653,119	605,067	635,277
504	External police on line/security alerts	83,460	45,421	47,611	17,343	23,929	16,359
505	External fires	69,421	88,172	82,075	31,940	47,815	55,194
506	External other	208,494	260,295	190,081	271,487	190,217	193,489
601	Unexplained	335,502	318,599	335,711	353,547	330,101	361,378
602	Un-investigated delay (new category)	0	0	0	0	0	169,640
Total Minutes		10,423,531	10,491,906	9,458,292	8,776,680	8,122,033	8,904,847
Train Kilometres		484,252,823	484,382,470	482,972,113	493,884,828	506,110,414	510,105,582

Table 1.12: Network total delays to passenger and freight trains by detailed cause category (delay minutes per 100 train km)							
No	Category	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
101	Points failures	0.17	0.17	0.15	0.15	0.13	0.13
102	Problems with trackside signs including TSR boards	0.01	0.01	0.01	0.01	0.00	0.01
103	Level crossing failures	0.03	0.02	0.02	0.02	0.02	0.02
104A	TSR's Due to Condition of Track	0.12	0.07	0.06	0.04	0.03	0.02
104B	Track faults (including broken rails)	0.19	0.19	0.17	0.15	0.12	0.13
104C	Rolling Contact Fatigue	0.00	0.00	0.00	0.00	0.00	0.00
104D	Reactionary delay to planned TSRs	0.03	0.02	0.02	0.02	0.01	0.01
105	Civil Engineering structures, earthworks & buildings	0.02	0.03	0.03	0.02	0.02	0.01
106	Other infrastructure	0.06	0.05	0.06	0.05	0.03	0.04
106A	Track Patrols & related possessions	0.02	0.02	0.02	0.01	0.01	0.01
107A	Possession over-run and related faults	0.05	0.06	0.06	0.03	0.03	0.03
107B	Other possession related delay	0.02	0.02	0.01	0.01	0.01	0.01
108	Mishap – infrastructure causes	0.03	0.03	0.03	0.04	0.03	0.03
110A	Severe weather	0.05	0.12	0.13	0.07	0.16	0.16
110B	Other weather	0.03	0.07	0.03	0.03	0.02	0.02
111A	Wheel slip due to leaf fall	0.01	0.01	0.01	0.02	0.01	0.03
111B	Vegetation Management failure	0.00	0.00	0.00	0.00	0.00	0.00
112	Fires starting on Network Rail infrastructure	0.01	0.01	0.01	0.00	0.01	0.01
150	Low adhesion inc. Autumn (Network Rail)	0.04	0.03	0.02	0.03	0.02	0.03
201	Overhead line/third rail faults	0.05	0.07	0.04	0.04	0.05	0.05
301A	Signal failures	0.08	0.07	0.06	0.06	0.05	0.04
301B	Track Circuit failures	0.19	0.16	0.13	0.11	0.10	0.11
301C	Axle counter failures	0.01	0.01	0.02	0.03	0.02	0.01
302A	Signalling System & Power Supply failures	0.08	0.09	0.08	0.09	0.08	0.10
302B	Other signal equipment failures	0.02	0.02	0.01	0.01	0.01	0.01
303	Telecoms failures	0.01	0.01	0.01	0.01	0.01	0.01
304	Cable faults (signalling & comms)	0.03	0.04	0.04	0.03	0.03	0.03
305	Track circuit failures – leaf-fall	0.00	0.00	0.00	0.00	0.00	0.00
401	Bridge strikes	0.05	0.05	0.05	0.03	0.03	0.03
402	External infrastructure damage–Vandalism/Theft	0.07	0.10	0.10	0.10	0.09	0.10
403	External level crossing/road incidents (not bridges)	0.02	0.02	0.02	0.02	0.01	0.02
501A	Network Rail Operations – signalling	0.10	0.09	0.09	0.08	0.07	0.07
501B	Network Rail Operations – control	0.02	0.02	0.02	0.02	0.01	0.01
501C	Network Rail Operations – railhead conditioning trains	0.01	0.00	0.01	0.00	0.01	0.01
501D	Network Rail Operations – other	0.03	0.04	0.04	0.04	0.02	0.02
502A	Timetable Planning	0.09	0.07	0.06	0.05	0.05	0.08
502C	Network Rail commercial takeback / other	0.12	0.11	0.08	0.07	0.06	0.07
503	External fatalities and trespass	0.13	0.13	0.13	0.13	0.12	0.12
504	External police on line/security alerts	0.02	0.01	0.01	0.00	0.00	0.00
505	External fires	0.01	0.02	0.02	0.01	0.01	0.01
506	External other	0.04	0.05	0.04	0.05	0.04	0.04
601	Unexplained	0.07	0.07	0.07	0.07	0.07	0.07
602	Un-investigated delay (new category)	0.00	0.00	0.00	0.00	0.00	0.03
Total Minutes		2.15	2.17	1.96	1.78	1.60	1.75

Asset failures

Infrastructure incidents recorded for attribution of delay

The number of performance incidents in asset related categories is shown in this section. These incidents are recorded for the purpose of identifying the cause and responsibility of delays and cancellations, whilst providing valuable management information on the causes of and trends in delays and hence an indication of where to maintain or renew the network assets. The records do not seek to represent a catalogue of every single physical component or system failure occurring on the network.

While bridge strikes represent externally caused incidents (road vehicles hitting bridges) they are included as infrastructure incidents as Network Rail has some influence over prevention measures, and is able to mitigate the impact to either prevent or reduce the train delays arising.

Network-wide totals

Incidents are recorded for the attribution of delays and cancellations. The following table (Table 1.13) shows the number of infrastructure incidents (including category numbers) with delays attributed to them. In a small number of cases more than one incident will be attributed for the same physical incident, to reflect different phases of an incident or responsibilities for contractual delay attribution purposes. Prior year figures have been restated as a result of reclassifying delays caused by animals on the line. These were previously included in a specific category (109) but are now split between infrastructure causes (106) and external issues (506).

Commentary

In 2010/11 there has been continued reduction in incidents across most categories, broadly reflective of the focus on improvement maintenance practice plus the increasing impact of remote condition monitoring as equipment is fitted and alert levels are set to capture worsening component delivery in advance of failure.

Table 1.13: Network infrastructure incidents recorded for delay attribution (number)

No	Category	2006/07	2007/08	2008/09	2009/10	2010/11
101	Points failures	9,079	7,828	8,048	7,130	5,815
103	Level crossing failures	2,365	2,201	2,260	2,162	2,005
104A	TSR's due to condition of track	2,201	1,878	1,429	1,151	866
104B	Track faults (including broken rails)	7,681	6,721	6,149	5,392	4,955
104C	Rolling contact fatigue	91	74	170	127	66
105	Civil Engineering structures, earthworks & buildings	569	492	391	438	385
106	Other infrastructure	5,251	6,741	5,496	3,557	3,380
106A	Track patrols & related possessions	2,639	3,144	3,365	2,568	2,269
108	Mishap – infrastructure causes	1,416	1,634	1,849	1,453	1,589
112	Fires starting on Network Rail infrastructure	285	230	197	221	249
201	Overhead line/third rail faults	1,706	1,358	1,370	1,241	1,279
301A	Signal failures	7,369	6,566	6,560	5,999	4,906
301B	Track Circuit failures	7,522	5,985	5,375	5,150	4,580
301C	Axle counter failures	442	569	1,095	911	646
302A	Signalling system & power supply failures	3,998	3,943	3,750	4,018	4,413
302B	Other signal equipment failures	1,948	1,579	1,471	1,559	1,695
303	Telecoms failures	1,445	1,464	1,356	1,351	1,252
304	Cable faults (signalling & comms)	628	667	574	532	550
401	Bridge strikes	1,688	1,686	1,365	1,131	1,235
Total		58,323	54,760	52,270	46,091	42,135

Cancellations & Significant Lateness (CaSL)

Definition

CaSL is defined as the number and percentage of passenger trains (franchised and open access operators) which are cancelled in part or full, or which arrive at their final destination 30 or more minutes later than the time shown in the public timetable.

Commentary

In 2010/11, the percentage of trains which were cancelled or significantly late was 2.76 per cent for England & Wales which was worse than the 2.58 per cent achieved in 2009/10. The regulatory targets for London and the South East (2.2 per cent) and Long Distance (4.5 per cent) were missed. However, the target for Regional services (2.5 per cent) was met. As for PPM, CaSL had been on track to be significantly better

than regulatory targets during the early part of the year but the major impact of the winter weather resulted in a deterioration of about a 0.5 per cent in CaSL.

As CaSL is strongly linked to PPM and delay, the approach to improvement in CaSL was as part of an overall integrated performance improvement plan. Experience has, however, continued to demonstrate the key value of CaSL as a metric of major disruption to passengers and the need for specific actions dependent on the needs for specific services, such as:

- the need to continue to run trains which might previously have been cancelled to enable swift service recovery due to strong passenger demand; and
- the particular impact of cancellations for some operators.

Customer satisfaction

Results from Network Rail's annual survey of its customers, conducted at the end of 2010, were disappointing with overall customer satisfaction down by 0.17 to 3.15 (on a scale of 1 to 5) or from 50 per cent to 48 per cent. Freight operator satisfaction increased by 0.16 to 3.11, which was pleasing given the very challenging environment for freight operators.

The results show a shift from respondents being 'neutral' to being 'dissatisfied'. In the 2009 survey 17 per cent of customers were dissatisfied; in 2010 this had risen to 29 per cent. The main reasons for this appears to be concerns about the way in which Integrated Train Planning System (ITPS) was introduced and the poor levels of operational performance achieved in 2010/11.

The score for "working relationship" increased which was a significant and welcome increase. We have been working very hard to get closer to our customers and to better understand their business. While it is clear from other parts of the survey that there is much more work to do in these areas this increase was very pleasing and reflects the efforts made in this area.

We are working closely with the ORR and our customers to develop a customer service maturity model that, together with satisfaction surveys, can be used to monitor progress towards our vision of becoming customer centric.

Table 1.14: Cancellations and significant lateness (%)

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11
London & South East	2.71	2.64	2.32	2.50	2.53	2.61
Long Distance	6.34	5.99	5.73	5.21	4.64	5.00
Regional	3.30	3.24	2.98	2.58	2.10	2.44
England & Wales	3.12	3.08	2.80	2.76	2.58	2.76
Scotland ¹	2.16	2.33	2.17	2.03	2.42	2.65
Network Total	3.01	3.00	2.73	2.68	2.56	2.75

Notes:

1. CaSL in Scotland is not subject to a regulatory output specified by the ORR .

Passenger satisfaction

Passenger Focus (PF) is an independent consumer watchdog for Britain’s rail passengers. PF carries out two passenger satisfaction surveys every year, one each in autumn and spring. The National Passenger Survey (NPS) provides a network wide picture of satisfaction with rail travel from a representative sample of passenger journeys which includes overall satisfaction, as shown in Figure 1.2. More detailed results are provided in the full passenger satisfaction survey results which are published on the Passenger Focus website.

The results for overall passenger satisfaction show the average score since the Autumn 2005 survey has remained above 80 per cent. The Autumn 2010 and Spring 2011 scores are the highest since the survey began in Autumn 1999.

Doing Business with Network Rail

In 2009/10, Network Rail completely overhauled what was previously known as our ‘Dependant Persons Code of Practice’, replacing it with a new Code of Practice entitled ‘Doing business with us’. During the course of 2010/11, we have developed three new sections of the Code of Practice, providing information on:

- accessing Network Rail Standards;
- investing in the network; and
- the Railway Systems Code of Practice.

The full text of the Code of Practice is publicly available on our website at the following web link:

<http://www.networkrail.co.uk/asp/1544.aspx>

During 2011/12 we will undertake a review of the Code of Practice and update or modify it as necessary.

Key regulatory issues arising in 2010/11

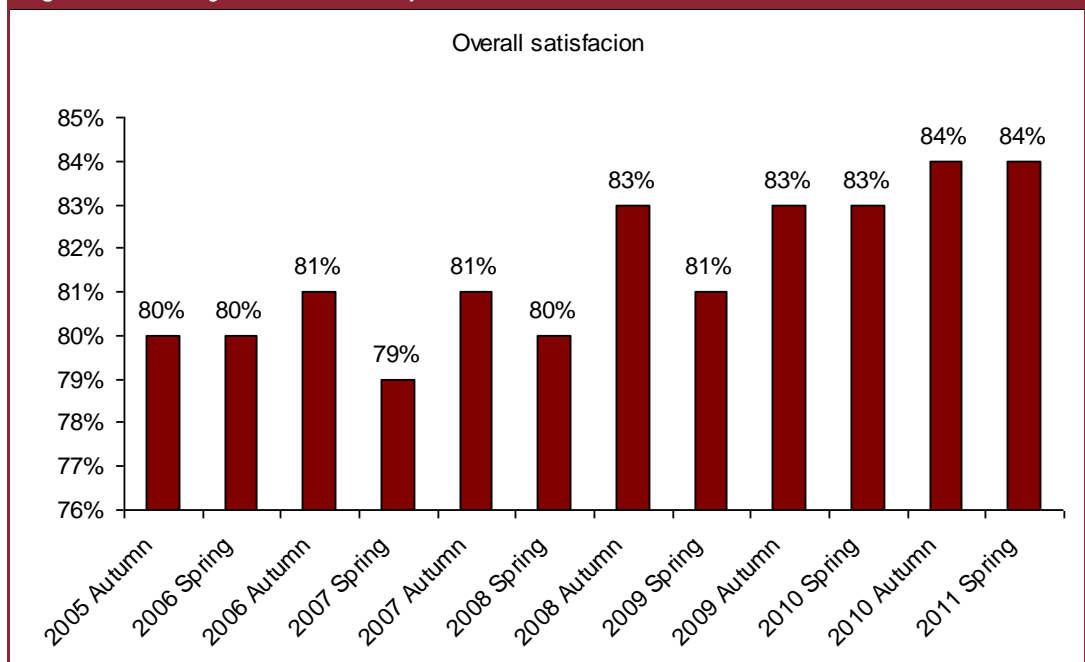
Integrated Train Planning System (ITPS)

Two breaches of our network licence were declared by ORR during 2010/11 both in relation to the roll-out and implementation of the new Integrated Train Planning System.

During 2009/10 we implemented the new ITPS. The system is designed to bring about significant long-term benefits for both Network Rail and the wider industry, in that it will:

- help us better exploit existing network capacity;
- provide more efficient and robust timetables;
- allow more effective development of significant timetable changes; and
- reduce data handling and transaction processing and costly system interfaces.

Figure 1.2: Passenger satisfaction survey results



The roll-out and implementation of ITPS did not go smoothly and caused problems for train operators and their customers. In May 2010 the independent reporter (Arup) was instructed to review our plans for meeting our timetabling obligations and to examine whether we took appropriate steps so as to mitigate the risks associated with the roll-out of the new system. The report concluded that, during the early stages of the project in particular, we failed to properly consider, mitigate and communicate with our customers about the risks associated with the introduction of ITPS.

ORR subsequently concluded that, whilst our decision to replace old and inefficient timetabling systems and processes was right, we had breached both Condition 1 of the Network Licence for failing to run an effective and efficient system for managing the timetable change process on the network, and Condition 2 for failing to provide accurate timetable information to train operators within required timescales. As a result of these licence breaches Network Rail was fined £3 million. ITPS performance is now much more stable and is no longer causing problems as regards the publication of the timetable within Informed Traveller timescales. Notwithstanding this, work continues to resolve residual system performance matters and ORR continues to closely monitor progress.

Operational Performance

Given the disappointing operational performance in 2010/11, we now need to achieve a greater level of improvement to meet the performance outputs specified in ORR's final determination. We believe that we can still achieve the performance output and we are discussing our plans to do this with ORR.

West Coast Main Line performance

The initiatives to address performance volatility on the West Coast Main Line (WCML) were reported in the 2009/10 Annual Return. Performance on the WCML has recovered from a PPM moving annual average of just under 80 per cent to over 86 per cent. The intensified timetable, introduced in December 2008, is well established and, whilst performance levels dipped over the recent severe winter, overall performance has been improving. As a result, our customers who operate on the line have confirmed that they are happy to rely on normal joint performance improvement (JPIP) processes during 2011/12.

East Coast Main Line Performance

Performance on the East Coast Main Line (ECML) in 2010/11 was poor due to a wide range of factors. Some of these were external, most notably the extreme weather, which saw some of the worst snowfalls in the north east of England and Scotland. There were also cable thefts and fatalities but also a number of asset failures. Network Rail has focussed its attentions on basic reliability and ORR has reviewed the plans and programme in detail. Although there are some encouraging signs in terms of a reduction in the number of incidents on the route, overall performance continues to fall short of where it should be.

Freight performance

The freight performance target (delay minutes per 100 train kms) for 2010/11 was missed for the second year running. Whilst this is disappointing, Network Rail is concerned that the target is not meaningful to our customers. We are therefore in discussions with both ORR and our customers as regards how freight performance should be measured.

Information about network capability

During the year Network Rail resolved all the discrepancies between actual and published network capability (the subject of enforcement action in 2006). Network Rail is now concentrating on resolving problems where a short term network change was made.

Section 2 – Network capability and network availability

Introduction

This section reports on the capability of the network and network availability.

Network capability

Data on four capability measures, and an explanation of changes during the year, are reported for:

- C1 – linespeed;
- C2 – gauge;
- C3 – route availability value; and
- C4 – electrified track.

The 'running lines' for network capability purposes are derived from around a quarter of a million GEOGIS records (GEOGIS is a major database of railway infrastructure assets containing information on the physical location and type of track). The capability data presented in this section includes actual changes to the network as well as changes as a result of data cleansing (review and subsequent amendment to data where necessary).

The original remit of the Infrastructure Capability Programme (ICP) was to publish accurate information pertaining to the capability available across all Routes, and to highlight where the capability was not as understood. It encompasses:

- the verification of capability as published in the Sectional Appendix;

- the resolution of any identified discrepancies;
- improvement to the accessibility of capability information through publication of the National Electronic Sectional Appendix (NESA); and
- improved management processes so as to prevent the emergence of further discrepancies in the future.

This section includes information on the ICP as well as the network changes which have arisen as a result of it.

Linespeed capability (C1)

This is a measurement of the length of running track in kilometres in the following speed bands:

- up to 35 miles per hour;
- 40 to 75 miles per hour;
- 80 to 105 miles per hour; and
- 110 to 125 miles per hour.

The measure includes running lines and loops but excludes sidings and depots. Where differential speeds apply to a section of track, the highest linespeed applies for that section.

Results

Tables 2.1 to 2.3 show linespeed capability for England & Wales, Scotland and the whole network for 2010/11 compared to previous years.

Reporting confidence

This is B2.

Table 2.1: Linespeed capability (km of track in each speed band) Network-wide

Speed Band (mph)	March 2006	March 2007	March 2008	March 2009	March 2010	March 2011
Up to 35	3,819	3,786	3,783	3,763	3,684	3,653
40 – 75	16,897	16,856	16,890	16,836	16,829	16,806
80 – 105	7,482	7,489	7,450	7,479	7,479	7,571
110 – 125	2,907	2,932	2,959	3,043	3,081	3,078
Total	31,105	31,063	31,082	31,119	31,073	31,108

Table 2.2: Linespeed capability (km of track in each speed band) England & Wales

Speed Band (mph)	March 2006	March 2007	March 2008	March 2009	March 2010	March 2011
Up to 35	3,361	3,328	3,315	3,300	3,223	3,194
40 – 75	14,523	14,488	14,510	14,439	14,426	14,422
80 – 105	6,400	6,407	6,368	6,378	6,375	6,403
110 – 125	2,686	2,711	2,739	2,822	2,860	2,857
Total	26,970	26,934	26,932	26,939	26,884	26,876

Table 2.3: Linespeed capability (km of track in each speed band) Scotland

Speed Band (mph)	March 2006	March 2007	March 2008	March 2009	March 2010	March 2011
Up to 35	458	458	468	463	461	459
40 – 75	2,374	2,368	2,380	2,397	2,403	2,384
80 – 105	1,082	1,082	1,082	1,099	1,104	1,168
110 – 125	221	221	220	221	221	221
Total	4,135	4,129	4,150	4,180	4,189	4,232

Commentary

The length of the “running lines” of the network has increased by 35 track kilometres.

Additions are:

- most significantly the opening of the Airdrie to Bathgate line (45 km mostly 80 – 105 mph);
- inclusion of the former High Marnham branch as “test track” (35 km mostly at 40 – 75 mph);
- Willesden Royal Mail Terminal; and
- track doubling at Axminster, Welshpool and to Hull Docks.

The reductions include:

- some minor track singling at Maidlee;
- preparatory works at Reading; and
- Erewash lines rationalisation.

The reductions mostly relate to changing the status of tracks. Some of this is recent network change whereas much is further data cleanse. The Kingsbury branch, Leamside line near Pelaw and Folkestone Harbour branch are the biggest of the reductions, virtually all of which were in the 0 – 35 mph speed band.

Speed band changes to existing track were not extensive although small enhancements can have a significant effect where, for example, bottlenecks are removed. However, in the case of Radford Junction to Trowell Junction, 14 km of 60 mph track is now 80 mph with a corresponding speed band shift. Three km near Aynho and two km near Bicester North also increased to the 80 – 105 mph band. Together with the aforementioned new track this explains an overall upwards shift of bands year-on-year. The reduction in 110 – 125 mph track is principally two km on the approaches to Derby which are now at 80 mph rather than 110 mph.

Gauge capability (C2)

This is a measurement of the length of route in kilometres capable of accepting different freight vehicle types and loads by reference to size (gauge). This measurement is reported against six standard gauges listed in the Group Standard:

- W6 is the freight vehicle gauge for freight wagons;
- W7 is a gauge for ISO 8’ 0” (2438mm) high containers, up to 2438mm wide;
- W8 is a gauge for ISO 8’ 6” (2590mm) high containers, up to 2500mm wide;
- W9 is a gauge for UIC-S containers 9’ 0” (2743mm) high, up to 2600mm wide;
- W10 is a gauge for up to ISO 9’ 6” (2590mm) high containers, up to 2500mm wide; and
- W12 is a gauge for up to ISO 9’ 6” (2590mm) high containers, up to 2600mm wide.

A definition of these individual freight gauges can be found in Railway Group Standard GE/RT8073 (October 2009) ‘Requirements for the Application of Standard Vehicle Gauges’. Reference to W6 in this report is actually to the W6A profile in the Standard. W6 or W6A, W7, W8 and W9 are broadly incremental.

Results

Tables 2.4 to 2.6 show gauge capability for England & Wales, Scotland and the whole network for 2010/11 compared to previous years.

Reporting confidence

This is B2.

Table 2.4: Gauge capability (km of route in each gauge band) Network-wide

<i>Gauge Band</i>	<i>March 2006</i>	<i>March 2007</i>	<i>March 2008</i>	<i>March 2009</i>	<i>March 2010</i>	<i>March 2011</i>
W6	4,771	4,746	4,670	5,049	5,406	5,597
W7	2,741	2,719	2,830	3,164	3,255	3,191
W8	5,504	5,496	5,407	4,851	4,318	4,084
W9	1,615	1,618	1,699	1,383	1,360	1,381
W10 and W6	6	6	6	6	0	0
W10 and W8	73	65	65	62	74	114
W10 and W9	1,016	1,054	1,054	1,170	1,210	1,275
W12	84	84	84	130	130	135
Total	15,810	15,788	15,815	15,815	15,753	15,777

Table 2.5: Gauge capability (km of route in each gauge band) England & Wales

<i>Gauge Band</i>	<i>March 2006</i>	<i>March 2007</i>	<i>March 2008</i>	<i>March 2009</i>	<i>March 2010</i>	<i>March 2011</i>
W6	4,651	4,629	4,546	4,924	5,284	5,479
W7	1,910	1,887	1,998	2,220	2,313	2,258
W8	4,309	4,305	4,240	3,721	3,187	2,974
W9	1,280	1,280	1,326	1,075	1,057	1,023
W10 and W6	6	6	6	6	0	0
W10 and W8	73	65	65	62	74	114
W10 and W9	854	892	892	1,008	1,039	1,105
W12	84	84	84	130	130	135
Total	13,167	13,148	13,157	13,146	13,084	13,088

Table 2.6: Gauge capability (km of route in each gauge band) Scotland

<i>Gauge Band</i>	<i>March 2006</i>	<i>March 2007</i>	<i>March 2008</i>	<i>March 2009</i>	<i>March 2010</i>	<i>March 2011</i>
W6	120	117	124	125	122	118
W7	831	832	832	944	942	933
W8	1,195	1,191	1,167	1,130	1,131	1,110
W9	335	338	373	308	303	358
W10 and W6	0	0	0	0	0	0
W10 and W8	0	0	0	0	0	0
W10 and W9	162	162	162	162	171	170
W12	0	0	0	0	0	0
Total	2,643	2,640	2,658	2,669	2,669	2,689

Commentary

The changes in the extent of the network reported in the Linespeed capability measure are also reflected in the Gauge Capability measure with a net increase of 24 route kilometres.

Network Rail has published freight gauge capability in the Sectional Appendix. The Infrastructure Capability Programme has involved checking many routes across the country, and although mainly complete, is continuing to drive the main changes to the capability. A number of routes show a small improvement where work has been undertaken to correct the capability, and one route, Chester to Holyhead, has reduced from W7 and W8 to

W6. Further minor reductions will appear over the next few years, along with improvements as work undertaken to correct the capability occurs.

Network Rail has a number of major projects underway that improve the gauge capability of key routes to W10 and in some cases W12. The first two of these, Southampton – West Midlands and Ipswich – Nuneaton, completed sufficiently to commence running some W10 traffic. However, as there are still reconstructions in progress, these routes have yet to be fully cleared and therefore do not feature in the figures above.

As W12 is now being specified as standard for these projects, the report has been amended to include W12. The small number of W12 routes was previously reported as W10. This change therefore results in a reduction in the W10 figures.

Route availability value (C3)

Introduction

The infrastructure capability Route Availability measure is used to check the compatibility of the weight of trains with the strength of underline bridges.

The route availability (RA) measure is a measurement of the length of track in kilometres capable of accepting different loaded vehicle types. The results are reported by individual RA value (since the 2010 Annual Return).

For infrastructure, the RA number represents the lesser of the maximum single axle weight or the maximum equivalent load effect of a whole vehicle for the capability of the underline bridges on a route. The RA number for a route is specified in the National Electronic Sectional Appendix.

Vehicles are able to run with the capability of the infrastructure where the vehicle RA is less than or equal to the route RA. If not, it is necessary to consider more detailed information on the loading characteristics of the vehicle and detailed information on the strength of individual bridges to check compatibility.

This measure includes running lines only on Network Rail's infrastructure and excludes sidings and depots.

Results

Tables 2.7 to 2.9 show the route availability for England & Wales, Scotland and the whole network for 2010/11 compared to previous years.

Reporting confidence

This is B2.

Table 2.7: Structures route availability (km of track) for Network

Route availability band	March 2006	March 2007	March 2008	March 2009	March 2010	March 2011
(1)					89	81
RA1					19	19
RA2					36	7
RA3	2,309 ²	2,295 ²	3,990 ²	3,558 ²	190	70
RA4					670	273
RA5					1,403	1,403
RA6					852	878
RA7					1,969	2,096
RA8	25,935 ³	25,928 ³	25,061 ³	25,591 ³	21,594	21,941
RA9					2,150	2,149
RA10	2,861	2,840	2,031	1,970	2,101	2,191
Total	31,105	31,063	31,082	31,119	31,073	31,108

Notes:

2. RA value not reported, line Out Of Use, leased or status of line being checked
3. RA1–6 and not reported
4. RA7–9

Table 2.8: Structures route availability (km of track) for England & Wales

Route availability band	March 2006	March 2007	March 2008	March 2009	March 2010	March 2011
(1)					86	78
RA1					19	19
RA2					36	7
RA3	1,570 ²	1,556 ²	2,856 ²	2,456 ²	72	32
RA4					670	273
RA5					464	469
RA6					845	871
RA7					1,759	1,873
RA8	25,280 ³	25,292 ³	24,011 ³	24,418 ³	20,721	21,042
RA9					2,146	2,145
RA10	120	86	65	65	66	67
Total	26,970	26,934	26,932	26,939	26,884	26,876

Notes:

5. RA value not reported, line Out Of Use, leased or status of line being checked
6. RA1–6 and not reported
7. RA7–9

Table 2.9: Structures route availability (km of track) for Scotland

Route availability band	March 2006	March 2007	March 2008	March 2009	March 2010	March 2011
(1)					3	3
RA1					0	0
RA2					0	0
RA3	739 ²	739 ²	1,134 ²	1,102 ²	118	38
RA4					0	0
RA5					939	934
RA6					7	7
RA7					210	223
RA8	655	636	1,050	1,173	873	899
RA9					4	4
RA10	2,741	2,754	1,966	1,905	2,035	2,124
Total	4,135	4,129	4,150	4,180	4,189	4,232

Notes:

8. RA value not reported, line Out Of Use, leased or status of line being checked
9. RA1–6 and not reported
10. RA7–9

Commentary

This year the RA measure is based on the Route Availability values published in the National Electronic Sectional Appendix (NESA). Previously for the 2008 to 2010 Annual Returns, the reported values were based on the work to verify Route Availability undertaken as part of the Infrastructure Capability Programme (ICP). During 2010 Network Rail formally consulted stakeholders through the industry Network Change process on proposals to address the discrepancies in Route Availability identified through the ICP.

Following the establishment of all the proposed network changes arising from the ICP, the Route Availability values have been updated in the NESA and are now aligned with the verified Route Availability values. As a result, and in conjunction with improvements in Route Availability arising from the strengthening and reconstruction of rail bridges to restore capability, additional assessments undertaken on bridges and the change in overall network size, there is a net additional 473 km of RA 7-9 track and 90 km of RA10 track and a reduction of 520 km of track in RA 1-6 bands.

The key changes in Route Availability are:

- 13 km increase to RA10 from RA8 – Cove LC to Lockerbie (WCM1);
- 14 km increase to RA8 from RA4 – Brockenhurst Junction to Bournemouth (BML2);
- 22 km increase to RA8 from RA4 – Horsham to Arundel Junction North (TBH1); and
- 13 km increase to RA8 from RA4 – Dorking to Horsham Junction (BTH3).

The changes in the extent of the network reported in the Linespeed capability measure are also reflected in the RA measure with a net increase of 35 track kilometres. The principal changes are the opening of the Airdrie to Bathgate line, 45 km (RA10) and the inclusion of the former High Marnham branch as "test track" comprising 35 km (RA8).

Electrified track capability (C4)

Introduction

This is a measurement of the length of electrified track in kilometres in the following bands:

- overhead line at 25kV A.C.;
- overhead line at 1,500V D.C.; and
- 3rd rail 650/750V D.C.

The measurement includes the length of running track, including loops but excluding sidings and depots.

Lengths of track with dual electrification are not double counted. In addition, line that is not energised and permanently earthed is counted as non-electrified.

Results

Tables 2.10 to 2.12 show electrification capability for England & Wales, Scotland and the whole network for 2010/11 compared to previous years.

Reporting confidence

This is B2.

Table 2.10: Electrification capability (km of electrified track) Network-wide

	March 2006	March 2007	March 2008	March 2009	March 2010	March 2011
25 kV AC overhead	7,882	7,981	7,975	8,000	8,016	8,059
3rd rail 650/ 750V DC	4,492	4,483	4,481	4,481	4,475	4,470
Dual AC, overhead/3rd rail DC	39	38	40	40	37	37
1500V DC overhead	39	39	39	39	39	39
Total electrified	12,452	12,541	12,535	12,560	12,567	12,605
Non-electrified	18,653	18,522	18,547	18,559	18,506	18,503
Total	31,105	31,063	31,082	31,119	31,073	31,108

Table 2.11: Electrification capability (km of electrified track) England & Wales

	March 2006	March 2007	March 2008	March 2009	March 2010	March 2011
25 kV AC overhead	6,629	6,728	6,725	6,747	6,761	6,757
3rd rail 650/ 750V DC	4,492	4,483	4,481	4,481	4,475	4,470
Dual AC, overhead/3rd rail DC	39	38	40	40	37	37
1500V DC overhead	39	39	39	39	39	39
Total electrified	11,199	11,288	11,285	11,307	11,312	11,303
Non-electrified	15,771	15,646	15,647	15,632	15,572	15,573
Total	26,970	26,934	26,932	26,939	26,884	26,876

Table 2.12: Electrification capability (km of electrified track) Scotland

	<i>March 2006</i>	<i>March 2007</i>	<i>March 2008</i>	<i>March 2009</i>	<i>March 2010</i>	<i>March 2011</i>
25 kV AC overhead	1,253	1,253	1,250	1,253	1,255	1,302
3rd rail 650/ 750V DC	0	0	0	0	0	0
Dual AC, overhead/3rd rail DC	0	0	0	0	0	0
1500V DC overhead	0	0	0	0	0	0
Total electrified	1,253	1,253	1,250	1,253	1,255	1,302
Non-electrified	2,882	2,876	2,900	2,927	2,934	2,930
Total	4,135	4,129	4,150	4,180	4,189	4,232

Commentary

The size of the “running lines” of the network has increased by 35 track kilometres. Additions are:

- principally the opening of the Airdrie to Bathgate line with over 45 km OHL (overhead line);
- inclusion of the former High Marnham branch as “test track” comprising 35 km without electrification; and
- Willesden Royal Mail Terminal plus track doubling at Axminster, Welshpool and to Hull Docks also add to the network but not electrification.

The reductions included mostly relate to changing the status of tracks but also include:

- some minor track singling at Maidlee;
- preparatory works at Reading; and
- Erewash lines rationalisation.

Some of this is recent network change whereas much is further data cleansing. The Kingsbury branch, Leamside line near Pelaw, Folkestone Harbour branch are the biggest of the reductions of which the latter is the only change in electrified track (DC).

Changes to existing track include work at Farringdon with more AC/DC and updating in relation to OHL for West Coast Route Modernisation near Rugby, Stafford and Nuneaton. Small reductions have also occurred as a result of GEORGIS refinements.

Infrastructure Capability Programme

Introduction

This section of the Annual Return records the current key information from the Infrastructure Capability Programme (ICP). It reflects progress of the ICP during the year as well as information on network changes which have arisen as a result of it.

Our obligation is to maintain network capability as at 1 April 2009, in terms of track characteristics such as mileage and layout, line speed, gauge, route availability, and electrification type and mileage. Network capability is primarily defined by the data contained within the Sectional Appendix and associated system, the National Electronic Sectional Appendix (NESA). At the start of this control period we provided ORR with a statement of the capability of the network at 1 April 2009 for the above characteristics and this baseline data is also published on our website. At that point there were discrepancies between actual and published capability of the network.

Table 2.13: Discrepancies between actual and published capability identified by the Infrastructure Capability Programme

Route	Line of route	Section	Capability measure	Published status	Current status
LNE	LN882	Pontefract Monkhill Down Goods Loop	T	Out of use	Network Change NC/G1/2010/LNE/054 proposed but currently in dispute – progressing

The original remit of the ICP was to publish accurate information pertaining to the capability available across all Routes, and to highlight where the capability was not as understood. This information was also used to provide to ORR an indication of a baseline level of capability to which Network Rail would be held accountable through CP4. Where there were discrepancies to the understood capability these were to be made visible, an appropriate course of action defined following consultation with stakeholders, and remediation activity planned and delivered to enable baseline capability to be restored, if appropriate.

Where these discrepancies were a material change to the baseline (e.g. W8 reduced to W7, or RA10 reduced to RA5) this was recorded in a Discrepancy Register. This register formed the basis of monitoring the ICP's progress through its Stakeholder Group. These discrepancies are being regularised through Network Change, or Short Term Network Change (STNC) and subsequent physical restoration, where appropriate.

The ICP, as a specific programme of work is now complete. The ownership of the Network Changes and STNCs which were established as part of the ICP has now transferred from the Programme to the relevant Routes. Therefore any future changes, such as removals, extensions, or following industry consultation re-establishment as permanent Network Changes, will be delivered by and reported on through the relevant Route.

The information shown below is correct at 10 May 2011.

Discrepancies between actual and published capability identified by the ICP

Definition and reporting method

This information is taken from the Discrepancy Register, which is published alongside the National Electronic Sectional Appendix (NESA) and is updated on a regular basis. The Discrepancy Register comprises a comprehensive list of the differences between our published and actual capability identified by the ICP.

Results

There is only one discrepancy remaining. This outstanding item is subject to a Network Change which is currently being disputed through the Network Change process, as described by the Network Code.

Table 2.13 provides a list of all discrepancies between actual and published capability.

Commentary

This is the second year in which this data has been published in the Annual Return. This publication of an almost "empty set" indicates that all but one of the discrepancies identified as part of the ICP have now been regularised through the establishment of Network Change or STNC, pending restoration of the original capability, or the establishment of a clear customer business need as a pre-cursor to restoration of the original capability.

Table 2.14: Number of Short-Term Network Changes

	<i>Expiring by end March in each year</i>					
	<i>Total</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>
England and Wales	45	1	16	16	12	0
Scotland	18	1	1	4	5	7
Network Total	63	2	17	20	17	7

Short-Term Network Changes resulting from ICP and year of expiry

Definition and reporting method

This information is taken from the internal processes used for monitoring STNC issued in connection with the ICP.

Results

This is the second year in which this data has been published in the Annual Return. We will update Table 2.14 annually.

Commentary

The number of STNCs has increased significantly since the 2010 Annual Return. This is as a result of a significant number of Network Changes which were established at the beginning of the year, following a lengthy consultation period, and reflects the corresponding decrease in the Discrepancy Register.

Permanent Network Changes completed resulting from ICP

Definition and reporting method

This information is taken from the internal processes used for monitoring the establishment of Network Changes issued in connection with the ICP, and covers the period to the data extraction date of 10 May 2011.

Results

This is the second year in which this data has been published in the Annual Return. This table is updated on an annual basis to reflect those Network Changes arising from the ICP which have been established in the previous 12 months. As the ICP Discrepancy Register is now an almost empty set it is envisaged that further entries to this table after this Annual Return will be minimal.

Commentary

The number of Network Changes established has increased significantly since the 2010 Annual Return. This is as a result of a significant number of network changes which were established at the beginning of the year, following a lengthy consultation period, and reflects the corresponding decrease in the Discrepancy Register.

Table 2.15: Permanent network change			
Route section	Description of change	Network change number/identifier	Date NC established
LN790	Rufford colliery area: various closures	NME/2010/LNE/018	29/04/2010
		NC/G1/2010/LNE/047	14/1/2011
		NC/G1/2010/LNE/STNC/001	14/1/2011
LN105	Moorgate to Drayton Park: Reduction in Freight Gauge capability	NCG12009ICPGLNE014	17/11/2010
LN3213	Moorgate to Kentish Town Jn: Reduction in Freight Gauge capability	NCG12009ICPGLNE017	17/11/2010
LN926	Dockfield Jn (Shipley) to Esholt Jn: Reduction from RA5 to RA2	NC/G1/2009/LNE/023	29/07/2010
EA1380	Gas Factory Jn and Barking Tilbury Line Jn West: Reduction from RA8 to RA3	NC-G1-2010-ICP-RA-EA 004	05/11/2010
SC115	Maryhill Park Jn to Knightswood North Jn: Reduction from RA10 to RA8	NC-G1-2010-ICP-RA- SC 014	30/04/2010
SC203	Georgemas Jn and Wick: 30mph Loco speed restriction and reduction from RA5 to RA3	NC-G1-2010-ICP-RA-SC 015	30/04/2010
SC051	Muirhouse Central Junction to Cathcart North Jn (West side via Langside): Reduction in RA	NC-G1-2010-ICP-RA-SC 016	23/11/2010
SC193	Dunkeld and Pitlochry: linespeed change over bridge	NC-G1-2010-ICP-RA-SC 017	12/11/2010
SC193	Dalwhinnie and Kingussie: linespeed change over bridge	NC-G1-2010-ICP-RA-SC 018	12/11/2010
SO130	London Charing Cross to Metropolitan Jn: reduction in RA	NC-G1-2010-ICP-RA-SO 015	27/07/2010
SW105	Worgret Jn to Furzebrook NR / Swanage Railway Boundary: reduction in RA	NC-G1-2010-ICP-RA-SO 016	30/04/2010
SW195	Hampton Court Jn to Hampton Court (Up line only): reduction from RA8 to RA4	NC-G1-2010-ICP-RA-SO 017	30/04/2010
SO330	New Beckenham Jn to Hayes: reduction from RA8 to RA4	NC-G1-2010-ICP-RA-SO 019	12/11/2010
SW110	Portsmouth Harbour Station, platforms 1 & 3: Reduction from RA7 to RA4	NC-G1-2010-ICP-RA-SO 022	27/07/2010
SO680	Dorking to Horsham Jn: linespeed change over bridge	NC-G1-2010-ICP-RA-SO 023	30/04/2010
SW140	St Denys Jn and Fareham East Jn: linespeed change over bridge	NC-G1-2010-ICP-RA-SO 024	30/04/2010
SO600	Appledore Jn to Ashford 'D' Jn: linespeed change over bridge	NC-G1-2010-ICP-RA-SO 025	30/04/2010

Network availability

Disruptions to passengers and freight as a result of planned engineering possessions

Possession Disruption Index – Passenger (PDI-P)

Definition

The Possession Disruption Index for Passengers measures the value of the impact of possessions on excess journey time as experienced by passengers.

This is calculated as (excess journey time x busyness factor) x (no. of passengers x time of day weighting x economic value of time) divided by (total scheduled passenger km).

Possession Disruption Index – Freight (PDI-F)

Definition

The Possession Disruption Index for Freight measures Track kilometre availability weighted by relative levels of freight traffic operated over each Engineering Line of Route.

Table 2.16: Disruptions to passengers and freight as a result of planned engineering possessions

	<i>2008/09 Actual</i>	<i>2009/10 Planned</i>	<i>2009/10 Actual</i>	<i>2010/11 Planned</i>	<i>2010/11 Actual</i>
Possession disruption index (Passenger) – (PDI- P)	0.87	1.02	0.63	0.91	0.52
Possession disruption index (freight) – (PDI-F)	1.16	1.00	0.82	1.00	0.89

This is calculated as Possession Disruption Index for freight = (average freight tonne km per SRS divided by average freight tonne km for network) x (Track km available divided by total Track km).

Results

Table 2.16 shows the PDI-P and PDI-F for 2010/11 compared to plan and 2009/10.

Commentary

During 2010/11 Network Rail has continued to perform well against its Network Availability targets for both passenger (PDI-P) and freight (PDI-F). Both measures end the year ahead of target with PDI-P standing at 0.52 and PDI-F at 0.89.

The effect arising from the review of track renewal standards and the deferral of some renewals and enhancements to later in the control period has contributed to this result (however, with reciprocal upward pressure on the forecasts for later years).

A further review of the methods used to collect the data for the PDIs and for supporting metrics was again undertaken by the Independent Reporter during the year. They rated the reporting confidence of the PDIs as B3. A number of recommendations were made that Network Rail will be working on in 2011/12.

The Network Availability Reporting System (NARS) was brought into use during this year.

The system has the capability to calculate the actual PDI figures and to assess different access strategies for their relative disruptive impact. NARS also supports Network Rail's ability to forecast PDIs for later years, although accuracy is dependent on the level of detail available in future access plans. We have invited the Independent Reporter to review NARS.

Supporting initiatives

Planning for the 2012 timetable year took place during 2010/11. These access plans capture further improvements in track renewals delivery in line with commitments, and are the first full year plans to take consideration of the Route Categorisation principles adopted following discussions in late 2009 between the industry and the Secretary of State for Transport.

Work has been ongoing with all customers to establish Joint Network Availability Plans (JNAPs) to outline future aspirations and the workstreams required to deliver these aspirations. All passenger operators now have a JNAP in place and there is a joint JNAP covering all freight customers.

Seven Day Railway Fund

At the end of 2010/11 a total of 54 schemes had been identified for full or part funding through the Seven Day Railway Fund. These schemes have a total cost of £147 million and were anticipated to deliver a PDI-P improvement of 0.085 and a PDI-F improvement of 0.020.

Of the 54 schemes:

- four were completed during the year – the additional platform at Chesterfield, road rail vehicle access at Christchurch, a new stabling facility at Worcester and 27 track clipping machines deployed nationally;
- 29 schemes were authorised for £68 million for single option development and beyond (GRIP 4-8);
- 13 schemes were authorised for £73 million for development (GRIP1-3); and
- eight schemes were closed with abortive costs following feasibility studies which resulted in a decision not to proceed as insufficient benefits were identified.

To support the delivery of the JNAPs; Network Rail has reviewed the arrangements for governance and financial authorisation. For schemes with an anticipated final cost (AFC) of £1 million or less authority has been delegated to Route Directors (Route Managing Directors in devolved routes). Schemes in excess of this amount will be authorised in line with Network Rail's investment regulations. All schemes will be assessed in line with the Network Availability investment guidelines to establish that appropriate benefits will be delivered.

Supporting Metrics

Working timetable weekend compliance –

The moving annual average (MAA) for this metric was maintained at around 86 per cent until periods 9 and 10 where it fell to around 84 per cent as a result of the impact of amended timetables arising from the winter weather conditions.

Rail Replacement bus hours – This metric showed a steady improvement throughout the year with a reduction of 15.4 per cent in the MAA of total bus hours from between Period 13 2009/10 and period 13 2010/11.

Possession Notification Discount Factor –

During this year there has been a significant reduction in the number of possessions compensated in the medium discount range, with the majority of possession being compensated at maximum discount indicating an improvement in late notice possession planning. However, the problems associated with introducing the new train planning system did result in a significant increase in minimum discount payments in period 6. Towards the end of the year the use of emergency timetables (Day A for Day B) resulting from the winter weather conditions resulted in increased minimum discount payments in periods 9 and 10. Minimum discount payments in period 11 resulted from emergency maintenance possessions for remedial work arising from damage caused by snow and ice.

Late and very late notice disruptive

possessions – This metric performed well with less than 2 per cent of possessions falling into this category in every period.

Possessions involving single line working –

The levels declined in the first half of the year, but have recovered somewhat in the second half.

Delay minutes due to possession overrun –

The improvements made on this metric were held for the first half of 2010/11. However, during the second half of the year the MAA for this metric has steadily risen. Analysis of the root causes of this worsenment is under investigation and, once identified, we will adopt mitigating actions.

Cancellation minutes due to possession

overrun – This metric has held steady over the past year with just over 0.01 cancellation minutes per 100 train km.

National unplanned TSRs actual vs target –

This metric has continued to significantly out perform against its target in each period of 2010/11, except for period 11 where a spike occurred due to the introduction of a number of unplanned temporary speed restrictions (TSRs) required following the winter weather conditions.

Section 3 – Asset management

Introduction

This section reports on the condition and quality of our assets for 2010/11. It provides an indication of our asset stewardship and trends over time as well as progress against forecasts or targets. The following measures are reported:

- broken rails;
- rail defects;
- track geometry quality;
- track buckles;
- track failures;
- condition of asset temporary speed restrictions (TSRs);
- track geometry faults;
- earthworks failures;
- earthworks condition;
- bridge condition;
- tunnel condition;
- signalling failures;
- signalling asset condition;
- AC traction power incidents;
- DC traction power incidents;
- AC traction substation condition;
- DC traction substation condition;
- AC contact system condition;
- DC contact system condition;
- station stewardship measure; and
- light maintenance depot stewardship measure.

The station stewardship measure is the only measure in this section to have a regulatory target. However, the ORR's document Network Rail – success in control period 4, published on 1 March 2011, sets out a range of measures including asset condition / reliability against which our asset stewardship is gauged. These measures help provide an indication of underlying trends in changes to asset condition rather than representing an absolute assessment. The forecasts for most of these measures are reflected in Appendix 10 (Condition and reliability forecasts for the network) of the CP4 Delivery Plan update 2011.

This Annual Return includes the following measures for the first time:

- earthworks condition;
- track buckles; and
- track failures.

Table 3.1 below shows the network-level asset measure results for 2010/11 compared with previous years.

Table 3.1: Comparison of network asset measures with previous years				
Measure	2007/08	2008/09	2009/10	2010/11
Good track geometry	135.2	137.9	137.7	137.0
Poor track geometry	2.66	2.18	2.38	2.48
Broken rails (No.)	181	165	152	171
Immediate action rail defects per 100 km	n/a	6.28	5.45	3.94
	(new measure for CP4)			
Condition of asset TSRs (No.)	4,550	4,436	1,729	1,348
Earthworks failures (No.)	107	61	57	42
Tunnels condition	n/a	n/a	Bore 87.8	Bore 88.6
	(new measure for 2009/10)		Portal 92.2	Portal 91.9
Bridge condition score	2.09	2.08	2.08	2.10
Signalling failures causing delays of more than 10 mins. (No.)	19,923	19,607	18,323	16,501
Signalling asset condition	2.38	2.39	2.37	2.41
AC power incidents causing >500 minute train delays (No.)	63	66	46	61
DC power incidents causing >500 minute train delays (No.)	9	14	14	14
AC traction feeder stations and track sectioning points condition	3.53	2.78	2.70	2.56
DC traction feeder stations and track sectioning points condition	3.61	2.53	2.32	2.37
AC contact systems condition	1.7	1.6	1.6	1.6
DC contact systems condition	1.9	1.9	1.9	1.9
Station stewardship measure				
Category A	2.48	2.44	2.38	2.30
Category B	2.60	2.47	2.46	2.40
Category C	2.65	2.52	2.52	2.47
Category D	2.69	2.52	2.54	2.47
Category E	2.74	2.57	2.58	2.50
Category F	2.71	2.55	2.56	2.50
Scotland (all categories)	2.39	2.39	2.39	2.33
Light maintenance depot stewardship measure (network)	2.49	2.52	2.50	2.48
Asset reliability (no. of infrastructure incidents causing delay)	54,760	52,270	46,091	42,135

Note: For all measures in this table except Good track geometry a lower figure indicates improvement. Some historical data has been restated due to refinement in the reporting systems.

Broken rails (M1)

Definition

A broken rail is one which, before removal from the track, has a fracture through the full cross-section, or a piece broken out of it, rendering it unserviceable. This also includes broken welds. Only broken rails occurring in running lines are included in this measure (i.e. sidings, depots, etc., are excluded).

Reporting method

This is in accordance with the company procedures for measuring and reporting broken rails.

Reporting confidence

The confidence grade has been assessed an A1 by Arup, the independent reporter for our output monitoring. The roll out of the new Rail Defect Management System (RDMS), completed in December 2008, allows for standardised reports for the numbers and types of broken rail to be produced straight from RDMS for the year starting April 2009 onwards. The procedure for collecting, confirming and collating the numbers of broken rails has been in place for six reporting years, and is now supported by RDMS.

Results

Table 3.2 shows the annual number of broken rails for England and Wales, Scotland, and the network total, by route classification type.

Commentary

The final year end figure for 2010/11 of 171 was an increase on the previous year's total of 152.

This is the first year in which we have seen an increase in the number of broken rails over the last ten years.

The increase in broken rails compared to the previous year is almost entirely due to an increase in transverse breaks from the foot of the rail in primary routes. This type of break increased from 43 in 2009/10 to 67 in 2010/11. Many parts of the country experienced some of the most severe winter weather we have seen for many years. This increase in the number of breaks shows a strong correlation to the exceptionally cold period experienced in December and January.

Transverse breaks from the rail foot are affected by rail temperature due to the high tensile stresses that occur in a rail as its temperature drops below the nominal stress free temperature of 27°C. In contrast to the period of severe weather the first six months of the year showed very little variation in the number of breaks compared to the same period last year with a six-monthly total of 36 against the previous year of 33.

The other remaining categories of break showed a minor reduction in the overall numbers compared with the previous year.

Table 3.2: Number of broken rails by route classification

<i>Route Classification</i>		<i>2006/07</i>	<i>2007/08</i>	<i>2008/09</i>	<i>2009/10</i>	<i>2010/11</i>
England & Wales	Primary, and key London & South East	88	94	77	71	87
	Secondary, other London & South East, and freight trunk	73	62	58	50	49
	Rural, and freight only	10	11	13	11	13
	Total	171	167	148	132	149
Scotland	Primary, and key London & South East	7	4	4	7	7
	Secondary, other London & South East, and freight trunk	14	9	13	13	15
	Rural, and freight only	0	1	0	0	0
	Total	21	14	17	20	22
Network Total	Primary, and key London & South East	95	98	81	78	94
	Secondary, other London & South East, and freight trunk	87	71	71	63	64
	Rural, and freight only	10	12	13	11	13
	Grand Total	192	181	165	152	171

Rail defects (M2)

Definition

A defective rail is a rail that has any fault requiring remedial action (repair or replacement) to make it fit for purpose in accordance with Network Rail standards. This measure is reported as isolated defects (those defects with a length of less than one yard, such as midrail, welds, isolated wheelburns) and continuous defects (those defects with a length of one yard or more, such as rolling contact fatigue (RCF), wheelburns, hydrogen shatter cracking, vertical longitudinal splits).

Results

Tables 3.3 – 3.8 are in accordance with, but with minor changes to, the company procedures for measuring and reporting defective rails in order to accommodate the difficulties and timescales of implementing a new system for managing rail defects nationally. The subsequent commentary provides further explanation of the tables.

Table 3.3: Isolated rail defects

	<i>Defects identified</i>	<i>Defects removed/ repaired</i>	<i>Defects remaining at 31/3/2010</i>	<i>Defects identified</i>	<i>Defects removed/ repaired</i>	<i>Defects remaining</i>
	<i>2009/10</i>	<i>2009/10</i>		<i>2010/11</i>	<i>2010/11</i>	<i>at 31/3/2011</i>
England & Wales	17,744	18,125	4,768	15,869	14,370	6,267
Scotland	2,874	2,759	1,359	3,605	2,629	2,335
Network Total	20,618	20,884	6,127	19,474	16,999	8,602

Table 3.4: Immediate action isolated defects per 100km identified during the year by route classification

	<i>Route Classification</i>	<i>2008/09</i>	<i>2009/10</i>	<i>2010/11</i>
England & Wales	Primary and key London & South East	8.13	6.33	5.00
	Secondary, other London & South East and freight trunk	5.67	4.57	3.49
	Rural and freight only	4.75	4.22	2.86
	Total	6.63	5.30	4.07
Scotland	Primary and key London & South East	10.91	5.33	3.81
	Secondary, other London & South East and freight trunk	2.26	4.19	1.89
	Rural and freight only	2.83	13.37	5.54
	Total	4.01	6.42	3.06
Network Total	Primary and key London & South East	8.30	6.26	4.92
	Secondary, other London & South East and freight trunk	5.06	4.50	3.20
	Rural and freight only	4.36	6.08	3.41
	Grand Total	6.28	5.45	3.94

Table 3.5: Lengths of continuous rail defects (excluding RCF data)

	<i>Defects identified</i>	<i>Defects removed/ repaired</i>	<i>Defects remaining</i>	<i>Defects identified</i>	<i>Defects removed/ repaired</i>	<i>Defects remaining</i>
	<i>2009/10</i>	<i>2009/10</i>	<i>at 31/3/2010</i>	<i>2010/11</i>	<i>2010/11</i>	<i>at 31/3/2011</i>
England & Wales	95,056	117,908	54,578	71,966	69,616	56,928
Scotland	12,307	23,528	33,087	8,591	9,029	32,649
Network Total	107,363	141,436	87,665	80,557	78,645	89,577

Table 3.6: Lengths of continuous rail defects remaining¹ (defects excluding RCF)

	2006/07	2007/08	2008/09	2008/09 ¹	2009/10 ¹	2010/11 ¹
Total length (yards)	2,195,541	2,010,831	1,399,634	121,738	87,665	89,577
Total length (km)	2,008	1,839	1,280	111	80	82

Note: Prior to 2009/10 continuous defects numbers included Rolling Contact Fatigue (RCF). RCF is a condition and not necessarily a defect or actionable and is now shown separately.

Table 3.7: Rolling contact fatigue in plain line classified as heavy or severe (yards)

	Classification	2008/09	2009/10	2010/11
England & Wales	heavy	287,960	311,046	300,310
	severe	126,069	133,566	137,500
Scotland	heavy	31,279	28,711	32,275
	severe	8,255	14,513	16,434
Network Total	heavy	319,239	339,757	332,585
	severe	134,324	148,079	153,934

Table 3.8: Rolling contact fatigue in S&C classified as heavy or severe (number of components)

	Classification	2008/09	2009/10	2010/11
England & Wales	heavy	1,305	1,464	1,557
	severe	1,166	1,042	1,489
Scotland	heavy	196	247	271
	severe	106	151	189
Network Total	heavy	1,501	1,711	1,828
	severe	1,272	1,193	1,678

Reporting confidence

The procedure for reporting defective rails is now well established and this data justifies a B3 confidence grade. The difficulties surrounding the implementation of the new system for managing rail defects impacted on the initial efficiency and robustness of reporting this data. The existing interim procedure for collecting, confirming and collating the numbers of defective rails has been in place for four years. The roll out of RDMS, completed in December 2008, now allows for standardised reports for the numbers and types of defective rail to be produced straight from RDMS for the year.

Commentary

Table 3.3 shows isolated defects have decreased in comparison with last year. The number of defects removed and defects remaining have increased due to changes to the standard for the minimum actions to be taken for defects identified. Previously very small surface defects were scheduled for removal within 13 weeks, regardless of the size or growth rate. The standard now allows smaller defects to be reclassified as 'defects below actionable limits' which are subject to a programme of retesting with no fixed timescale for removal. This allows for more flexible and efficient

planning of their removal, and allowing greater focus on the management of larger defects of an actionable size. The overall reduction in the number of defects identified is a result of continued rail management activities. Rail replacement is focussed on the removal of defective rail, while new, more efficient rail defect repair methods, a continued programme of rail grinding, and the introduction of premium rail steels for critical locations help prevent the initiation and growth of surface defects.

Table 3.4 shows the number of immediate action defects identified per 100km of track by region and specific route category. Immediate action defects are those defects which require the immediate imposition of an emergency speed restriction due to their severity. The underlying network total was a significant annual reduction of 28 per cent on 2009/10, with improvement across all route sections. This has been brought about through more widespread use of ultrasonic test trains on Primary and Secondary routes and revisions to standards allowing earlier detection and removal of defects before a speed restriction is required.

Table 3.5 shows the lengths of continuous defects excluding rolling contact fatigue (RCF). These are rail defects greater than one yard long made up primarily of untestable rail, lipping, wheelburns, and hydrogen shatter cracking. These types of defects are more commonly associated with older rail steels, produced before 1976, when significant improvements were introduced to improve the cleanliness and quality of rail steels.

Table 3.6 illustrates that the overall length of continuous defects remaining in track is at a similar level to last year, although the numbers identified and requiring removal have reduced significantly. The early detection of these defects enables us to better manage the remaining life of the assets before they require removal. For example, it has enabled longer term programmed plans to remove the defects through the targeted rerailing of older, pre-1976 rail.

Table 3.7 shows the volume of heavy and severe RCF in plain line track measured in yards. The introduction and national use of RDMS has enabled the lengths of RCF reported to be split by severity. There are four levels of severity (light, medium, heavy, and severe). Light is where a surface crack is less than 10mm in length; moderate is between 10mm and 19.9mm; heavy is where the length of surface crack is between 20mm and 29.9mm; and severe is for surface cracks longer than 30mm.

Light and moderate RCF is managed through cyclic inspection and grinding, and requires no additional actions. Therefore, only heavy and severe RCF, which requires enhanced inspections, have been reported here.

The total length of heavy RCF has decreased over the previous year end figures although by contrast severe RCF has shown a slight increase. Table 3.8 shows the volume of heavy and severe RCF in switches and crossings (S&C). This is the number of units of S&C where one or more component(s) such as switch rails, stock rails, closure rails, and crossings contain heavy or severe cracks within the length of the component. The data shows an increase in the number of components in S&C affected by heavy and severe RCF.

Over the last year a programme of work has been carried out to improve the functionality of RDMS to facilitate the better management of RCF. These improvements were completed in February 2011 and will allow specific actions for the inspection and replacement of RCF affected rail to be recorded and linked automatically to the Ellipse work planning system so that specified inspections and remedial actions are automatically scheduled and monitored without the need for the re-entry of data into both systems.

Track geometry quality – Good track geometry (M3)

Definition

The measure Good Track Geometry (GTG) is based on the proportion of track where the lateral alignment and vertical alignment is categorised as 'good' or 'satisfactory'. The alignment is measured by track geometry measurement and recording vehicles. The measurement used is standard deviation (in mm). The values of standard deviation that need to be achieved for alignment to be categorised as good or satisfactory vary with line speed. These values are specified in Network Rail standards. It is possible to have a value of over 100 per cent for GTG, as there is a weighting for track categorised as 'good'.

GTG is one of the principal measures that provides a high level assessment of the track geometry. Other principal measures are Poor Track Geometry (PTG) and Geometry Faults per 100 km. All measures need to be considered jointly to fully assess the current condition and trends in track geometry. The majority of track on the network falls into the track geometry categories of good or satisfactory.

Results

Table 3.9 shows GTG for England and Wales, Scotland, and the network total for each of the main route classifications. Increasing values indicate improvement.

In recent years there have been improvements in measurement technology, changes to the way that the data is stored and processed, and changes to the rules for calculating GTG. Results for 2007/08 and 2008/09 were recalculated to be consistent with the current methodology.

Reporting Confidence

The Track geometry measures have been assigned an A1 confidence grade by the independent reporter for our output monitoring. The track geometry measurement systems that provide the base data, and the data storage and processing systems used to calculate GTG are all well established and maintained.

Commentary

During 2010/11 track geometry was adversely affected by ground shrinkage over the summer, followed by the effects of a severe winter, in a similar manner to 2009/10. Ground shrinkage from drought occurs in roughly 50 per cent of years, but the weather pattern over the past two winters has been exceptional. The winter of 2009/10 saw the most widespread and prolonged period of severe winter weather since 1981/82. Winter 2010/11 brought the coldest December since UK-wide records began 100 years ago.

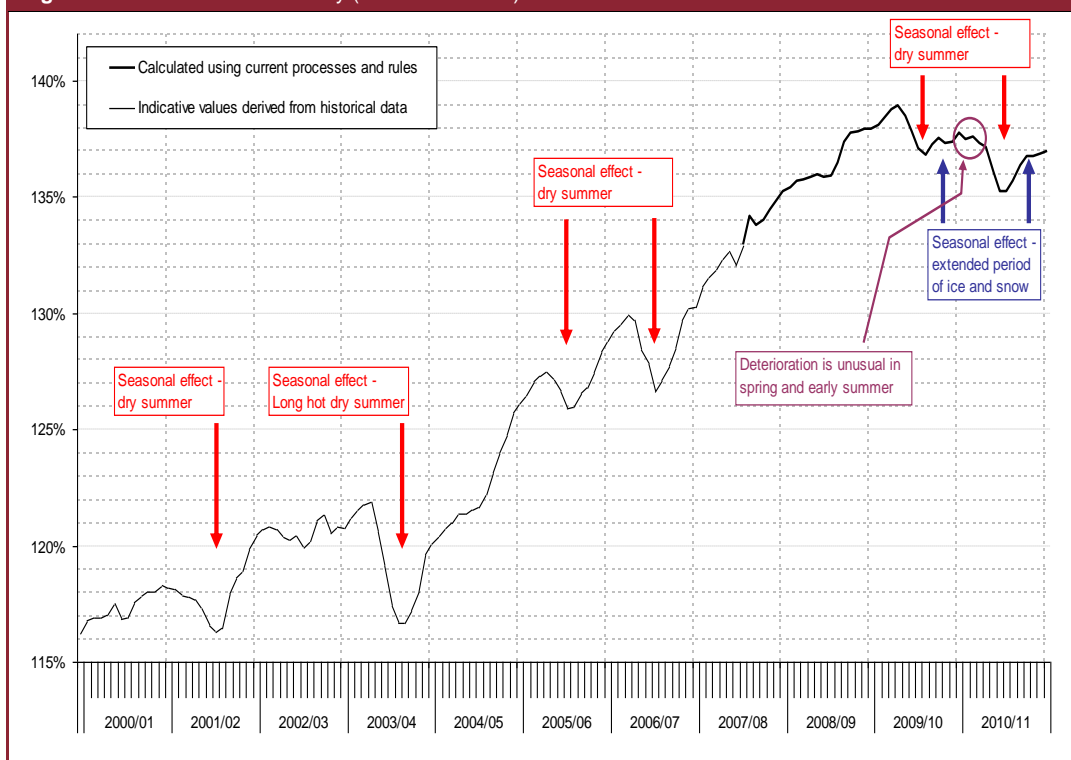
It is in this context that, after several years of year-on-year improvement, we have experienced the second successive year of deterioration in track geometry. Scotland has been particularly badly affected, and all track geometry measures for Scotland are now worse than at the end of 2007/08.

Ground shrinkage over the summer particularly affects the southeast of England where there are extensive alluvial clay formations and embankments that are susceptible to shrinkage in drought conditions. Remedial actions are carried out during autumn and winter and, in most years, full recovery of track geometry to the previous level is achieved by the end of the year.

Table 3.9: Good track Geometry (%) by route classification

<i>Route Classification</i>		<i>2007/08</i>	<i>2008/09</i>	<i>2009/10</i>	<i>2010/11</i>
England & Wales	Primary and key London & South East	135.7	138.5	137.7	137.0
	Secondary, other London & South East and freight trunk	137.0	140.0	139.8	139.4
	Rural and freight only	124.3	125.7	130.7	130.0
	Total	135.0	137.9	137.8	137.2
Scotland	Primary and key London & South East	140.2	142.0	141.5	139.9
	Secondary, other London & South East and freight trunk	143.5	143.3	143.3	141.6
	Rural and freight only	101.6	111.1	107.2	101.5
	Total	136.5	138.2	137.4	135.2
Network Total	Primary and key London & South East	136.0	138.8	138.0	137.2
	Secondary, other London & South East and freight trunk	138.3	140.6	140.5	139.8
	Rural and freight only	120.6	123.1	126.3	124.6
	Grand Total	135.2	137.9	137.7	137.0

Figure 3.1: Good Track Geometry (seasonal effects)



This pattern can be seen in Figure 3.1 for 2001/02, 2005/06 and 2006/07. Strong recovery was also evident in 2003/04, but the summer of 2003 was unusually hot and dry for an extended period and the degree of ground shrinkage was so severe that recovery of geometry to previous levels was not achieved until autumn 2004/05.

In 2010/11, as with 2009/10, remedial actions to address the problems caused by the ground shrinkage were implemented and there were clear signs of recovery in late autumn. In both years, the rate of recovery was similar to that achieved in 2005/06, and full recovery was expected by the end of the year. However, in both 2009/10 and 2010/11 the exceptional winter seriously hampered maintenance operations to improve geometry after the summer, and triggered geometry deterioration from the effects of freezing within the soil supporting the track.

Although there were strong similarities in the weather patterns of 2009/10 and 2010/11, there were some subtle differences. In 2010/11 the drought in the southeast of England was moderated by rainfall during August, with the result that the deterioration in geometry over the summer was not quite as severe as in 2009/10. During the winter of 2010/11, deterioration in geometry was apparent in Scotland and northern England, where there had been abnormal levels

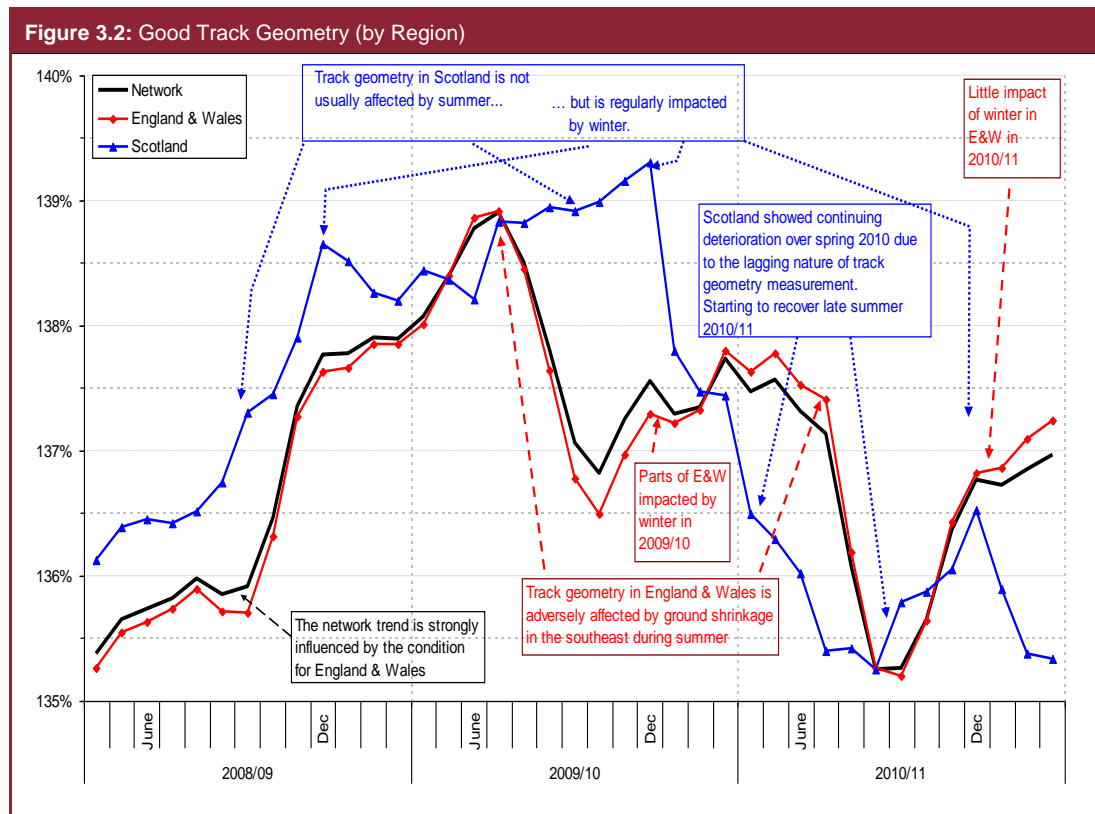
of snow and ice for an extended duration. However, unlike 2009/10, the winter weather did not directly lead to further geometry deteriorations in southern England. In consequence, the effect of winter on the track geometry statistics for the network was also not as severe as for winter 2009/10, and most areas of England and Wales achieved an overall improvement in geometry between November 2010 and March 2011.

The evidence for the deterioration being due to seasonal effects comes from two sources; visible changes in the ground, and analysis of geometry measurement. In drought conditions there are visible signs of cracked ground, with depressions where shrinkage is severe. Any visible signs of ground disturbance from ice formation within soils tend to be hidden, with snow and ice covering the ground during the freezing process and the ice within the soil melting when the ground thaws. However, in both cases, evidence for a seasonal effect comes from the simultaneous deterioration in all track geometry measures, especially the effect on GTG. The geometry of track categorised as good or satisfactory will tend to deteriorate only slowly unless the support beneath it changes. A sudden deterioration in GTG after a long stable period, together with a simultaneous severe deterioration in PTG, indicates that the track is

being affected by a widespread, external influence causing ground disturbance.

The link of seasonal effects to geology and geography is demonstrated by Figure 3.2, with clear differences between the pattern in England and Wales and the pattern in Scotland. As stated earlier, the southeast of England is particularly susceptible to ground shrinkage in drought conditions, and the GTG trend for England and Wales correlates strongly with this summer seasonality. Recovery starts in autumn, with a slowing in the rate of recovery as work is impeded by winter weather. In 2009/10 the winter weather persisted for an extended duration, and detailed data indicates that there was some deterioration in geometry from ground disturbance in the southeast of England, but this is an exceptional case. Conversely, track geometry in Scotland is not usually affected by

the summer. Scotland has higher rainfall and a limited extent of drought susceptible soils (mainly peat in highland areas). Track geometry therefore tends to improve in Scotland over the summer. However, winter in Scotland is generally colder than in other parts of the UK, and the resultant effect is clearly seen in the graph. In particular, the duration and severity of the winter in 2009/10 had a huge impact on track geometry, with the effects still being measured throughout spring and into summer 2010/11 as data was returned from sections of secondary and rural track that have less frequent measurement cycles (see Track geometry measures note, below). By late autumn 2010, geometry was improving rapidly in Scotland, but the extreme winter weather in December 2010 and January 2011 again triggered widespread deterioration.



Not all the deterioration seen in 2010/11 is due to weather. This year moderate deterioration occurred across most areas during spring and early summer, a time of year when the maintenance teams usually take advantage of the more stable conditions to make steady improvements in track geometry. (See the historical patterns in Figure 3.1). Some of the spring deterioration will be related to the delayed detection of problems induced by the severe winter of 2009/10, but other factors were also involved. Initially, the allocation of track geometry maintenance machines (tamperers and stoneblowers) to the Maintenance delivery units was insufficient to recover the abnormal deterioration of track geometry that occurred during 2009/10. The outline planning and allocation of these machines is to long timescales and, when the shortfall of allocation was recognised, it took several weeks to provide and plan the additional resources. This increased allocation led to the overall improvement in track geometry achieved over the period from November to March. To improve the planning and coordination of track geometry maintenance activities new posts have been introduced within each Operating Route.

Remedial works to correct the adverse effects of the last two summers and winters will be carried out over the course of 2011/12. Outside the rectification of the weather related problems, the commitment through CP4 is for gradual improvement to GTG. This is in-line with the commitment to reduce maintenance cost, and follows the substantial improvement delivered in CP3.

Track geometry measures note

Track geometry measures always lag behind the actual situation on the ground. They are calculated from the national dataset at the end of each period. This dataset holds the last measurement result for each section of track. As the dataset can only be updated when a recording run takes place, the dataset will lag both going into any problem phase (when there has been deterioration on the ground that has not yet been detected and measured) and during

the recovery phase (when geometry that has been restored to a good or satisfactory condition has yet to be remeasured). With the highest frequency of recording, any indications of change will be first seen in the statistics for Primary track. The effects usually take longer to become apparent in Secondary and Rural track, because of less frequent measurement.

As the Operating Route with the highest proportions of Secondary and Rural track, Scotland is particularly affected by this lagging effect.

Track geometry quality – Poor Track Geometry (M3)

Definition

The measure Poor Track Geometry (PTG) is based on the proportion of track where the lateral alignment and vertical alignment is categorised as 'very poor'. The alignment is measured by track geometry measurement and recording vehicles. The measurement used is standard deviation (in mm). The threshold values of standard deviation at which track is categorised as very poor varies with line speed. The threshold values are specified in Network Rail standards. The formula for the measure has additional weighting for extreme values of standard deviation.

PTG reflects combinations of aged track, poor track bed condition, and/or undesirable geometrical features such as severely constrained junction layouts, with tight curves, or curves of irregular radii. Rectification can often only be achieved by significant design alterations, treatment of underlying ground and other environmental conditions, and wholesale renewal. Affected track is often in the vicinity of major junctions and switches and crossings. This compounds the complexity and the cost of remediation work, which may then be disproportionate to the benefits of such work, especially on rural and freight routes.

Table 3.10: Poor Track Geometry (%) by route classification

<i>Route Classification</i>		<i>2007/08</i>	<i>2008/09</i>	<i>2009/10</i>	<i>2010/11</i>
England & Wales	Primary and key London & South East	2.73	2.24	2.43	2.49
	Secondary, other London & South East and freight trunk	2.63	2.08	2.40	2.53
	Rural and freight only	3.21	2.68	2.77	2.83
	Total	2.75	2.23	2.45	2.54
Scotland	Primary and key London & South East	2.05	1.64	1.55	1.63
	Secondary, other London & South East and freight trunk	1.67	1.68	1.90	2.03
	Rural and freight only	3.33	2.91	2.50	3.39
	Total	2.05	1.85	1.90	2.14
Network Total	Primary and key London & South East	2.69	2.19	2.37	2.43
	Secondary, other London & South East and freight trunk	2.44	2.01	2.31	2.44
	Rural and freight only	3.23	2.72	2.71	2.95
	Grand Total	2.66	2.18	2.38	2.48

Results

Table 3.10 shows PTG for England and Wales, Scotland, and the network total for each of the main route classifications. Decreasing values indicate improvement.

In recent years there have been improvements to the measuring technology, changes to the way that the data is stored and processed, and changes to the rules for calculating PTG. Results for 2007/08 and 2008/09 have been recalculated to be consistent with current methodologies. Therefore, results prior to 2007/08 are not shown in the table to avoid misleading comparisons.

Reporting Confidence

The track geometry measures have been assigned an A1 confidence grade by the independent reporter for our output monitoring. The track geometry measurement systems that provide the base data, and the data storage and processing systems that are used to calculate PTG, are all well established and maintained.

Commentary

Poor Track Geometry has been affected by the last two summers and winters in a similar manner to Good Track Geometry. Figure 3.3 shows the long-term trend for PTG, with substantial improvement over CP3 followed by the seasonal impacts experienced in 2009/10 and 2010/11. The trend is virtually a mirror image of GTG, and clearly shows the effect of ground shrinkage from drought over several summers.

Figure 3.4 shows the recent seasonal trends for England and Wales, and Scotland. Overall, despite the deterioration of the last two years, Scotland has proportionately less 'very poor track' than England and Wales.

The commitment through CP4 is for gradual improvement in PTG. As with GTG, this is in line with the commitment to reduce maintenance cost, and follows the substantial improvement delivered in CP3.

Figure 3.3: Network Poor Track Geometry

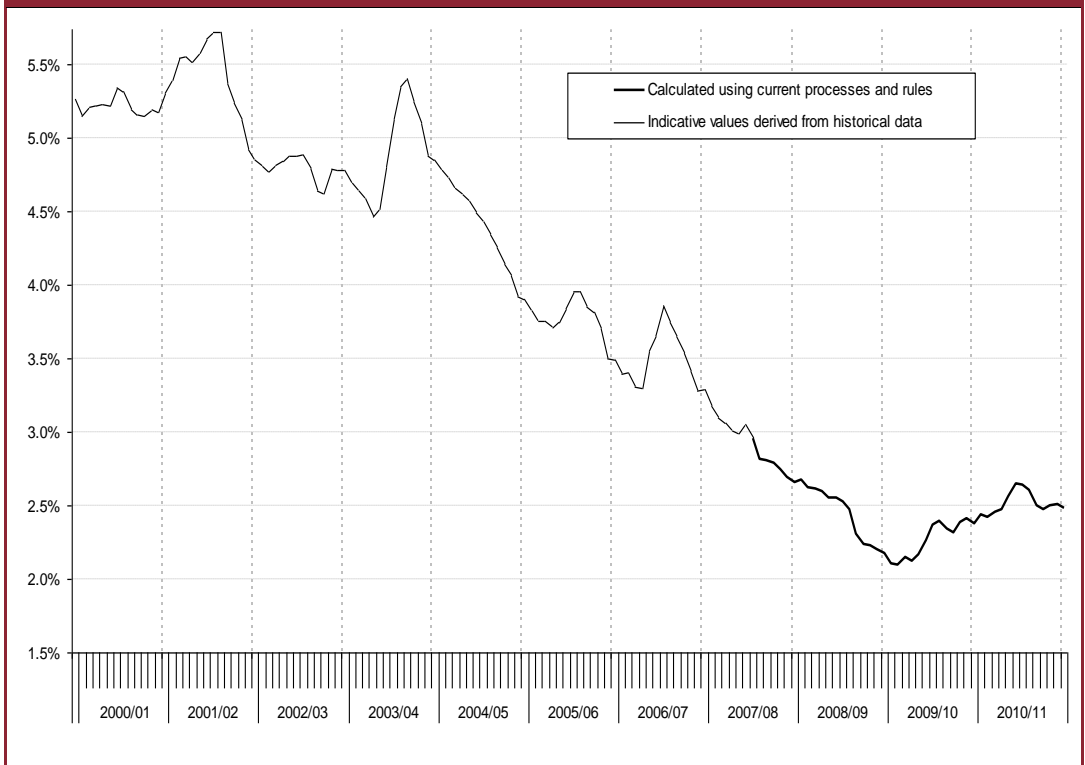
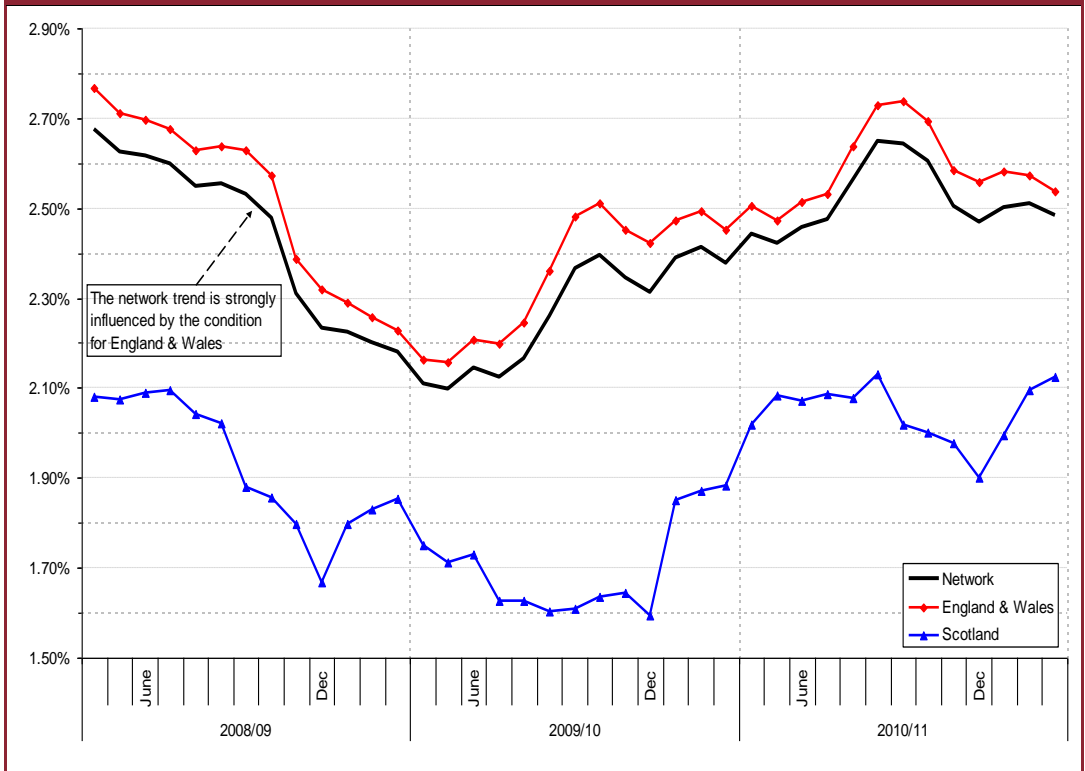


Figure 3.4: Poor Track Geometry by Region



Track buckles

Definition

A track buckle is a track deformation, primarily caused by thermal expansion in the rail, which renders the line unfit for the passage of trains at line speed. The remedial work may consist of adjusting or cutting rails or slewing the track.

Reporting Confidence

Track buckles are reported to A2 confidence limits. For every occurrence a track buckle report and a hazard report are produced.

Results

The following table lists the number of track buckles per 100 kilometres for England and Wales, Scotland, and the overall network.

Commentary

A total of 29 track buckles occurred in 2010/11. This is an increase of two compared to 2009/10. Variance in temperatures in spring and summer is a major factor affecting the annual number of buckles. In 2010/11, 16 out of the 29 buckles occurred in the two weeks between 21 May and 5 June, when temperatures reached 25.8°C the highest average maximum daily temperature recorded in May since 2003. Out of the 29 track buckles, 16 occurred in jointed track, 11 of which had the older style bull head rail. Jointed track is

not a modern construction form and generally remains only in low speed, low tonnage routes. Eight of these buckles occurred in or close to sections of track containing switches and crossings. These locations present an added risk. The remaining 13 occurred in sections of track with Continuously Welded Rail (CWR), of which 10 occurred in or close to sections of track containing switches and crossings. Two of the buckle sites were in higher speed and tonnage track (track categories 1A and 1).

The cause of all track buckles is investigated. Of the buckles that occurred during 2010/11, ten were due to incorrect critical rail temperature (CRT) calculations, nine were due to inadequate expansion gaps in jointed track, two occurred following disturbance to the track system by maintenance work, and the other eight were due to a variety of other reasons.

Track buckles are treated as a serious incident, and a detailed study was undertaken into the underlying causes of the buckles that occurred in 2010/11. The scope of the study included the management of track deficiencies in hot weather conditions, the systems available to the track engineers and competence and training. Several recommendations resulted from the study and a series of short, medium and long-term actions have been initiated.

Table 3.11: Track buckles per 100 km

	2006/07	2007/08	2008/09	2009/10	2010/11
England & Wales	0.32	0.01	0.06	0.09	0.10
Scotland	0	0	0.05	0.05	0.02
Network total	0.27	0.01	0.05	0.09	0.09

Table 3.12: Number of track failures

	2006/07	2007/08	2008/09	2009/10	2010/11
England & Wales	9,530	8,239	7,318	6,312	5,500
Scotland	443	434	430	358	387
Network total	9,973	8,673	7,748	6,670	5,887

Track failures

Definition

This measure reports the total number of train delay incidents that were attributed to track failures on Network Rail owned infrastructure. The measure uses data from the TRUST system (Train Running System). Track failures are those incidents that have a delay attribution category number of 104A (TSRs due to condition of track), 104B (Track faults including broken rails), and 104C (Rolling contact fatigue).

Results

Table 3.12 shows the number of track failures for 2010/11 and the previous four years, for England and Wales, Scotland, and the network.

Reporting Confidence

Track failures are reported to B2 confidence limits. Train delay attribution is a manual process, based on rules set out in the Delay Attribution Guide (an industry document).

Commentary

The trend of reducing numbers of delay incidents for track failures results from the cumulative effect of improvements to the infrastructure and the inspection and maintenance processes over several years.

For the categories covered by this measure, the majority of incidents of train delay minutes arise from implementing safety precautions where there is a known fault, or where a serious track fault is suspected. These safety precautions include the imposition of speed restrictions or the closure of sections of track, which then forces diversions.

The principal faults involved are:

- broken rails and fishplates;
- serious rail defects that could grow and result in a broken rail;
- track alignment or twist faults that present a risk of a derailment;
- 'rough rides' reported by train crew that are suspected of being a broken rail or geometry fault;

- faults with track components associated with points; and
- sections of aged track where the overall condition means that it is no longer capable of carrying traffic at the standard line speed.

These faults are mostly due to cumulative damage and fatigue over many years of service, or are the result of time-based processes such as corrosion or rotting. There are no quick fixes to reducing failures from such causes. The sustained year-on-year improvements have been achieved through long-term investment in renewal and maintenance of the infrastructure, and from the extension of processes such as rail grinding and train mounted ultrasonic testing of rail. Rail grinding removes shallow cracks and, more importantly, reprofiles the rails so that contact stresses from train wheels are spread more uniformly across the rail resulting in less cracking and the slower growth of any cracks that do form. Regular ultrasonic testing provides earlier detection of any cracks, enabling planned maintenance intervention before they grow to a size that requires safety precautions to be applied. We have been progressively increasing the extent of rail grinding and ultrasonic testing to reduce train delay and whole life cost.

In the last two years, increased engineering knowledge in the rate of crack growth has led to the changes in Network Rail standards described in the rail defects (M2) part of this section. These changes have contributed to a reduction in the number of defects being classified as sufficiently serious to require speed restriction. Part of the reduction has been brought about by requiring earlier intervention on certain types of defect to prevent them rapidly growing to size that requires the imposition of a speed restriction. Conversely, some defects with slower rates of crack growth have been recognised as posing a lower risk than previously assessed, and here the rules have been amended to avoid the premature introduction of a speed restriction.

Additional reductions in speed restrictions have been achieved through process improvements in the management of aged track. Registers have been introduced for those sites that are at risk of

requiring a speed restriction. Typically, these are sites where a renewal or major refurbishment is planned in the short to medium term. The timing of renewals is important. Renewing too soon wastes useful life, but renewing too late leads to train delay, with additional disruption when a speed restriction has to be imposed at short notice. The registers are kept under review and the sites concerned are subject to regular assessment. This process supports planning for the renewal to take place at the optimum time, while sustaining the current line speed by carrying out the appropriate maintenance intervention before it becomes necessary to apply a speed restriction.

The improvements in track geometry achieved over Control Period 3 (April 2004 – March 2009), together with an increased focus on the rectification of 'dipped joints', produced a smoother ride for trains. A smoother ride means that less dynamic load is applied to the track, resulting in less cumulative damage to the track system, especially to rails. However, in 2009/10 and 2010/11 the adverse effects of extreme weather have led to a general deterioration of track geometry¹. This will have resulted in some additional dynamic load, but it is too early to know to what extent this will translate to increased numbers of failures in the future. Additionally, the increase in traffic levels running on the network will generate a higher level of cumulative damage in a shorter time period and will therefore work against the improvement initiatives that have been applied. Despite these counter pressures, the plan through CP4 is to further reduce the incidence of delay by continuing to apply current policies and introduce new innovations in rail and track inspection and maintenance.

Condition of asset temporary speed restriction sites (M4)

Definition

The measure provides an indication of the quality of stewardship of track, structures and earthworks by identifying the number of sites where asset condition has fallen sufficiently below that required for the route speed and traffic type, to require the imposition of a temporary speed restriction (TSR), or an emergency speed restriction (ESR). The number of unplanned restrictions indicates the number of sites where an ESR or TSR has been imposed for seven days or more due to any degradation in the condition of the asset (track, structure or earthworks). TSRs may be planned for safety and consolidation of works. Sites are excluded where an ESR or TSR has been imposed for less than seven days due to being part of the normal maintenance cycle. Following data cleansing and process improvement, the 2009/10 data has been restated to reflect the latest version of the Network Rail standard which defines the asset temporary speed restrictions measure (i.e. the number of TSRs with a duration of seven days or more).

The annual number of sites is reported by operating route, and individually for track, structures and earthworks. This report separates speed restrictions into 'unplanned' and 'planned' categories. An 'unplanned' TSR also includes an ESR which has been converted to a TSR, a TSR imposed within the 26 week Confirmed Period Possession Plan window, or speed restrictions with no removal plans. A 'planned' TSR refers to any speed restrictions that the train operators are formally aware of through Rules of the Route (ROTR), the Confirmed Period Possession Plan (CPPP) and the Draft Period Possession Plan (DPPP). This means any speed restrictions imposed as part of the yearly renewals programme, all of which are discussed with train operators as part of ROTR discussions. This also means speed restrictions which have been on for a while and again the train operator is aware (through the formal process above) but has dated plans to remove even if they are in the following year's renewal programme. This explains why some areas have condition speed restrictions shown as planned.

¹ See Good Track Geometry, Poor Track Geometry (M3) and Track geometry faults (M5) within Section 3 – Asset management.

Network total	2006/07	2007/08	2008/09	2009/10	2010/11
Unplanned	795	902	761	724	450
Planned	3,599	3,648	3,675	1,005	898
Grand total	4,394	4,550	4,436	1,729	1,348

	Classification	Track	GCC	Structures	Earthworks	Safety	Total
England & Wales	Primary	278	0	0	26	9	313
	Secondary	44	0	0	3	14	61
Scotland	Primary	11	0	0	4	0	15
	Secondary	42	0	4	5	3	54
Network Total	Primary	289	0	2	30	9	330
	Secondary	86	0	9	8	17	120
Grand Total		375	0	11	38	26	450

Note: GCC = Gauge Corner Cracking

	Classification	Track	Structures	Earthworks	Safety	Total
England & Wales	Primary	610	42	14	14	670
	Secondary	74	8	2	4	88
Scotland	Primary	23	0	1	0	24
	Secondary	73	32	1	0	106
Network Total	Primary	633	42	15	14	704
	Secondary	147	40	3	4	194
Grand Total		780	82	18	18	898

Reporting method

Each TSR or ESR (imposed for seven days or more) is recorded on a weekly basis by operating route, by primary and secondary route, and individually for track, structures and earthworks. These reports form the database for the period-end reporting to the ORR, as well as for the M4 Condition of Asset measure.

Results

Tables 3.13 to 3.15 summarise the results for the unplanned and planned speed restrictions across the network.

Figure 3.5 shows the actual number of unplanned temporary speed restrictions against our internal targets and stretch targets.

Reporting confidence

For 'Condition of Track TSRs' the reporting confidence is at a similar level to previous returns and a grade of B2 remains appropriate. The method used is very similar to last year, with some improvements in data handling and quality.

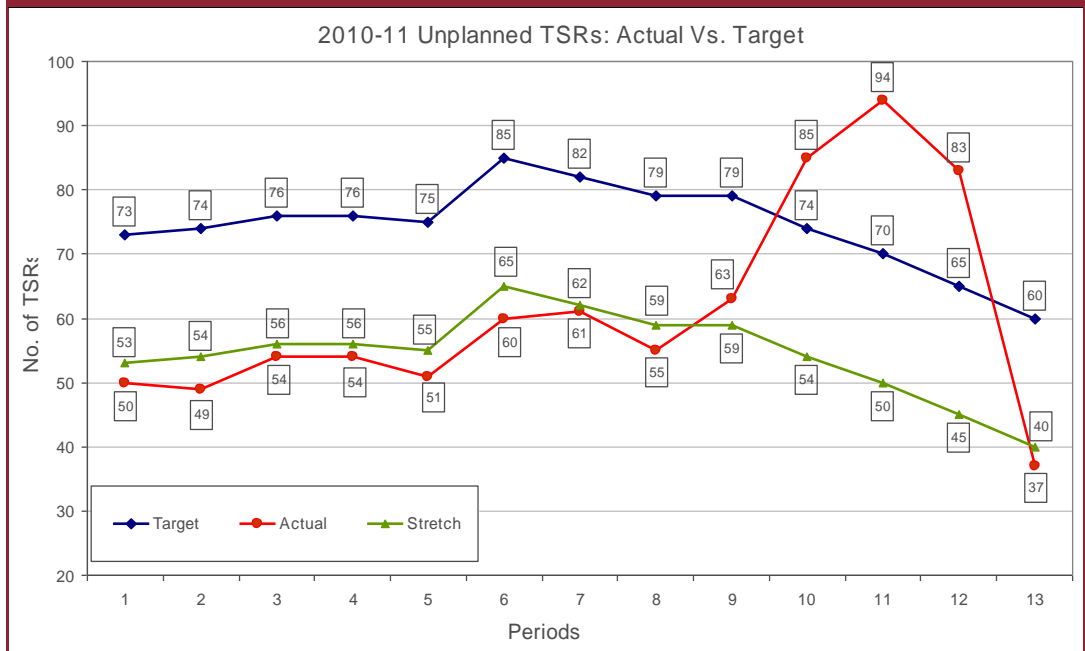
For 'Structures and Earthworks TSRs' the low numbers enable close scrutiny to ensure that the TSRs are recorded accurately. Therefore, we consider a confidence grade of B2 is appropriate.

Commentary

The total number of TSRs for the year 2010/11 was 1,348, compared with 1,729 in 2009/10, representing a 22 per cent reduction. Network Rail continued to maintain and monitor the TSR Risk Register during 2010/11, which enabled us to further build upon last year's reduction in unplanned TSRs. Planned TSRs are inevitable and are a reflection of good asset stewardship, whereby necessary maintenance and renewal works are conducted in a timely manner, preventing many future unplanned TSRs which are highly damaging to Network Rail's performance.

Network Rail was able to achieve a 22 per cent reduction in TSRs during a difficult year which included exceptionally adverse winter conditions and an unscheduled reduction in track renewals capability when one of the four track renewals contractors ceased trading.

Figure 3.5: National Unplanned TSRs Actual vs Target



Although the position was recovered by the year-end (as illustrated in Figure 3.5), the adverse winter weather experienced on many parts of the network (i.e. snow, ice and prolonged low temperatures) had a significant effect on TSRs. These included:

- additional TSRs being required due to degradation of the condition of the track;
- existing TSRs being kept in place for longer, due to the required remedial works being cancelled due to lack of track access; and
- some structures, such as retaining walls and viaducts, suffered splitting and breakage due to the adverse conditions.

The unscheduled reduction in the number of track renewals contractors from four to three partway through the year also impacted TSRs across the network, leading to some TSRs having their duration extended due to short-notice cancellation of remedial track works.

Track TSRs – Planned and Unplanned

The number of TSRs for track in 2010/11 was 1,155, compared with 1,542 in 2009/10, representing a 25 per cent reduction. The numbers of planned and unplanned TSRs have been reduced by 16 per cent and 39 per cent respectively. The significant reduction in unplanned TSRs indicates an improvement in the understanding and management of asset condition.

The routes with the most significant reduction in TSRs compared with 2009/10 were Wessex and London North Western (LNW) North. In Wessex, renewals work has been conducted at locations that historically have experienced repeated TSRs, including a particularly prolific site in Clapham. In LNW North, the improvements have been brought about through diligent review of the risk register, and increased focus on the Carlisle area which has been prone to unplanned speed restrictions historically.

Structures and Earthworks TSRs – Planned and Unplanned

This is the first year of monitoring and reporting this measure in tables 3.14 and 3.15. The outturn figures for ‘Unplanned’ Structures and Earthworks TSRs (49) show a year-on-year improvement. The low number of combined TSRs (149) reflects the increased focus on scheduling work to avoid TSRs and also promptly remediating assets with a TSR.

A more proactive management regime of predicting earthwork performance, supported by examination and evaluation activity and coupled with improved workbank planning has supported the achievement of the year-end results.

Track geometry faults (M5)

Definition

This measure is based upon the incidents of discrete faults identified against four principal parameters of vertical alignment, horizontal alignment, gauge (the distance between the rails) and twist (relative vertical position across the opposite corners of a three metre bogie or vehicle). These form part of the real-time output from the track recording vehicles to front-line maintenance personnel. The full population of track geometry faults covers a wide range; from serious twist and gauge faults that require an immediate response (block the line or reduce speeds), to relatively minor alignment anomalies on low speed track that require only review and monitoring. This measure includes all those faults that require intervention and rectification actions to fixed timescales. Both the threshold values and the specified timescales are mandated in Network Rail standards.

The measure is normalised as faults per 100 track kilometres to provide comparison across different parts of the network.

Results

Table 3.16 shows track geometry faults for England and Wales, Scotland, and the network as a whole for each of the main route classifications. Decreasing values indicate improvement.

Reporting confidence

Track geometry faults per 100km is reported to A1 confidence limits.

The track geometry measurement systems that provide the base data, and the data storage and processing systems that are used to calculate the measure, are all well established and maintained.

Commentary

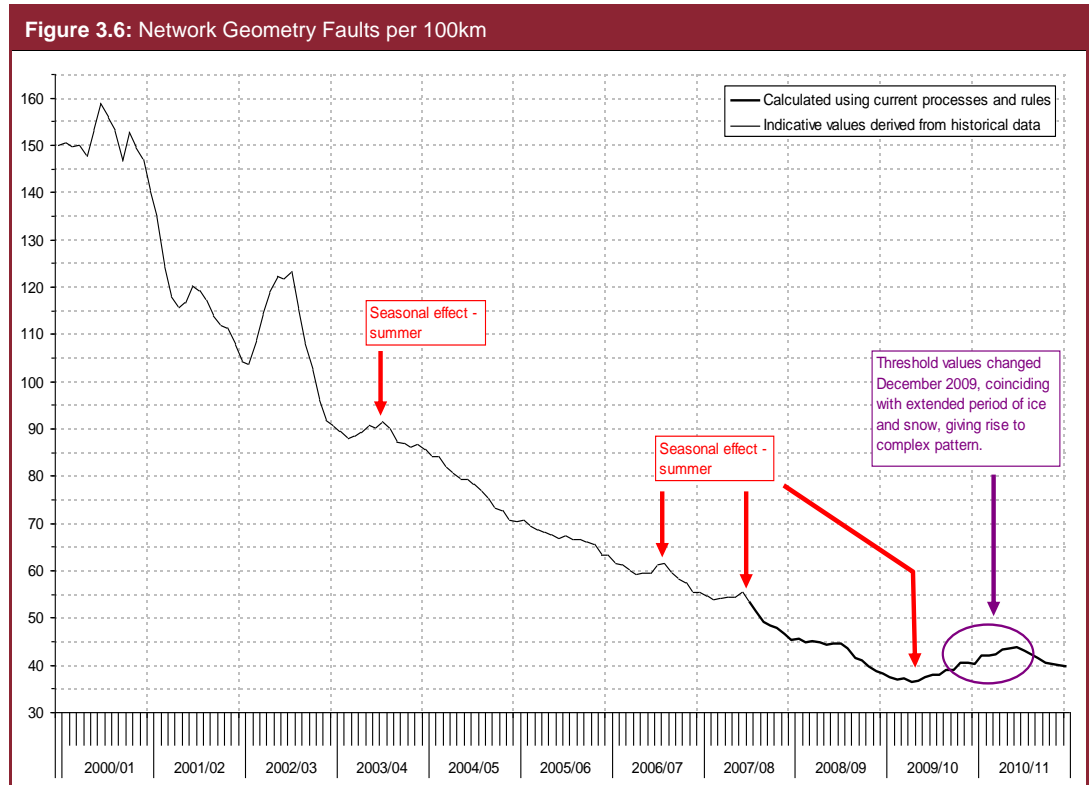
The year-end position of 39.7 faults per 100km for the network as a whole is a modest improvement over the year-start position of 40.3 faults per 100km. The planned overall improvement was reduced by the effect of winter in Scotland. For Scotland, the cumulative effect of two severe winters has led to the second successive year of deterioration, and has resulted in Scotland now having more faults per 100km than England & Wales.

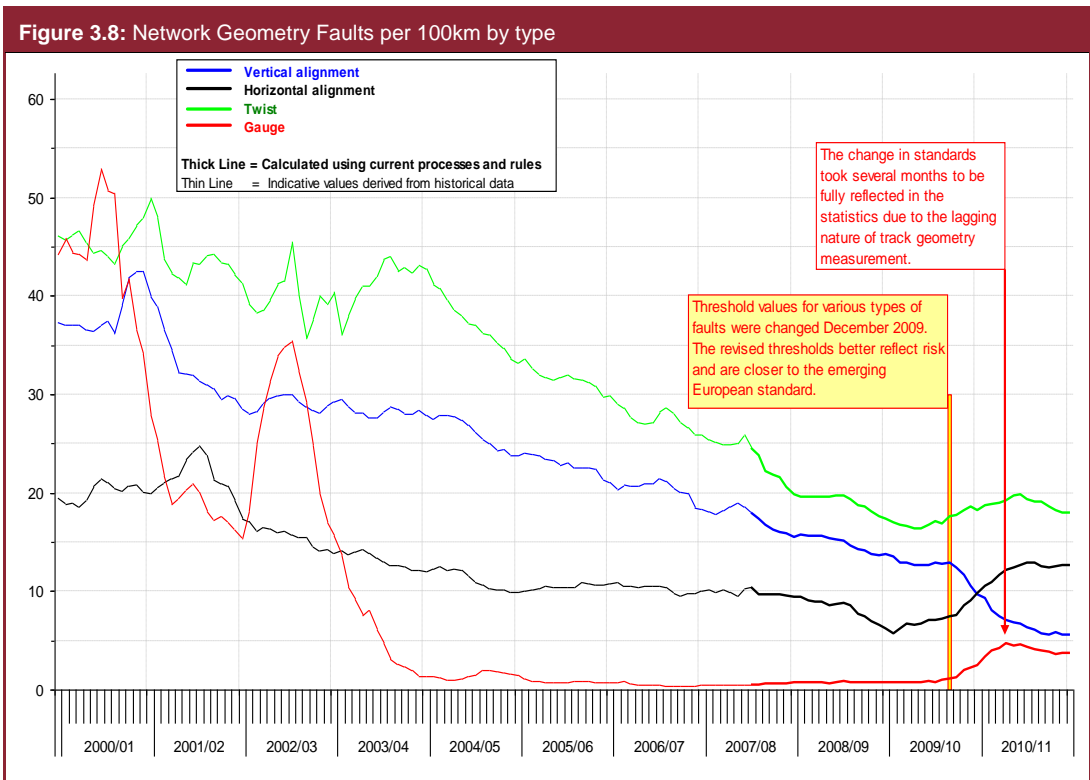
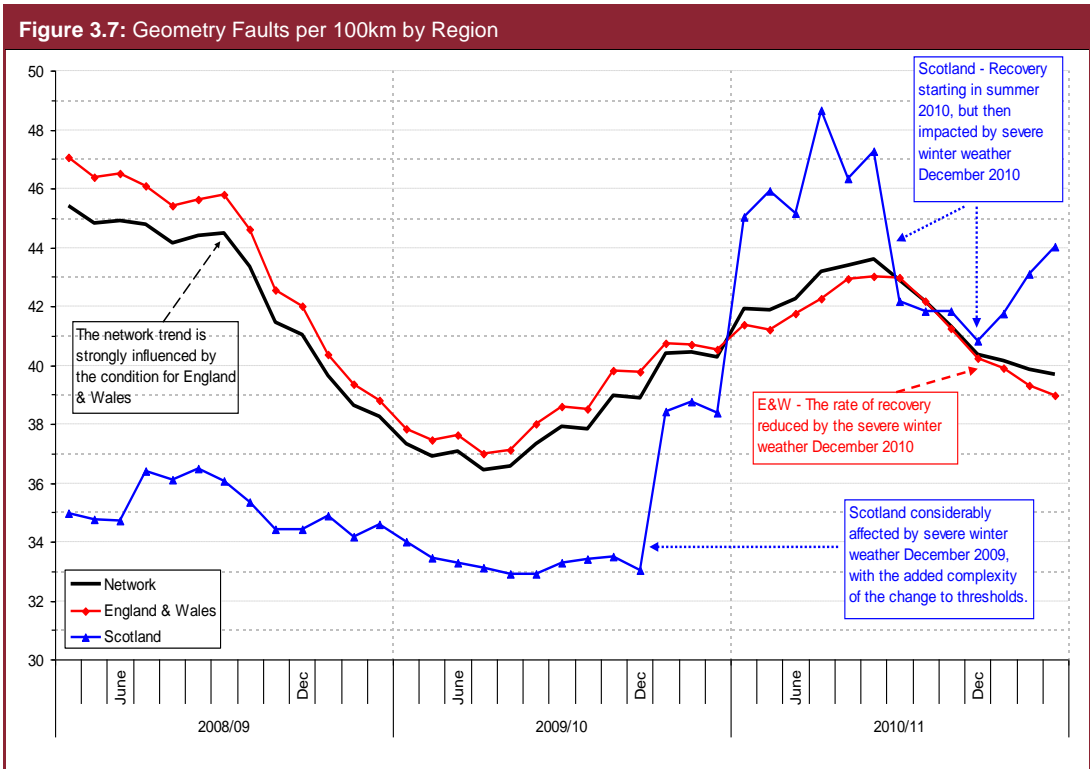
As with Good Track Geometry and Poor Track Geometry (see measure M3), over the last two years the trend in Track Geometry Faults per 100km has been influenced by seasonal effects, but with added complexity because of a change in threshold values at December 2009. Threshold values and action requirements for higher risk situations were made more stringent, but they were relaxed for low risk conditions. In introducing these changes comparisons were made with the equivalent thresholds actions applied by other European railways, and the rules applied by Network Rail now align more closely to the emerging European standard.

Table 3.16: Track geometry faults per 100 km by route classification

<i>Route Classification</i>		<i>2007/08</i>	<i>2008/09</i>	<i>2009/10</i>	<i>2010/11</i>
England & Wales	Primary and key London & South East	34.8	27.6	29.6	29.4
	Secondary, other London & South East and freight trunk	50.2	40.0	43.3	40.9
	Rural and freight only	78.1	73.6	69.5	66.2
	Total	47.0	38.8	40.5	39.0
Scotland	Primary and key London & South East	22.9	24.6	22.9	25.6
	Secondary, other London & South East and freight trunk	29.9	30.7	35.4	38.3
	Rural and freight only	54.9	55.0	62.0	78.3
	Total	34.1	34.6	38.6	44.2
Network Total	Primary and key London & South East	34.0	27.4	29.1	29.2
	Secondary, other London & South East and freight trunk	46.5	38.3	41.9	40.4
	Rural and freight only	73.4	69.9	68.0	68.7
	Grand Total	45.3	38.2	40.3	39.7

Figure 3.6 illustrates that the correlation of geometry faults with summer ground shrinkage appears to be less pronounced than for GTG or PTG. A big factor in this is the scaling of the graph, with the seasonal effects being masked by the very considerable improvement in the overall number of faults that has been achieved in the last ten years. A second factor is the nature of track geometry faults that result in them being rectified as they are detected, thus moderating the extent of deterioration.





For Scotland, Figure 3.7 illustrates the correlation with extreme winter weather and shows why there has been such a deterioration in track geometry faults. The graph shows the reduction in the rate of improvement that occurred in England and Wales over winter 2010/11.

The effect of the change to the threshold values for different fault types made during 2009/10 can be seen in Figure 3.8. The effect is best illustrated by the trend for gauge faults, where the tightening of the threshold gave rise to a pronounced increase in these faults after four years of consistently low numbers. The trend of increasing levels of gauge faults persisted for

several months as geometry recording runs took place in locations that had last been measured applying the previous thresholds. The level reached a maximum in Period four. Since then it has reduced as track has been remeasured following remedial work to meet the tighter standard. Horizontal alignment was also subject to a tightening of the threshold, but the threshold for vertical alignment was relaxed.

Remedial works to correct the adverse effects of the last two summers and winters will be carried out over the course of 2011/12. Outside the rectification of the weather related problems, the commitment through CP4 is for steady improvement to track geometry faults, with the aim of achieving a six per cent improvement over the course of the control period.

The reporting of immediate action geometry faults

As described earlier, there are degrees of severity amongst the different types of fault. The most serious are classified as Immediate Action geometry faults. Actions to address these could be to block the line, impose a speed restriction, and/or correct within 36 hours. We have plans to produce a regular trend analysis of these particular faults. In order to do this in a consistent manner we need to enhance our current I.T. systems. Once these enhancements are completed, we will report the Immediate Action geometry faults in the Annual Return.

Earthwork failures (M6)

Definition

This measure reports the annual number of rock falls, soil slips, slides or flows in a cutting, natural

slope, or embankment on running lines. Failures causing a passenger or freight train derailment are recorded separately.

Reporting method

All earthwork failures are recorded in a database which is managed by the Principal Civil Engineer. The database now contains full details of all earthworks failures over the last eight years.

Results

Table 3.17 shows the number of sites of earthworks failures for England and Wales, Scotland, and for the whole network for the past five years.

Reporting confidence

The confidence rating for Earthworks Failure measure is A2 which we believe is appropriate for the national and network totals.

Commentary

The total number of earthwork failures for 2010/11 was 42. This is a considerable improvement on last year's outturn (57) and continues a steady improvement over the last three years.

This increased level of asset performance has been achieved through targeted investment and favourable weather patterns. Work continues to improve the quantification of risk that the geotechnical asset presents, improve asset policy to better target investment and develop options to reduce and/or mitigate safety risk.

Table 3.17: Earthwork failures

	2006/07	2007/08	2008/9	2009/10	2010/11
England & Wales	79	99	47	45	29
Scotland	11	8	14	12	13
Network Total	90	107	61	57	42

There was one earthwork related derailment at Cruachan (Scotland) on 6 June 2010. A two coach diesel multiple unit (DMU) hit a boulder on the track and was derailed. The leading coach left the railway and turned onto its side with trees arresting the fall. There were no major injuries but eight passengers received minor injuries. As a result planned remedial work of the rock and soil slopes has been accelerated from later in the control period and completed in 2010/11. Vegetation, which has the potential to impact on the sufficiency of examination activities, is also being addressed. To manage the consequences of further boulder fall from the mountainside a further investment in an acoustic fibre listening cable system is being developed for installation later this year.

Earthwork Condition (M33)

Definition

The number of five chain lengths of Earthworks (embankments and cuttings) in the Poor, Marginal and Serviceable Condition Rating reported on running lines.

Reporting method

Earthwork condition is reported by five chain lengths for poor, marginal and serviceable condition rating split geographically. Earthwork condition is the state defined by a soil slope hazard index (SSHI), or a rock slope hazard index (RSHI) defined in Table 3.18.

Examinations are carried out in accordance with the requirements of the Network Rail company standard for the examination of earthworks.

An algorithm is used to produce the SSHI or RSHI scores from the field data gathered as part of the examinations.

Results

Table 3.19 provides the number of embankments, cuttings, and rock cuttings by condition category per five chains for England and Wales, Scotland, and overall network.

Table 3.18: Earthwork condition scoring

<i>Earthwork Condition</i>	<i>SSHI Score</i>	<i>RSHI Score</i>	<i>Planned interval (years)</i>	<i>Permitted tolerance in interval (months)</i>
Poor	≥ 10	≥ 100	1	4
Marginal	>6 to <10	>10 to <100	5	6
Serviceable	≤ 6	≤ 10	10	12

Table 3.19: Earthwork condition results per five chains for 2010/11

	<i>Poor</i>	<i>Marginal</i>	<i>Serviceable</i>	<i>Total</i>
England & Wales				
Embankments	4,782	3,2005	34,115	70,902
Cuttings	2,128	2,1459	24,620	48,207
Rock Cuttings	494	2149	2,382	5,025
Total	7,404	5,5613	61,117	124,134
Scotland				
Embankments	575	2,835	13,252	16,662
Cuttings	267	2,642	9,809	12,718
Rock Cuttings	156	1,059	490	1,705
Total	998	6,536	23,551	31,085
Network totals				
Embankments	5,357	34,840	47,367	87,564
Cuttings	2,395	24,101	34,429	60,925
Rock Cuttings	650	3,208	2,872	6,730
Grand Total	8,402	62,149	84,668	155,219

Reporting confidence

The confidence rating for earthworks condition measure is B2. It should be noted that the current examination standard, which prescribes an objective process to determine the condition grade of earthwork has not yet been applied to all earthwork assets. This will be achieved by April 2014, in accordance with the timescales set out in the company standard. The rating has not been subject to independent verification as it is a new measure proposed by Network Rail.

Commentary

This new measure is being proposed by Network Rail to report on earthwork condition. It is a snapshot measure at the end of Period 1 2011/12 so as to report latest asset condition following completion of the annual examination cycle. This year (2011/12) we have commenced active tracking of the number of five chain lengths (earthwork units) remediated and also the number that have deteriorated as reported through the earthworks examinations.

Tunnel condition

Definition

A new objective system to score tunnel condition was launched nationally in 2009/10. This score is generated automatically by the routine detailed, standardised examination report, and the system is termed Tunnel Condition Marking Index (TCMI). This measure covers all Network Rail managed tunnels that have brickwork or masonry linings.

Reporting method

Each time a detailed examination of a tunnel is carried out, the standard defect coding within the report representing severity and the extent of all salient defects, generates a condition score for the tunnel. The scores range from 100 for the best condition descending to zero for the worst condition. TCMI scores are derived for the major tunnel components of bores and portals separately and are, therefore, reported as such. It should be noted that some tunnels have more than one bore.

Tunnel bores are divided into 20 metre section lengths for reporting purposes. The tunnel bore TCMI score is an average of these section scores for each tunnel. Since tunnels are long linear assets, the worst section scores within a bore are also reported to remove the dilution of these scores by the average figure.

With more data sets now available for tunnels it is emerging that it would be more representative of overall condition to report on the entire number of tunnel section scores for the tunnel stock rather than the average score of the tunnel sections within a bore and the worst sections within the bore as is currently the case. The TCMI scores of the individual tunnel sections are more sensitive to change in condition than the average tunnel bore score, thus giving a more accurate depiction of condition and rates of change due to degradation and intervention.

Although not initiated for this report, it is intended to base future reports on this. There are around 16,760 tunnel sections managed by Network Rail. It is proposed for future reports that the condition of the total tunnel sections be represented in graphical form for review.

It is intended to roll out TCMI for shafts in 2011/12. Consideration is also being given to developing TCMI scoring for ancillary tunnel components such as cross passages and adits, and other bore lining types such as segmental and jack arches. If feasible the ancillary component and other lining-type TCMI scoring will be rolled out during 2011/12.

Table 3.20: Tunnel Condition Marking Index score 2009/10

	<i>No. of bore scores out of total bores</i>	<i>Average bore score</i>	<i>No. of portal scores out of total portals</i>	<i>Average Portal score</i>
England & Wales	148 out of 663	86.6	125 out of 1,192	90.6
Scotland	40 out of 80	94	46 out of 159	96.5
Network Average		87.8		92.2

Table 3.21: Tunnel Condition Marking Index score 2010/11

	<i>No. of bore scores out of total bores</i>	<i>Average bore score</i>	<i>No. of portal scores out of total portals</i>	<i>Average Portal score</i>
England & Wales	255 out of 664	88	237 out of 1,192	91.5
Scotland	40 out of 80	93	54 out of 159	93.9
Network Average		88.6		91.9

Results

Tables 3.20 and 3.21 show the TCMI scores for England and Wales, Scotland, and the combined network.

Reporting confidence

The TCMI scoring system has been developed to incorporate all salient tunnel lining defect types that contribute to overall condition. Engineering principles and judgment have been used to generate an algorithm with appropriate defect weightings to produce a score that reflects the condition of the tunnel. As TCMI was rolled out for the first time late in 2009/10, it was considered prudent to carry out a calibration exercise once sufficient data had been accumulated and check whether scores reflected the perceived condition of the tunnel sections.

This exercise was carried out in December 2010 with six engineers (three independent parties) to score a sample of tunnel sections using TCMI principles to represent their opinion of the tunnel section condition within that sample set. Those scores were then compared with those obtained through the examination process in the field.

It was decided that, although not absolutely necessary, a small recalibration of the algorithm would be prudent in the interest of completeness of the system development and would be implemented in a future version of the TCMI software. This is likely to take place in 2011/12.

The impact on the overall scores of a tunnel section will be relatively minor and the more critical factor of monitoring change in condition will be unaffected. With this in mind the confidence grade for this measure is a B2.

Commentary

The detailed tunnel examination reports that generate TCMI were implemented in September 2009 with delivery to Network Rail commencing in the October 2009 period. Prior to the TCMI implementation date, tunnels were examined in the old examination format which did not produce the objective condition score.

Considering the number of scores obtained out of the total number of relevant components it is not planned to conduct detailed examinations (and, therefore, obtain TCMI scores) for the all components in any one year.

The average bore score presented here is calculated from the bore scores received for England and Wales, and Scotland. Each bore comprises 20m (average) sections. The bore score is the average section score for each tunnel bore.

To overcome the effect of dilution of a section score the lowest section score is included in the data for internal monitoring purposes, but is not here included as it potentially shows a single section score as representing England and Wales, Scotland, and/or the whole network.

The average portal score was previously the average of the portal scores received per territory. However, the average for this Return is now for portal scores received for England and Wales, Scotland, and for the whole network.

Bridge condition (M8)

Definition

The bridge condition grade is a measure from one to five, with one representing good condition and five poor condition. Each bridge is graded from a structures condition marking index (SCMI) value determined using the scoring tool set out in the SCMI handbook. The SCMI process is a marking methodology that grades the condition of each bridge on a 1–100 scale and involves defining the elements of the bridge and determining the extent and severity of defects in each of the elements. The bridge scores are collated into five bands, as shown in Table 3.22.

Reporting method

The reported measure is presented as a distribution graph (see Figure 3.9) showing the cumulative number of bridges assessed since 2000 on a 1–100 scale. Additionally, bridge mark data is collated into each of the five condition grades, and numbers of bridges reported by band. The dates relate to the period the examination was carried out. SCMI is not normally carried out on major structures, footbridges and tenanted arches.

The process of reporting, introduced in 2009/10, uses the date of the examination as the reporting baseline. The database contains approximately 30,000 bridge assets although these do not entirely align with the Civils Asset Register and Reporting System (CARRS) asset register as changes to the CARRS database cannot be applied retrospectively to the SCMI database.

The large number of SCMI scores of 70 are due to a high number of masonry arch structures with brick face spalling and loss of pointing. There appears to be a small anomaly in the scoring system that gives a disproportionate number of structures a score of 70. However, as this is in the middle of a band, this does not affect the overall pattern of results. The distribution of the different materials indicates that metallic structures have the lowest condition but it should be noted that a different scoring matrix is used for severity and extent.

Results

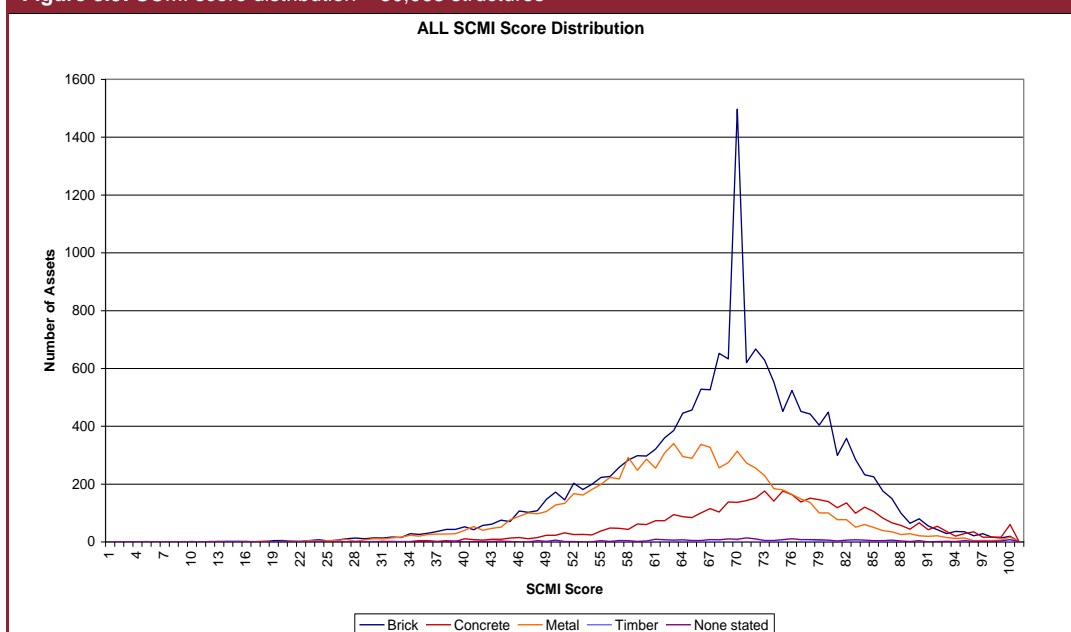
Table 3.23 provides the number of bridges assessed for the year and the condition band to which those bridges have been allocated.

Table 3.22: Structures Condition Marking Index (SCMI)

Condition bands	Condition score (the higher the score the better)
1	100–80
2	79–60
3	59–40
4	39–20
5	19–1

Table 3.23: Bridge condition index results

Bridge Condition Grade	Equivalent SCMI Value	2006/07	2007/08	2008/09	2009/10	2010/11
1	80–100	660	711	862	500	204
2	60–79	2,720	2,577	3,145	2,036	1,161
3	40–59	966	914	1,060	598	512
4	20–39	108	85	111	70	74
5	1–19	6	2	5	2	2
Total no. examined		4,460	4,289	5,183	3,206	1,953
Average condition grade		2.12	2.09	2.08	2.08	2.10

Figure 3.9: SCMI score distribution – 30,068 structures

SCMI distribution

The distribution of the different materials indicates, as in previous reports, that metallic structures have the lowest condition which is one of the main reasons for the increase in the volume of underbridge works referred to in Section 4 – Activity Volumes.

Uses of SCMI outputs

SCMI was originally introduced to promote an objective examination process and reduce the subjectivity that previously existed with the good/fair/poor reporting system. It was aimed at the component level so deterioration of a particular element could be ascertained and managed. The global score is generated from an algorithm and is used as an overall measure. The global score is considered useful when applied to a population of assets.

SCMI is now being used for several management processes. On an individual asset it is used as part of a risk assessment to set detailed examination frequencies and the component scores highlight areas of concern that can be addressed in the examination report and subsequent actions. The SCMI database has also been extensively used to identify structures with particular generic features. This allows us to better manage risk on a network-wide basis.

However, evidence is now emerging which suggests that the global score is masking the condition of the main structural elements of

metallic structures, such as main and cross girders, and it is proposed that this be further investigated in 2011/12.

Reporting confidence

The confidence grades allocated for this measure are B3 for numbers of bridges in each condition grade (1-5), and B3 for the average condition grade for the inspected bridges stock.

Second phase reports

There have been 7,800 second phase examinations with SCMI scores. These results are in the initial stages of validation and analysis. The results appear to indicate an approximate deterioration rate in the order of one point per annum per asset. The effect and/or correlation between intervention and maintenance requires further analysis. The proportion of second phase results are shown in Figure 3.10.

Update on current processes

Risk based examination intervals have been introduced for bridges. This optimises the level of examination with the risk of the bridge. Two key factors in the determination of risk are the SCMI score and the assessed capacity of the bridge. In general terms, visual examinations continue to be carried out annually and the interval for detailed examinations can vary between three and 18 years. The option to adopt a bespoke examination regime for any structure remains. As SCMI benchmarking is an intrinsic part of the detailed examination, the intervals for SCMI will vary in the future.

Figure 3.10: SCMI score distribution – 2nd Phase vs Total

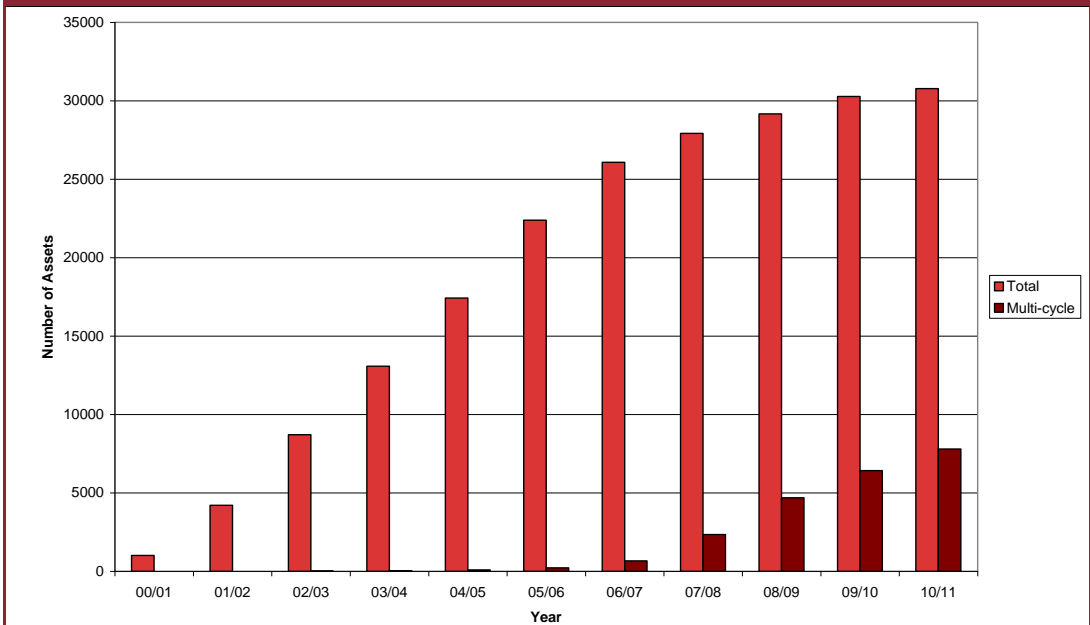
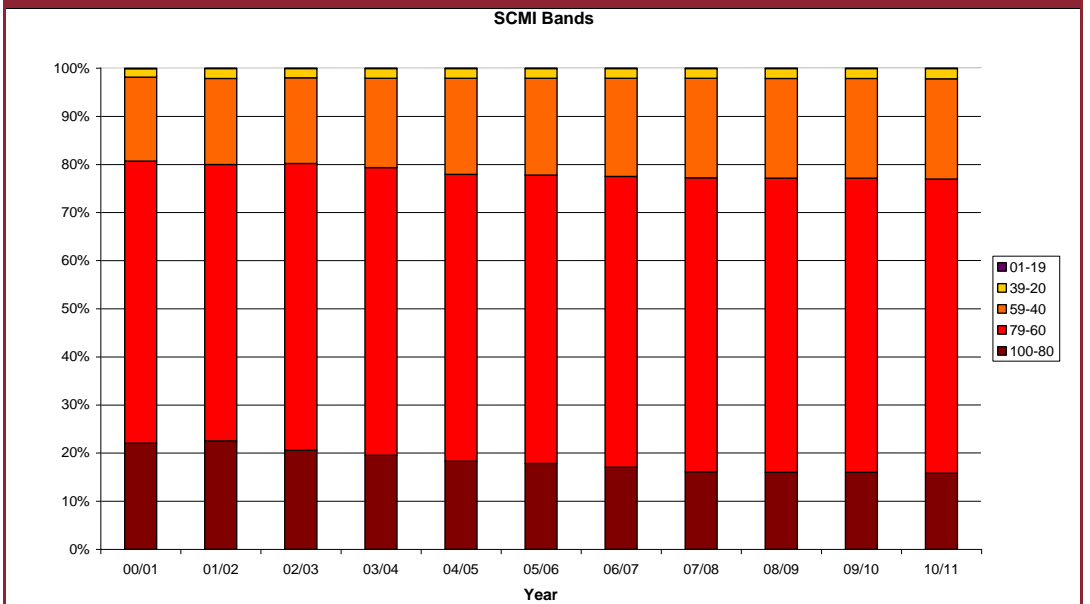


Figure 3.11: SCMI score distribution – trends



Commentary

There are some perceptible trends emerging from the results, shown in Figure 3.11, which represents the percentage share of the bands.

The results for 2010/11 are largely in line with 2009/10 with the SCMI score virtually static at 2.10. However, there is a clear deterioration in condition from 2000 and, as previously reported, metallic structures are in a worse condition than other materials when viewed at global score level. At critical score level, the SCMI results indicate masonry assets are in the worst condition. Overall the asset condition is

deteriorating and there may be a need for additional investment.

Further work is planned for 2011/12 to confirm the relative relationship between element scores across material types, which in turn will lead to a review of investment priorities within the remainder of CP4 and confirm or otherwise the need for additional investment.

Signalling failures (M9)

Definition

This measure reports the total number of signalling failures causing a cumulative total train delay of more than ten minutes per incident, and only includes failures on Network Rail owned infrastructure.

Reporting Method

The data was compiled from the TRUST system and shows the number of signalling failures where train delays in excess of ten minutes have been recorded. This data was merged with the reported train mileage then allocated to the business operating routes. It is here aggregated and reported as England & Wales, Scotland, and network totals.

Results

Table 3.24 shows both the total number and the number per million train kilometres of signalling failures per year for England & Wales, Scotland, and the network.

Reporting confidence

Train running information is reported in TRUST. All signalling failures are also reported in fault management system (FMS) and are allocated to route delivery units. FMS is used to manage failures and produce data on the reasons for equipment failure. The reported values allow for any minor errors in attribution of data between routes within the overall value given. The confidence grade for this measure is B2.

Commentary

Network Rail continues to target improvements to its infrastructure performance as part of its overall aim of increasing train punctuality levels. Part of the improvement is due to the reduction in signalling failures causing more than ten minutes delay. Results from TRUST show a ten per cent improvement from 18,323 for 2009/10 to 16,501 for 2010/11. Our new

maintenance reliability team has been instrumental in targeting a number of failure modes with a view to implementing initiatives designed to drive sustainable improvements to the reliability of signalling and other assets. The autumn performance for 2010/11 was largely concentrated into one financial period of the year, and the figures were worse than 2009 but better than 2008. The annual improvement must also be viewed against the severe weather problems experienced in Period 9. 2011/12 will see action plans developed for ongoing improvement and increased intelligent infrastructure works to proactively identify failing assets before they cease to operate, with the objective of continuing to reduce delay.

Signalling asset condition (M10)

Definition

The purpose of this measure is to assess the condition of signalling assets in terms of a one to five grading system, where a condition grade of one is good and five is poor. Condition grade is based on residual life of the equipment in a signalling interlocking area using the signalling infrastructure condition assessment (SICA) tool. While the assessment is dominated by the condition of the interlocking, the condition of lineside signalling equipment is also taken into account.

Reporting method

This has been collated from SICA assessment records stored in the Signalling Schemes Asset Data System (SSADS) which is the Network Rail repository for all SICA assessments. This tool stores information from all SICA records in a central repository. This allows improved visibility of the results from SICA surveys produces up to date SICA assessment schedules for the routes use.

Table 3.24: Number of signalling failures

	2007/08		2008/09		2009/10		2010/11	
	No. per million train km	No. per million train km	No. per million train km	No. per million train km	No. per million train km	No. per million train km	No. per million train km	No. per million train km
England & Wales	17,753	43	17,500	39	16,324	33	14,874	30
Scotland	2,170	49	2,107	43	1,999	38	1,627	30
Network Total	19,923	43	19,607	39	18,323	34	16,501	30

Table 3.25: Total number of interlocking areas with a SICA assessment at end of each financial year

Condition grade	Observed nominal residual life (in years)	2006/07					2007/08					2008/09					2009/10					2010/11				
1	>20	3					5					9					89					68				
2	10 to 20	965					1,022					1,030					935					876				
3	3 to 10	520					518					546					590					673				
4	<3	20					15					24					24					21				
5	At end of life	14					15					13					22					8				
Average condition grade		2.39					2.38					2.39					2.37					2.41				
Total number graded		1,522					1,575					1,622					1,660					1,646				

Table 3.26: Signalling condition index

Condition grade	2009/10					2010/11					Total 2010/11	
	1	2	3	4	5	1	2	3	4	5		
England & Wales	77	823	537	23	19	1,479	61	774	606	19	8	1,468
Scotland	12	112	53	1	3	181	7	102	67	2	0	178
Network Total	89	935	590	24	22	1,660	68	876	673	21	8	1,646

Table 3.27: Level Crossing condition index 2010/11 year total

	Total LX Population	Total LX Surveyed	Condition grade				
			1	2	3	4	5
England & Wales	1,488	1,456	35	676	735	9	1
Scotland	105	105	2	50	52	1	0
Network Total	1,593	1,561	37	726	787	10	1

There are 1,646 interlockings on the network. Of these, 63 do not have a current SICA assessment as they have been renewed within the last five years. However, as these are new assets they are assigned a condition grade of one.

There are 1,593 signalled level crossings on Network Rail infrastructure. Of these, 32 do not require a current SICA assessment as they have been renewed within the last five years. This leaves a balance of 1,561 level crossings requiring a valid SICA assessment which is reflected in the tables.

The above asset condition coverage level is in accordance with the appropriate internal Network Rail standard.

Results

Tables 3.25 to 3.27 show the condition grades for signalling and level crossings in England and Wales, Scotland, and the combined network, and also the condition grade and residual life for interlocking areas with a SICA assessment for the whole network.

Reporting confidence

Reporting confidence is stated as B2 in line with recent audit findings. The nature of the SICA tool means that an accuracy band better than two cannot be realistically achieved. A reliability band of B is given as, although there is no extrapolation of the data, there are still a number of older SICA assessments carried out to an earlier version.

Commentary

The SICA process remains Network Rail's prime tool for assessing the condition of its signalling assets. The results of the SICA surveys from both interlockings and level crossings are now being used to help develop a renewals work bank for all assets. Looking forward over the next 40 years, this allows a detailed proposal to be developed as part of Network Rail's plans for CP4 and beyond.

The average condition score for all interlockings is 2.41 for the financial year 2010/11 and the average condition score of level crossings currently stands at 2.47. The slight decrease in the interlocking average condition score from previous years is as a result of the delay of the Newport resignalling to May 2011. If this scheme

had commissioned as originally planned then the signalling asset condition would have been 2.39, as forecast in the CP4 Delivery Plan update 2011.

Alternating current traction power incidents causing train delays (M11)

Definition

This measure reports the number of overhead line equipment (OLE) component related failures that lead to incidents that cause delays exceeding 500 train minutes. Incidents due to bird strikes and vegetation incursion are included but those proved to have been caused by defective train equipment, outside parties, vandalism and those arising as a direct result of extreme weather conditions are excluded.

Reporting method

This involves the Asset Reporting Manager (ARM) monitoring failures reported in the Daily National Incident Report and at each period end the summary is sent to the mechanical and electrical (M&E) Maintenance Support Engineers for their review and verification. They investigate the cause of each traction power incident, and the verified figures are provided to the ARM.

Results

Table 3.29 shows the annual number of AC electrification (overhead line equipment) failures in England and Wales, Scotland, and the network total.

Reporting confidence

Overall the confidence level for this measure should remain at B2 as previously independently assessed.

Commentary

During 2010/11 there were 61 incidents compared with only 46 incidents in 2009/10.

However this was a slight improvement on 2008/09, which had 66 incidents. The overall trend is still showing an improvement.

The London North Western (LNW) South route had the biggest improvement on the previous years. During the year there were only five incidents above 500 minutes compared with 15 in 2009/10 and 23 in 2008/09. This improvement has been achieved in part by the additional maintenance inspections that have been undertaken to identify and remove defects before they cause a failure.

Anglia route had the worst performance during the year with 26 incidents above 500 minutes compared with 13 incidents in each of the previous two years. Out of these incidents 35 per cent were caused by defects that were not identified and removed before failure. A route specific action plan is in place which is addressing this issue.

Scotland had a small increase in the number of incidents with five in 2010/11, up from three in 2009/10, and two in 2008/9.

London North Eastern (LNE) also had an increase on the previous year with 14 incidents in 2010/11, up from nine in 2009/10, but less than 2008/09 when there were 15 incidents.

Analysis of the all 61 incidents has identified the following distribution of root causes. Route-specific action plans are focused on addressing these issues.

Table 3.28: Root causes of failure

Asset Condition	28%
Equipment Design	20%
Construction Delivery	18%
Maintenance Delivery	16%
Maintenance regime	11%
Other	7%

Table 3.29: Electrification failures: overhead line

	2007/08	2008/09	2009/10	2010/11
England & Wales	58	64	43	56
Scotland	5	2	3	5
Network total	63	66	46	61

Asset Condition	65%
Equipment Design	14%
Construction Delivery	0%
Maintenance Delivery	14%
Maintenance regime	0%
Other	7%

	2007/08	2008/09	2009/10	2010/11
England & Wales	9	14	14	14
Scotland	n/a	n/a	n/a	n/a
Network total	9	14	14	14

Direct current traction power incidents causing train delays (M12)

Definition

This measure reports the number of conductor rail component related failures that lead to incidents of duration exceeding 500 train delay minutes. It excludes incidents proved to have been caused by defective TOC equipment, outside parties, vandalism, animals and those arising as a direct result of extreme weather conditions.

Reporting method

This involves the Asset Reporting Manager (ARM) monitoring failures reported in the Daily National Incident Report and at each period end the summary is sent to the M&E Maintenance Support Engineers for their review and verification. It is they who investigate the cause of each traction power incident, and the verified figures are provided to the ARM for collation.

Results

Table 3.31 shows the annual number of DC (conductor rail) electrification failures.

Reporting confidence

Overall the confidence level is considered to be BX, as previously assessed.

Commentary

There were 14 incidents during 2010/11 which is the same as both previous years (2008/09 and 2009/10).

Sussex Route had the largest improvement during the year with three incidents during 2010/11 compared with six incidents in 2009/10 and eight incidents in 2008/09. Wessex route had five incidents during the 2010/11 compared with five in 2009/10 and four in 2008/09. Kent Route had an increase in the number of incidents with six in 2010/11 compared with two in both 2009/10 and 2008/09.

Table 3.30 shows the root causes of the 14 incidents analysis has identified.

Electrification condition – AC traction feeder stations and track sectioning points (M13)

Definition

This is a measure of the condition of alternating current traction feeder stations and track sectioning points, on a scale of one to five, based on visual inspection and the age, robustness of design, maintenance / refurbishment history and operational performance of the 25kV switchgear:

- Band 1: equipment is free from defects with negligible deterioration in condition;
- Band 2: evidence of minor defects and/or early stage deterioration that may require some remedial work to be undertaken;
- Band 3: defects and/or a level of deterioration that requires remedial work to be undertaken;
- Band 4: significant defects and/or a high level of equipment deterioration needing major repairs / heavy maintenance or complete renewal to be programmed; and
- Band 5: serious defects and deterioration of a level that, should the equipment still be in operation, has potential for service disruption.

The measure reports the percentage of feeder stations and track sectioning points falling within each of the defined condition grades.

Results

Table 3.32 provides the number and the percentage of alternating current traction feeder stations and track sectioning points within each of the condition bands for England and Wales, Scotland, and the overall network.

Reporting method

The national report has been produced in accordance with the Network Rail Standard, first published in September 2009. The condition assessments are carried out through a combination of visual inspections and measurements at 25kV switchgear feeder

stations and traction sectioning points. The condition assessment grade is a result of weighted pre-determined questions that consider the robustness of the installation, fitness for purpose, and maintainability. The measure takes advantage of in-house maintenance and developments in technology allowing an element of non-intrusive measurements and, therefore, reducing the subjectivity within the assessment. The age and life expectancy of the equipment is also incorporated into the scoring system for the first time.

Reporting confidence

The reporting confidence is considered to be B4.

Commentary

For this measure a condition assessment is undertaken of the AC traction feeder stations and track sectioning locations. The reporting at the end of 2010/11 was almost at the end of the 100 per cent asset condition assessment undertaken as part of our CP5 planning. This means we will have assessed all our AC traction feeder stations and track sectioning points in just over a year, rather than the usual four year cycle.

There is a population of 299 AC traction feeder stations and track sectioning locations. The score reported represents an average of the last available scores for each location. The condition score for 2009/10 was reported as 2.70 so there has been a slight improvement in the condition score reported this year. This may be due in part to a change in the process for undertaking the assessment which was implemented just before the start of the reporting year. Previously the assessments were undertaken by a small number of distribution engineers but under the new process they are undertaken by the maintenance technicians as they undertake their maintenance activity.

Table 3.32: Electrification condition – AC traction

Condition grade	England & Wales		Scotland		Network total	
	No.	%	No.	%	No.	%
1	37	14%	3	8%	40	13%
2	54	20%	13	34%	67	22%
3	112	41%	16	42%	128	41%
4	58	21%	6	16%	64	20%
5	11	4%	0	0%	11	4%
Average condition grade						2.56

Table 3.33: Electrification condition – DC traction

Condition grade	England & Wales		Scotland		Network total	
	No.	%	No.	%	No.	%
1	17	16	n/a	n/a	17	16
2	51	45	n/a	n/a	51	45
3	44	33	n/a	n/a	44	33
4	7	6	n/a	n/a	7	6
5	0	0	n/a	n/a	0	0
Average condition grade		2.37		n/a		2.37

Electrification condition – DC traction substations (M14)

Definition

This is a measure of the condition of direct current traction substations including track paralleling locations on a scale of one to five, based on visual inspection and the age, robustness of design, maintenance / refurbishment history and operational performance of the equipment:

- Band 1: equipment is free from defects with negligible deterioration in condition;
- Band 2: evidence of minor defects and/or early stage deterioration that may require some remedial work to be undertaken;
- Band 3: defects and/or a level of deterioration that requires remedial work to be undertaken;
- Band 4: significant defects and/or a high level of equipment deterioration needing major repairs / heavy maintenance or complete renewal to be programmed; and
- Band 5: serious defects and deterioration of a level that, should the equipment still be in operation, has potential for service disruption.

The measure reports the percentage of high voltage and direct current substations falling within each of the defined condition grades.

Results

Table 3.33 illustrates the number of kilometres and proportional percentage of direct current substations for England and Wales, and the network total. There are no DC traction substations in Scotland so the England and Wales results are also the network results.

Reporting method

The national report has been produced in accordance with a new Network Rail Standard. The condition assessments are done through a combination of visual inspections and measurements at feeder stations and traction sectioning points. The condition assessment grade is a result of weighted pre-determined questions that consider the robustness of the installation, fitness for purpose and maintainability. The measure takes advantage of having maintenance in-house and developments in technology allowing an element of non-intrusive measurements and therefore reducing the subjectivity within the assessment. The age and life expectancy of the equipment is also incorporated into the scoring system for the first time.

Reporting confidence

The reporting confidence is considered to be BX as we have had to refresh previous asset data as part of a change in the process for assessing condition.

Commentary

There is a population of 672 DC substations. The score reported represents an average of the last available scores for each location that has had a condition assessment. The average condition score for 2010/11 was 2.37 which is a small deterioration on 2.32 for 2009/10. The condition assessments undertaken in 2010/11 were incomplete at the time of our end of year reporting, due in part to a change in the process. This is reflected in our reporting confidence of BX. Therefore the data submitted is an update of the condition scores reported for 2009/10. The update reflects that the equipment is a year older. However, this means that the benefit of any renewals undertaken since the 2009/10 assessments have not been included. As with the AC traction substations (M13) we are assessing 100 per cent of these assets as part of our planning for CP5 so the coverage is well ahead of the normal four year cycle.

Electrification condition – AC traction contact systems (M15)

Definition

This is a measure of the condition of AC contact systems, on a scale of one to five, based on physical wear measurement of contact wire and visual inspection of key components including contact and catenary wires, registration assemblies and structures. A condition grade of one is good and five is poor. This measure excludes all earthing, bonding and traction return circuits.

Reporting method

For this measure a condition assessment is undertaken of the overhead line equipment (OLE). During the reporting year there was a change in the process for undertaking the condition assessments. The new system is a desktop assessment process taking information from ellipse. The previous process required a site inspection of the OLE. Under the previous systems a five per cent sample was inspected each year but under the new systems a 50 per cent sample is required each year. The score reported is an average of the last five years data. The condition grade is as detailed in reporting methods for M13 and M14 above.

Results

Table 3.34 shows the number and percentage of the AC contact systems within the five condition grades.

Reporting confidence

This measure is given a B4 confidence grade.

Commentary

During the year a total of 1,197 tension lengths were condition assessed and the assessments were undertaken on a range of OLE types and age. The assessments were a mix of both the old and new process. The overall condition grade in the year was 1.6. Due to changes in the reporting process during 2010/11 the previous process was put on hold as part of the implementation of the new one. However, there were delays in getting some Delivery Units (DUs) fully up to speed with the new desk top process due to resource and competency constraints within the technical support team. One such DU was the one for Scotland which had not fully implemented the new process in time to be included in the year-end report. This means there is no data reported here for Scotland in 2010/11. However, we still believe that the proportional representation of the England and Wales data is sufficient to provide a representative condition grade for the network.

The assessments undertaken during 2010/11 showed a slight decrease in condition compared with the 2009/10 assessments. However, this was due to the very large volume of assessments in 2009/10 from the East Coast Main Line so it did not represent a true cross section sample of all OLE. However, the 2010/11 overall score was just above the five year average which is in part due to the new process that has been introduced during 2010/11.

Table 3.34: Electrification condition – AC traction contact system 2010/11 year total

Condition grade	England & Wales		Scotland		Network total	
	No.	%	No.	%	No.	%
1	1039	87%	0	0%	1039	87%
2	153	13%	0	0%	153	13%
3	0	0%	0	0%	0	0%
4	4	0%	0	0%	4	0%
5	1	0%	0	0%	1	0%
Average condition grade		1.6				1.6

Electrification condition – DC traction contact systems (M16)

Definition

This is a measure of the condition of DC contact systems, on a scale of one to five, based on physical wear measurement of conductor rail. A condition grade of one is good and five is poor. The measure excludes any associated equipment such as insulators, anchor assemblies, and protective boarding.

Results

Tables 3.35 show the percentage of the DC contact systems within the five condition grades.

Reporting confidence

This measure has been assigned a B3 confidence grade.

Commentary

72 per cent of the assets have been assessed and the national average condition score remains at 1.9. This reflects the steady state of renewal activity addressing locations which are in poor condition and preventing others from becoming so.

Station Stewardship Measure (M17)

Definition

This is the average condition rating of each station where trains make timetabled stops and Network Rail is the operator or the landlord.

The score is calculated by assessing the asset remaining life of key elements of a station by visual inspection and combining into an overall station score. The scale represents the remaining life, as a percentage of the expected life, of all measured assets at a station, on a scale of one to five as shown in Table 3.36.

Regulatory target

We are required to maintain the average condition scores within each station category A to F for the whole network and also across all stations in Scotland. This requirement relates to the maintenance and renewal of the asset but excludes the impact of enhancement activity funded by Network Rail or other stakeholders. The categories were designed to reflect the different sizes and passenger throughput of the stations on the network. The maximum average condition to be achieved for each station category is in shown in Table 3.37.

Table 3.35: Electrification condition – DC traction contact system 2010/11 year total

Condition grade	England & Wales		Scotland		Network total	
	Km	%	Km	%	Km	%
1	1,059	33%	n/a	n/a	1,059	33%
2	1,414	44%	n/a	n/a	1,414	44%
3	656	20%	n/a	n/a	656	20%
4	108	3%	n/a	n/a	108	3%
5	7	0%	n/a	n/a	7	0%
Average condition grade		1.9		n/a		1.9

Table 3.36: Definition of scoring in the Station Stewardship Measure

Remaining life as a percentage of expected full life	Condition rating
76% – 100%	1
46% – 75%	2
16% – 45%	3
1% – 15%	4
0%	5

Table 3.37: Station Stewardship Measure

<i>Station Category</i>	<i>2007/08</i>	<i>2008/09</i>	<i>2009/10</i>	<i>2010/11</i>	<i>Regulatory target – maximum average score at the end of CP4</i>
A	2.48	2.44	2.38	2.30	2.48
B	2.60	2.47	2.46	2.40	2.60
C	2.65	2.52	2.52	2.47	2.65
D	2.69	2.52	2.54	2.47	2.69
E	2.74	2.57	2.58	2.50	2.74
F	2.71	2.55	2.56	2.50	2.71
Scotland (all stations)	2.39	2.39	2.39	2.33	2.39

Results

Table 3.37 shows the SSM scores for the period from 2008/09 to 2010/11. The results shown for 2008/09 and 2009/10 differ slightly from those reported in the 2009/10 Annual Return. The scores for these years had been incorrectly calculated at Network Rail route level rather than at overall network category level as had been the case in 2007/08, the first year that SSM was reported.

Reporting confidence

The condition of each asset, based on an assessment of its asset remaining life, is uploaded to our Operational Property Asset System (OPAS). The Station Stewardship Measures scores are based on validated OPAS examination data and generated by the system. The confidence rating for Station Stewardship Measure is B3, down from B2 previously – this change was made following the Q3 2010/11 Data Assurance Report by the Independent Reporter.

In the Q3 2010/11 Data Assurance Report the Independent Reporter stated that their audit had revealed a systematic bias in the reporting of the SSM score. The audit sample evaluated (26 stations) was given as evidence of a pessimistic skew of six per cent implying that the scores are showing condition to be worse than actual condition. At the time of writing we are still discussing these findings with the ORR.

The report produced by the independent reporter also includes recommendations relating to the processes and procedures which support this measure. These recommendations and other improvements identified by Network Rail are being progressed between now and the end of March 2012.

Commentary

The latest results show an improvement to the scores for stations in all categories. Although the score has improved by approximately 2.5 per cent we do not believe this is representative of underlying condition which we believe is broadly stable. The improvements in the scores observed are related to additional asset condition data which is typically above average. There are two main factors.

Firstly, we are continuing to expand the number of stations in the measure; this year we have surveyed an additional 160 locations not previously scored (an increase of approximately seven per cent). The newly scored stations have typically been programmed later as they present less risk and are typically above average in condition.

The second factor is the continued progression of our programme of detailed surveys of locations where previously there had been ADC-lite surveys. The ADC-lite surveys were employed in an accelerated data collection phase which began on 2007. These surveys were focused on assessing the condition of the 20 per cent of our assets which drove approximately 80 per cent of our expenditure. ADC-lite surveys did not include the larger number of assets such as buildings and subways where expenditure is relatively low. In the last year we replaced 396 ADC-lite scored locations with full surveys. The low expenditure items have consistently proved to be in better condition than others. This is also supported by analysis we have undertaken as part of our work to develop plans for CP5 and beyond for the next periodic review.

An emerging but as yet un-quantified factor is network enhancement which we believe is beginning to result in an improvement in the scores. This activity comprises enhancements such as platform lengthening, Access for All schemes, franchise commitments and National Stations Improvement Programme (NSIP) schemes.

Table 3.38 shows a comparison of SSM scores at completed National Station Improvement Programme (NSIP) stations and all other stations. The NSIP work focuses on improvements to the passenger environment and addresses such matters as personal safety, facility for access and the provision of information rather than the condition of the more substantive station infrastructure. New assets introduced at NSIP locations are expected to result in a marginal improvement of the average condition at those locations. Due to the cyclical pattern of surveys the full impact of NSIP schemes completed will not be shown for a number of years.

Light Maintenance Depot Stewardship Measure (M19)

Definition

This measure assesses the overall average condition of light maintenance depots (LMDs) where Network Rail has responsibility for the repair of assets by providing, at each year-end, the number of depots in individual average condition ratings of 1–5. Those leased to a depot facility owner on a “full repairing basis” are excluded from the calculation.

Reporting method

The condition score is an average of the score from 11 elements in the light maintenance depots such as wheel lathes, structure and facilities. The elements are condition rated where one is “as installed” and five is “no longer serviceable”.

Reporting confidence

The condition of each of the 11 elements, based on an assessment of its asset remaining life, is collected together with other relevant asset information by a competent surveyor. New surveys are uploaded to our Operational Property Asset System (OPAS) once certain validation checks have been performed. The LMD scores are based on validated examination data. The confidence rating for light maintenance depot stewardship measure is C4 – this is down from B2 previously. This change was made following an internal review of the process and observations made in the Q3 2010/11 Data Assurance Report by the Independent Reporter.

Table 3.38: Station Stewardship Measure – comparison of completed NSIP and non-NSIP stations

Station Category	Regulatory Target – Maximum average score at end of CP4		Completed NSIP stations		All other stations	
	SSM	SSM	No. of stations	SSM	No. of stations	
A	2.48	2.51	1	2.29	24	
B	2.60	2.18	2	2.41	60	
C	2.65	2.54	13	2.47	211	
D	2.69	2.55	20	2.46	265	
E	2.74	2.56	9	2.49	638	
F	2.71	2.45	9	2.50	1,176	
Network Total	n/a	2.52	54	2.49	2,374	

Note: 57 stations have now been completed as part of the National Stations Improvement Programme. However, three of these stations (Lewisham, Middlesbrough, and Warwick) do not currently have Stations Stewardship Measures and are therefore excluded from the data.

Results

Table 3.39 shows the average light maintenance measure scores for England and Wales, Scotland, and for the combined network.

Commentary

The results for 2010/11 show a continuing improvement in the average score for all depots from 2.50 to 2.48. The underlying trend of condition is broadly stable with this marginal improvement (less than one per cent) driven by further detailed data collection from an additional 13 sites this year (18 per cent of the portfolio).

This improvement in score is consistent with what is seen in the station stewardship measure as the data set is broadened. The score has dipped marginally in Scotland but is expected to recover when works at the Perth depot are included in the score. The current score for Perth is poor and at 3.77 has a large influence in a small population.

Table 3.39: Light Maintenance Depot Stewardship Measure

<i>Light Maintenance Depots (LMDs)</i>	<i>2008/09</i>	<i>2009/10</i>	<i>2010/11</i>	<i>Delivery Plan target – Minimum average score at end of CP4</i>
England & Wales	2.52	2.47	2.46	2.52
Scotland	2.56	2.65	2.67	2.56
All LMDs (network total)	2.52	2.50	2.48	2.52

Section 4 – Activity volumes

Introduction

This section provides data on the level of renewal activity on the network. It reports volumes of work undertaken for each asset category including 12 measures for track renewals, two for signalling, nine for telecoms, ten for civils and 13 for electrification/plant.

There are no regulatory targets set for the volume of renewal activity.

Track Renewals

With track activity volumes a degree of variance from forecasts (in the Delivery Plan) is expected, as details of planned work are refined during the year (for example, in response to more detailed site knowledge), and engineering priorities being adjusted to focus on key areas for improving asset condition and operational performance.

We usually consider plain line track renewal volumes in terms of composite kilometres (ckm), which measure the number of components included in a renewal; these components being rail, sleepers and ballast as reported in Table 4.1 to Table 4.9. The total composite volume of plain line track renewal completed during the year was 1,557 ckm (587 km of rail, 445 km of sleepers and 525 km of ballast); of this total 1,353 ckm was delivered under our core renewal contracts and a further 204 ckm was delivered by our maintenance teams.

This was an under-delivery of 326 ckm against the 2010 Delivery Plan update (DPu10) of 1,883 ckm, due to the severe weather impact, the late delivery of the new High Output TRS4 system, and issues related to plant, possession and access.

Notwithstanding the under-delivery in 2010/11, it remains the intention to deliver the planned CP4 total volume of 9,456 ckm over the control period as a whole.

The number of switches and crossings (S&C) renewals delivered in the year was 347 equivalent units, which is close to the DPu10 number of 343 equivalent units.

Following the revisions to our asset policies there has been a change in emphasis from full renewal activity to more targeted refurbishment and partial renewals on more lightly used parts of the network.

Rail renewed (M20)

Definition

This is the total length of track in kilometres where re-railing has been carried out. This measure counts the total length of plain line track where both rails have been replaced. If one rail is replaced the length counts as half.

Results

Table 4.1 shows rail renewed for the year as compared to the DPu10 forecast for 2010/11 and previous years.

	<i>Actual 2006/07 (km)</i>	<i>Actual 2007/08 (km)</i>	<i>Actual 2008/09 (km)</i>	<i>Actual 2009/10 (km)</i>	<i>DPu10 2010/11 (km)</i>	<i>Actual 2010/11 (km)</i>
England & Wales	909	895	1,049	730	720	532
Scotland	109	96	100	80	57	55
WCRM	10	48	57	N/a	n/a	n/a
Network Total	1,028	1,039	1,206	810	777	587

Sleepers renewed (M21)

Definition

This is the total length of track in kilometres where re-sleeping has been carried out.

Results

Tables 4.2 to 4.5 provide the total km of sleepers renewed and the kms for different types of sleepers renewed.

Table 4.2: Sleepers renewed: all types

	<i>Actual 2006/07 (km)</i>	<i>Actual 2007/08 (km)</i>	<i>Actual 2008/09 (km)</i>	<i>Actual 2009/10 (km)</i>	<i>DPu10 2010/11 (km)</i>	<i>Actual 2010/11 (km)</i>
England & Wales	658	658	605	403	453	401
Scotland	73	57	73	35	46	44
WCRM	7	48	57	n/a	n/a	n/a
Network Total	738	763	735	438	499	445

Table 4.3: Concrete sleepers

	<i>Actual 2006/07 (km)</i>	<i>Actual 2007/08 (km)</i>	<i>Actual 2008/09 (km)</i>	<i>Actual 2009/10 (km)</i>	<i>Actual 2010/11 (km)</i>
England & Wales	461	437	398	310	305
Scotland	47	30	50	26	30
WCRM	7	48	57	n/a	n/a
Network Total	515	515	505	335	335

Table 4.4: Timber sleepers

	<i>Actual 2006/07 (km)</i>	<i>Actual 2007/08 (km)</i>	<i>Actual 2008/09 (km)</i>	<i>Actual 2009/10 (km)</i>	<i>Actual 2010/11 (km)</i>
England & Wales	17	8	11	6	6
Scotland	1	1	0	1	1
WCRM	0	0	0	n/a	n/a
Network Total	18	9	11	7	7

Table 4.5: Steel sleepers

	<i>Actual 2006/07 (km)</i>	<i>Actual 2007/08 (km)</i>	<i>Actual 2008/09 (km)</i>	<i>Actual 2009/10 (km)</i>	<i>Actual 2010/11 (km)</i>
England & Wales	179	213	197	88	90
Scotland	25	26	23	8	13
WCRM	0	0	0	n/a	n/a
Network Total	204	239	220	96	103

Ballast renewed (M22)

Definition

This is the total length of track, in kilometres, where re-ballasting has been carried out.

Results

Tables 4.6 to 4.9 provide the total kms of ballast renewed and the kms for the types of ballast renewed.

Table 4.6: Ballast renewed: all types

	<i>Actual 2006/07 (km)</i>	<i>Actual 2007/08 (km)</i>	<i>Actual 2008/09 (km)</i>	<i>Actual 2009/10 (km)</i>	<i>DPu10 2010/11 (km)</i>	<i>Actual 2010/11 (km)</i>
England & Wales	764	733	633	476	564	483
Scotland	74	56	73	34	43	42
WCRM	12	48	57	n/a	n/a	n/a
Network Total	850	837	763	509	607	525

Table 4.7: Full ballast renewal by excavation

	<i>Actual 2006/07 (km)</i>	<i>Actual 2007/08 (km)</i>	<i>Actual 2008/09 (km)</i>	<i>Actual 2009/10 (km)</i>	<i>Actual 2010/11 (km)</i>
England & Wales	322	323	308	213	187
Scotland	21	16	35	18	7
WCRM	12	48	57	n/a	n/a
Network Total	355	387	400	231	194

Table 4.8: Partial reballast-automatic ballast cleaning

	<i>Actual 2006/07 (km)</i>	<i>Actual 2007/08 (km)</i>	<i>Actual 2008/09 (km)</i>	<i>Actual 2009/10 (km)</i>	<i>Actual 2010/11 (km)</i>
England & Wales	264	191	175	140	198
Scotland	28	13	20	1	18
WCRM	0	0	0	n/a	n/a
Network Total	292	204	195	141	216

Table 4.9: Scarify-reballast with sleeper relay

	<i>Actual 2006/07 (km)</i>	<i>Actual 2007/08 (km)</i>	<i>Actual 2008/09 (km)</i>	<i>Actual 2009/10 (km)</i>	<i>Actual 2010/11 (km)</i>
England & Wales	177	219	150	122	98
Scotland	25	27	18	15	17
WCRM	0	0	0	n/a	n/a
Network Total	202	246	168	137	115

Switches and crossings renewed (M25)

Definition

This measure records the total number of switches and crossing (S&C) units that have been renewed. The tables include data on the numbers of full renewals, the number of abandoned (renewed or recovered) units and the number where asset life has been extended through partial renewal or re-ballasting.

Results

The business plan includes figures for S&C equivalent units to give an overall metric of total activity delivered. To convert the data in the following tables to equivalent units, we use a factor of 1.0 for a full renewal, 0.5 for an abandoned unit and 0.33 for a partial/reballasting renewal.

The total number of equivalent S&C units renewed during the year was 347 (compared to 343 in the Delivery Plan update 2010) of which 39 were delivered by our maintenance teams. The three following tables illustrate that this comprises 269 full renewals equivalent units, 34 abandonment equivalent units and 43 partial renewals/reballasting equivalent units, using the conversion factors given above.

Table 4.10 to Table 4.12 show the S&C renewed during the year compared to the DPu10 forecast for 2010/11 and previous years.

Table 4.10: S&C full renewals

	<i>Actual 2006/07 (units)</i>	<i>Actual 2007/08 (units)</i>	<i>Actual 2008/09 (units)</i>	<i>Actual 2009/10 (units)</i>	<i>DPu10 2010/11 (units)</i>	<i>Actual 2010/11 (units)</i>
England & Wales	362	334	310	206	252	240
Scotland	58	39	35	25	29	29
WCRM	22	63	74	n/a	n/a	n/a
Network Total	442	436	419	231	281	269

Table 4.11: S&C abandonment

	<i>Actual 2006/07 (units)</i>	<i>Actual 2007/08 (units)</i>	<i>Actual 2008/09 (units)</i>	<i>Actual 2009/10 (units)</i>	<i>DPu10 2010/11 (units)</i>	<i>Actual 2010/11 (units)</i>
England & Wales	62	94	76	61	55	61
Scotland	0	14	6	5	6	8
WCRM	0	0	0	n/a	n/a	n/a
Network Total	62	108	82	66	61	69

Table 4.12: S&C partial renewals/reballasting

	<i>Actual 2006/07 (units)</i>	<i>Actual 2007/08 (units)</i>	<i>Actual 2008/09 (units)</i>	<i>Actual 2009/10 (units)</i>	<i>DPu10 2010/11 (units)</i>	<i>Actual 2010/11 (units)</i>
England & Wales	18	111	69	150	80	113
Scotland	0	9	18	16	14	18
WCRM	0	0	0	n/a	n/a	n/a
Network Total	18	120	87	166	94	131

Signalling renewed (M24)

Definition

This measure reports the total number of signalling equivalent units (SEU) which were commissioned each year. An SEU is defined as each single trackside output function controlled by the interlocking, including every signal, each controlled point end, plungers and any other attribute that require a particular control function and each ground frame. Partial renewals are allocated partial values (50 per cent for external equipment, 45 per cent for an interlocking, two per cent for a control centre and 3 per cent for control equipment). The SEUs recorded do not cover minor works and only include individual schemes with an anticipated forecast cost greater than £5 million, with the exception of stand-alone level crossing projects where one SEU is recorded for renewal of the control circuitry interface.

Results

Table 4.13 shows the SEUs renewed for 2010/11 against the DPu10 and previous years.

Commentary

During 2010/11 a total of 1,062 SEUs were worked on, resulting in a volume of 802 equivalent SEUs commissioned after adjusting for type of work undertaken.

A description of the main schemes delivered is as follows:

- 532 SEUs associated with the Reading scheme with a mixture of relock and recontrol giving an equivalent volume of 215;
- 114 SEUs fully renewed as part of Basingstoke scheme;
- 81 SEUs fully renewed as part of Oxley scheme;

- 99 SEUs renewed with an Interfaced SSI at Hitchin; and
- 199 SEUs commissioned as part of the Cambrian scheme.

The main variance to the forecast is as a result of slippage of the Newport scheme to May 2011 as a result of issues surrounding the new Westlock equipment.

Level crossing renewals

Definition

This measure reports the number of level crossings renewed each year. Each level crossing accounts for one level crossing equivalent unit (LXEU). If a partial renewal is undertaken then an appropriate part LXEU will be declared. Five partial renewals were undertaken this year on Western Route affecting eight level crossings and resulting in an equivalent volume of 5.75. The volumes are captured and monitored within our project management system (P3e), and the volumes are declared within the period that the level crossing is commissioned.

Results

Table 4.14 shows the number of level crossings equivalent units renewed in 2010/11.

Commentary

Twelve level crossings were renewed nationally last year including five partial renewals on the Western route. This compares to 26 that were planned for the year. The reason for this change is the decision to defer many of the planned level crossings renewals until next year where they can be packaged into larger schemes and thus tendered at a more competitive price based on economies of scale. This has resulted in next years planned volumes of renewal increasing from 59 to 79 level crossings.

Table 4.13: Signalling renewed

	<i>Actual 2006/07 (SEU)</i>	<i>Actual 2007/08 (SEU)</i>	<i>Actual 2008/09 (SEU)</i>	<i>Actual 2009/10 (SEU)</i>	<i>DPu10 2010/11 (SEU)</i>	<i>Actual 2010/11 (SEU)</i>
England & Wales	477	1,437	600	778	1,096	800
Scotland	4	4	381	35	2	2
Network Total	481	1,441	981	813	1,098	802

Note: The total includes conventional and ERTMS SEUs. There were no ERTMS SEUs in Scotland. In England and Wales there were 199 ERTMS SEUs and 601 conventional SEUs.

Table 4.14: Number of Level crossings renewed (equivalent units)

England & Wales	9.75
Scotland	0
Network Total	9.75

A dedicated team now exists within Network Rail which is responsible for the delivery of all standalone level crossing renewals. We expect that the number of level crossings renewed will increase in future years as identified in our latest delivery plan.

Telecom renewals

Definition and reporting method

This measure reports on a total of nine categories of telecoms volumes which were commissioned over the course of the year. The nine categories span two main telecoms asset groups: Operational Telecoms and Station Information and Surveillance Systems (SISS).

Operational Telecoms consists of the following assets: Concentrators (split for large and small), level crossing public emergency telephone systems (PETS), driver only operation (DOO) systems and voice recorders.

The SISS group consists of the following assets (unit of measure given in brackets): PA – public address (per speaker), CIS – customer information screen (per display), CCTV – closed circuit television (per camera), clock (per clock).

Results

Tables 4.15 and 4.16 show the different types of telecoms renewals for 2010/11. Partial renewals to extend the life of assets are not reported in this measure.

Commentary

During 2010/11 the total number of operational telecoms volumes delivered varied from the original forecast declared in the Delivery Plan Update (March 2010) as described below.

Concentrators:

Three large concentrators were delivered while two experienced delays; one due to issues associated with the introduction of new technology and the other due to dependency on fixed telecommunications network (FTN) infrastructure.

28 small concentrators were delivered including 11 originally planned for the first financial year of the control period. Of the remainder, eight concentrators were re-planned for later years due to the dependency on new technology, six were due to project slippage and three have moved out of the control period to align with new condition assessments. Additionally, the requirement for the renewal of sixteen small concentrators has been avoided through the alignment with the signal box closure programme.

Table 4.15: Telecom renewals – Operational telecoms

	Unit	Actual 2009/10	Planned 2010/11	Actual 2010/11
Large concentrators				
England/Wales	No.	2	5	3
Scotland	No.	0	0	0
Network total	No.	2	5	3
Small concentrators				
England/Wales	No.	28	50	22
Scotland	No.	0	0	6
Network total	No.	28	50	28
Public Emergency Telephone Systems				
England/Wales	No.	5	45	14
Scotland	No.	0	2	0
Network total	No.	5	47	14
Driver Only Operation systems				
England/Wales	No.	247	69	120
Scotland	No.	0	0	0
Network total	No.	247	69	120
Voice recorders				
England/Wales	No.	8	1	13
Scotland	No.	0	5	0
Network total	No.	8	6	13

Note: Planned figures are from the 2010 Delivery Plan update

Table 4.16: Telecom renewals - Station Information and Surveillance Systems

	<i>Unit</i>	<i>Actual 2009/10</i>	<i>Actual 2010/11</i>
Customer information screen (monitors)			
England/Wales	No.	530	662
Scotland	No.	110	0
Network total	No.	640	662
Public address (speakers)			
England/Wales	No.	287	1,574
Scotland	No.	521	1,723
Network total	No.	808	3,297
Closed circuit television (cameras)			
England/Wales	No.	89	748
Scotland	No.	0	0
Network total	No.	89	748
Clocks			
England/Wales	No.	0	127
Scotland	No.	3	6
Network total	No.	3	133

Notes:

11. There were no planned figures included in our 2010 Delivery Plan update

12. Actuals for CIS and PA in 09/10 restated from those in the 2011 Delivery Plan

Public Emergency Telephone systems:

The significant reduction in PETS delivery is due to supplier and technical related issues associated with the introduction of replacement technology for obsolete equipment. All required renewals have been re-planned for delivery within the control period.

Driver Only Operation systems:

The increase in the DOO systems delivered is due to two factors, a revised commissioning strategy from 2009/10 resulting in a larger volume being commissioned in 2010/11 financial year and an increase in volume to comply with safety related changes to the design standard.

Voice Recorders:

Additional units have been renewed to address poor asset condition and progress towards the uniform asset base.

Station Operation and Surveillance Systems (SISS):

This is the first Annual Return where SISS assets have been reported. We have also, as part of our asset management plans, changed our approach to the volume measurement associated with these assets, moving from a generic 'system level' basis to an 'asset level'. Whilst this has resulted in a mismatch between the volumes forecast in the Delivery Plan 2010, we believe that this represents greater alignment with project unit costing and provides for improved transparency of the work undertaken.

For example, the measure of the number of systems does not adequately provide for the variations that can occur from station to station, a typical example being replacement of a public address system, where the volume of speakers will vary depending on the physical construction and environmental condition. This has been made possible through our ongoing improvement in asset information with an intensive survey undertaken for SISS assets across the station portfolio during 2010/11.

Civils activity volumes

Table 4.17 sets out the civils volume measures we use to monitor delivery compared to plan and are reported on a period basis in our management review meetings as well as to ORR. The final figure for tunnels has been updated from that shown in the period report.

It should be noted that it is not possible to make direct comparisons between the volumes recorded for 2010/11 and prior years. This is as a result of changes to the methodology for measurement of volume in accordance with a new process we introduced to ensure a consistent approach for future benchmarking.

The volume variance on underbridges is in part due to a change in methodology for capturing and recording volume.

The volume variance associated with “Other (including major structures)” is as a consequence of a change in reporting methodology. This is most significant on the Forth and Tay bridges where the unit of measure has changed from surface area painted to deck plan area to be consistent with other bridges and major structures.

We are also reporting the historic civils activity measures that were used throughout CP3 and, as agreed with ORR, we are including them in Tables 4.18 to 4.25 to provide some consistency. These tables provide a summary of projects completed during the year. The measures relate to projects over a defined value rather than counting all renewal activity.

Table 4.17: Civils renewal activity volumes delivered in 2010/11 compared to plan

	Actual 2010/11	Plan
Overbridges (sq ms)	11,866	13,408
Underbridges (sq ms)	87,914	77,677
Bridgeguard 3 (sq ms)	6,276	6,762
Footbridges (sq ms)	1,224	1,147
Tunnels (sq ms)	19,721	19,514
Culverts (sq ms)	2,340	1,262
Retaining walls (sq ms)	2,609	2,384
Earthworks (sq ms)	386,748	519,586
Coastal/estuary defence (ms)	1,185	1,235
Other (including major structures) (sq ms)	22,288	91,087

Bridge renewals and remediation (M23)

Definition

This is the total number and area of bridge decks that have been subject to renewal or remediation, with total cost per work item greater than £50,000. The term 'bridge' includes over- and under-bridges, side of line bridges and footbridges.

Results

Table 4.18 shows the different types of bridge renewals and remediation work for 2010/11 and Table 4.19 shows the bridge renewals and remediation for 2010/11 compared to previous years.

Commentary

Overall the amount of remediation (in terms of the number bridges) through preventative, repair, strengthening and waterproofing work has increased from 2009/10, with a continued emphasis placed on the underbridge assets. By comparison to 2009/10 there has been a 30 per cent increase in remediation activity in 2010/11.

Over the past twelve months, a more robust definition of volumes and data processing systems has been introduced to record structures work activity. It is therefore not possible to directly compare the volume of deck replacement in Table 4.19 for 2010/11 against previously reported volumes.

Adjusting previous year's activity to the new reporting base indicates the volume of deck replacement for 2010/11 to be marginally less than 2009/10 and broadly in line with the CP3 exit position. The reduction in deck replacement in 2010/11 is more than offset by the increase in other remediation activity.

Culverts renewals and remediation (M26)

Definition

This is the total number of culverts that have been renewed or where major components have been replaced with a total cost per scheme greater than £50,000.

Results

Table 4.20 shows the culvert renewals and remediation work for 2010/11.

Commentary

During 2010/11 total number of culverts remediated or renewed was the same as 2009/10.

Of the 25 culverts remediated during 2010/11, three were introduced mid-year in response to rapid asset deterioration. Work is ongoing to better understand our emerging picture of culvert condition, which in turn will lead to a review of our approach to investment.

A significant quantum of other culvert remediation work took place in 2010/11, which was below the financial threshold for this measure.

Table 4.18: Bridge renewals and remediation 2010/11: number by task category

	<i>Preventative</i>	<i>Repair</i>	<i>Strengthen</i>	<i>Replace</i>	<i>Waterproofing</i>	<i>Total</i>
England & Wales	67	115	39	60	12	293
Scotland	14	9	5	18	1	47
Network Total	81	124	44	78	13	340

Table 4.19: Bridge renewals and remediation: square area of deck replacement (actual sq m)

	<i>2006/07</i>	<i>2007/08</i>	<i>2008/09</i>	<i>2009/10</i>	<i>2010/11</i>
England & Wales	12,067	16,732	8,240	12,976	8,672
Scotland	974	8,926	3,806	1,722	1,263
Network Total	13,041	25,658	12,046	14,698	9,935

Table 4.20: Culvert renewals and remediation 2010/11: number by task category

	<i>Preventative</i>	<i>Repair</i>	<i>Replace</i>	<i>Total</i>
England & Wales	0	3	14	17
Scotland	0	0	8	8
Network Total	0	3	22	25

Retaining walls remediation (M27)

Definition

This is the total number and area in square metres of retaining walls of scheme value greater than £50,000 where renewal works have been carried out.

Results

Table 4.21 shows the different types of retaining wall renewals and remediation work for 2010/11 and Table 4.22 shows the area of retaining wall renewed for 2010/11 compared with previous years.

Commentary

During 2010/11 total number of retaining walls remediated or renewed was significantly up in numbers compared with 2009/10, although the volume of renewal and remediation was slightly down.

Work is planned for the remainder of CP4 to develop improved methodology for recording and measuring retaining wall asset condition.

Table 4.21: Retaining wall renewals and remediation 2010/11: number by task category

	<i>Preventative</i>	<i>Repair</i>	<i>Replace</i>	<i>Total</i>
England & Wales	1	4	5	10
Scotland	0	1	0	1
Network Total	1	5	5	11

Table 4.22: Retaining wall renewed: area (actual sq m)

	<i>2006/07</i>	<i>2007/08</i>	<i>2008/09</i>	<i>2009/10</i>	<i>2010/11</i>
England & Wales	2,240	17,207	5,787	1,737	1,534
Scotland	0	243	135	0	0
Network Total	2,240	17,450	5,922	1,737	1,534

Earthwork remediation (M28)

Definition

This is the total number of earthwork schemes that have been subject to remediation, with total cost per scheme greater than £50,000.

Results

Table 4.23 shows the numbers of different types of earthwork remediation works for 2010/11 and Table 4.24 shows the square metre area for different types of work greater than £50,000.

Commentary

The total volume delivered in the year was less than planned mainly due to:

- improved asset performance reducing the number of unplanned repair schemes (40,000 sq ms);
- programme slippage (97,000 sq ms) from 2010/11 as volumes are only recorded on completion; and
- some delays in updating volumes records.

Programme slippage was mainly due to unforeseen problems gaining land access together with environmental constraints. A small number of schemes have been delayed due to procurement strategy changes centred around a move to tendered works to optimise delivery efficiency.

The slippage in volume delivered in 2010/11 will be largely recovered in 2011/12 and the overall volume in CP4 is forecast to be broadly as originally expected, at 2.5 million sq ms.

50 per cent of the volume delivered was cuttings and 50 per cent embankments. 18 per cent of the total volume delivered was unplanned earthworks. 29 per cent of the cuttings volume was delivered in Scotland, where the ten year rock cutting remediation programme continues. Embankment volume was more evenly spread between the routes.

Table 4.23: Earthworks Remediation Projects 2010/11: number by task category

	<i>Preventative</i>	<i>Repair</i>	<i>Total</i>
England & Wales	39	42	81
Scotland	20	2	22
Network Total	59	44	103

Table 4.24: Earthworks Remediation Projects 2010/11: total volume (m²) for works greater than £50,000

	<i>Preventative</i>	<i>Repair</i>	<i>Total</i>
England & Wales	229,168	59,487	288,655
Scotland	58,259	2,120	60,379
Network Total	287,427	61,607	349,034

Tunnel remediation (M29)

Definition

The total number of remediation schemes on tunnels with a total cost per scheme greater than £50,000.

Results

Table 4.25 shows the different types of tunnel renewals work for 2010/11.

Commentary

The number of tunnels with renewal and remediation work is up from 24 in 2009/10 to 49 in 2010/11. In part this is due to improvements in the capture of work activity.

A number of the schemes are complex tunnel lining. This work typically requires rock bolting, stitching, grouting and application of secondary lining and is considerably more expensive than traditional lining repairs and is targeted at smaller but potentially unstable locations.

Shaft stabilisation works and traditional repairs to poor condition areas of masonry accounted for much of the remainder across a wide portfolio of assets.

Table 4.25: Tunnel renewals 2010/11: number by task category

	<i>Preventative</i>	<i>Repair</i>	<i>Total</i>
England & Wales	6	38	44
Scotland	1	4	5
Network Total	7	42	49

Electrification and Plant renewal activity volumes

Table 4.26 sets out the electrification and plant renewal volume measures we use to monitor delivery compared to plan and are reported on a period basis in our management review meetings as well as to ORR.

Commentary

The reasons for the main variances in delivery compared to plan are as described below:

- OLE campaign changes – access issues, pre-Christmas incidents and slippage following Jarvis going into administration;
- conductor rail – re-phasing to allow higher priority work to proceed;
- AC distribution booster transformers – duplication in original plan so figure was overstated;
- DC distribution LV switchgear – scope change caused slippage due to the need to re-do option selection & single option design;
- DC distribution HV Switchgear – work re-prioritised to align with planned outages at substations;
- DC distribution HV Cables – work re-prioritised to align with track access and possessions;
- DC distribution transformer/rectifier – works reprogrammed to integrate with HV & PSE scope which were delayed due to infrastructure failure at Coulsden North; and
- Points heaters – work brought forward.

Table 4.26: Electrification and Plant Activity Volumes in 2010/11				
	<i>DPu10</i>	<i>GB actual</i>	<i>England/Wales</i>	<i>Scotland</i>
	<i>2010/11</i>	<i>2010/11</i>	<i>Actual</i>	<i>actual</i>
			<i>2010/11</i>	<i>2010/11</i>
AC distribution				
HV Switchgear (circuit breakers)	43	57	39	18
AC GSP transformer (No)	0	1	1	0
AC GSP cable (km)	0	0	0	0
Booster transformers (No.)	43	27	5	22
OLE and conductor rail				
OLE re-wiring (wire runs)	68	71	67	4
OLE campaign changes (wire runs)	1,020	815	688	127
Conductor Rail (km)	31	2	2	0
DC distribution				
HV Switchgear (No.)	86	68	68	0
HV Cables (km)	62	53	53	0
LV Switchgear (No.)	95	55	55	0
Transformers / Rectifiers (No.)	44	40	40	0
LV cabling (km)	4	0	0	0
Plant & Machinery				
Points Heaters (No.)	389	634	634	0

Drainage renewals expenditure

Definition and reporting method

The drainage renewal expenditure reported here covers all types of drainage work. Drainage activities are planned in the same way as other delivery activities. Costs are apportioned to those activities in accordance with the normal commercial administration of the projects in the delivery portfolio.

Results

Table 4.27 provides the drainage renewals expenditure for 2010/11.

Commentary

The delivery total for 2010/11 was £10.3 million. This is less than the Delivery Plan forecast of £15 million. The reason for this shortfall is that a number of jobs were lost over the winter due to severe weather, and difficulties with access and possessions being experienced.

Table 4.27: Expenditure on drainage renewals	
	£ million
England & Wales	9.20
Scotland	1.07
Network Total	10.27

Section 5 – Safety and environment

Introduction

This section reports on our principal safety KPIs and our environmental measures and initiatives.

Safety

This section reports on aspects of safety which are the responsibility of Network Rail and our contribution to safety within the industry. Additional safety information and reporting is included in the Safety Environment and Assurance Report (SEAR). There are two main safety measures; the Passenger Safety Indicator, which reports passenger safety risk associated with Network Rail activity, and the Fatalities and Weighted Injuries measure, which reports workforce safety. It is through these two measures that we monitor our contribution to the industry target of achieving a three per cent reduction in the risk of death or injury from accidents on the railway for passengers and rail workers over CP4.

We are also reporting on the key aspects of system safety using the following KPIs:

- infrastructure wrong side failures;
- level crossing misuse;
- category A Signals Passed At Danger (SPADs);
- irregular working; and
- criminal damage.

System safety is an indication of the overall safety of passengers, workforce and the public in respect of the risks associated with all aspects of the design, construction, maintenance and operation of the railway system.

The recommendations from the Independent Reporter Data Assurance Report for 2009/10 have been closed out except for one which is currently being progressed. Recommendations from the report for 2010/11 focus on the need to improve the accuracy of recording and reporting of accidents and other safety events, and these are currently being addressed.

Passenger Safety

Definition

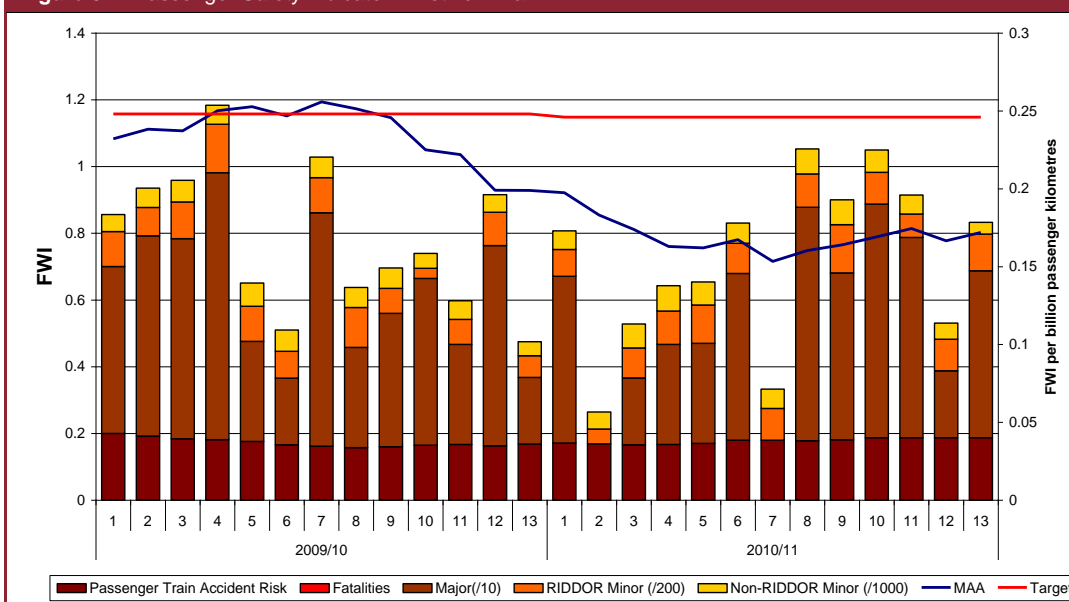
This measure is a combination of two separate data sources, the train accident risk data from the Precursor Indicator Model (PIM) and weighted fatality and injury data from station level crossings and Network Rail managed stations. The PIM is produced by the Rail Safety & Standards Board (RSSB) every quarter, and provides an indication on the trend in train accident risk by looking at the key precursor events (e.g. broken rails). A subset of the PIM is calculated, identifying passenger risks only, and it is that number that is used in calculating the Passenger Safety Indicator (PSI). The main reason the PIM is used for assessing train accident risk is to avoid the effect of low frequency, high consequence events distorting the KPIs (any actual accidents are highlighted in the SEAR).

The remaining element of PSI is calculated as the weighted number of personal injuries to passengers, at station level crossings and Network Rail Managed Stations only, reported in SMIS (Safety Management Information System). This comprises those defined as reportable under RIDDOR¹ as well as those which are not reportable, normalised per billion passenger kilometres.

¹ Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995

Table 5.1: Passenger safety

	2006/07	2007/08	2008/09	2009/10	2010/11
Passenger Safety Indicator (MAA)	N/A	N/A	0.252	0.215	0.171

Figure 5.1: Passenger Safety Indicator – Network Rail

Results

Table 5.1 shows the results of the Passenger Safety Indicator for 2010/11 compared to previous years. Our target for the end of CP4 is 0.246. Figure 5.1 shows the breakdown of the PSI period by period.

Commentary

There have been no accidental passenger fatalities at managed stations since 23 February 2009. The Passenger Safety Indicator MAA currently stands at 0.171 against a target for 2010/11 of 0.246.

There were no passenger fatalities at station level crossings and Network Rail managed stations. The major influence on the figure is the number of passenger major injuries through slips, trips and falls on Network Rail managed stations, the majority of which are as a result of passenger behaviour. Overall, there has been a reduction in these since 2009/10, although the rate of these has increased slightly in the second half of the year. Safety enhancements have been undertaken at a number of managed stations in order to mitigate the risk of slips, trips and falls.

Train accident risk, measured by the train accident Precursor Indicator Model (PIM), represents approximately 15 per cent of the PSI,

and has demonstrated a long term trend of improvement over the last nine years, with the overall risk reducing by 58 per cent from the baseline of March 2002. This trend had recently flattened with the index showing a slight improvement between June 2006 (50.8) and January 2009 (49.1). Since then the index has seen a significant further improvement then a small rise, with the total now at 42.4 at the end of December 2010. This is primarily due to increases in level crossing misuse, objects on the line and SPADs, predominantly weather related, and targeted actions are in place to address these.

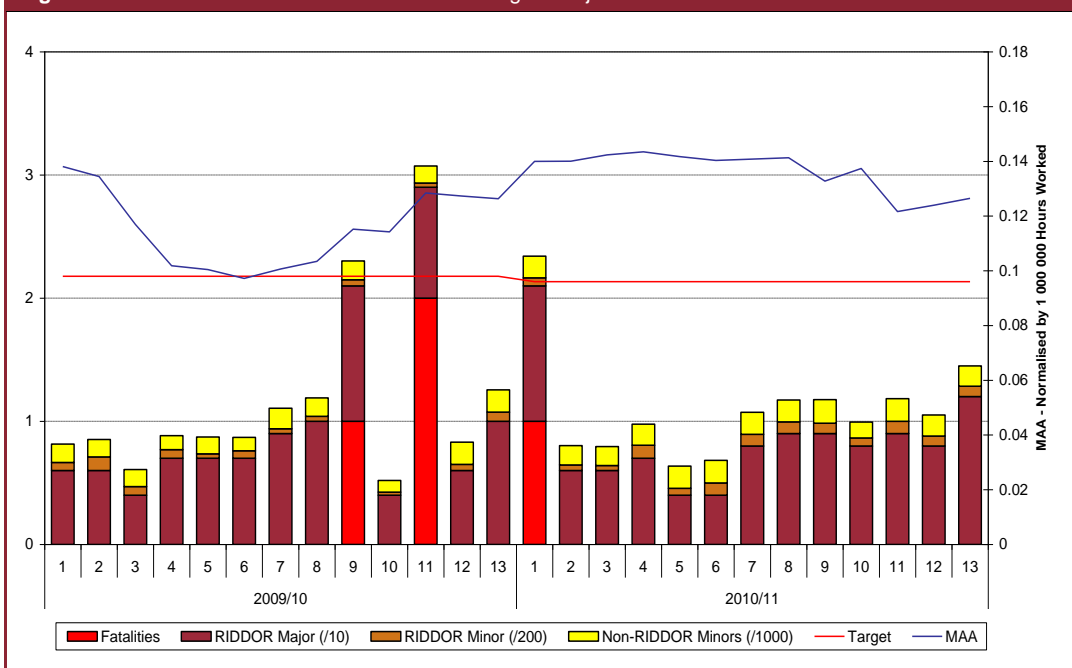
Workforce safety (fatalities and weighted injuries rate)

Definition

This measure compares the weighted number of personal injuries that are reported in the Safety Management Information System (SMIS) for all Network Rail staff and contractors working on Network Rail's managed infrastructure, normalised per million hours worked. This measure provides information to help monitor and control accidents and injuries to the workforce.

Table 5.2: Workforce safety

	2007/08	2008/09	2009/10	2010/11
Fatalities	2	3	3	1
Major injuries	105	130	96	100
Lost time injuries	189	198	146	203
FWI (MAA)	0.129	0.152	0.127	0.126

Figure 5.2: Combined Workforce Fatalities and Weighted Injuries Rate

Results

Table 5.2 shows workforce safety for 2010/11 compared to previous years. The target for the end of CP4 for workforce safety (fatalities and weighted injuries) (FWI) is 0.096. Figure 5.2 shows the breakdown for FWI period by period.

Commentary

It has been necessary to review and re-align the data, as a result of the findings of Network Rail's own investigations and the RSSB's (Rail Safety and Standards Board) independent review of RIDDOR reporting arrangements.

The FWI target for this year has not been met and the moving annual average (MAA) FWI rate has remained broadly level since 2009/10. The reduction in workforce fatalities from three to one has been offset by an increase in the number of major injuries reported.

Tragically there was one contractor employee fatality during 2010/11. In April 2010 at Stewarton Viaduct in Scotland, a contractor employed by SW Global Resourcing Ltd received fatal injuries when the raised mobile

elevated platform, from which he was undertaking strengthening work on the viaduct, toppled over.

Key initiatives during the year which contributed to the management of workforce safety, health and welfare were:

- 'all orange' Personal Protective Equipment (PPE) has been introduced and implemented nationally;
- continuing the 'Safety 365' safety awareness campaign, using a variety of media which covered specific track worker and general safety topics. The media used included:
 - 'Safety 365' communications trucks visiting worksites and briefing worksite operatives on the latest safety topics;
 - an "Ask the Experts" webpage on the Safety Central website;
 - briefing packs for use by line managers;
 - DVDs (e.g. Frontline Focus, E-learning);
 - posters;
 - booklets; and
 - pocket cards.

Table 5.3: Infrastructure wrong side failures

	2006/07	2007/08	2008/09	2009/10	2010/11
England & Wales				56	78
Scotland				11	10
Network-wide	66	60	50	67	88

Table 5.4: Signals Passed at Danger (SPADS)

	2006/07	2007/08	2008/09	2009/10	2010/11
England & Wales				255	272
Scotland				19	27
Network-wide	334	354	293	274	299

- maintenance delivery units have continued to develop and implement their own local accident reduction plans. These are designed to focus on local issues that have been identified through work activity risk; assessments and local accident investigations.
- continuing the Controller of Site Safety (COSS) working group meetings with representatives from Network Rail functions and Trades Unions, to identify improvements to existing COSS practice;
- review and re-drafting of the Network Rail standard for Controller of Site Safety (COSS) and Safety System of Work (SSOW) to require individuals with Personal Track Safety (PTS) competence to demonstrate suitable behaviour, knowledge and experience before being allowed to progress to higher-level competences;
- continuing a collaborative approach to the management of workforce safety, health and welfare with contractors and suppliers through the Project Safety Leadership Group and the Supplier Safety Forum;
- continued health screening and surveillance for Noise Induced Hearing Loss and Hand Arm Vibration Syndrome;
- the development and publication of a company standard for Working at Height;
- health promotion and education campaigns, including 'health fairs' and health and wellbeing fact sheets, designed to help the workforce to understand what they can do to help themselves;
- rehabilitation physiotherapy for employees with musculoskeletal disorders due to work related injury;
- stress counselling and the provision of work/life balance literature;
- undertaking a programme to install fixed lighting at junctions on London North Western route where frequent night time access is required; and

- a programme of On Track Plant (OTP) site compliance checks and High-Ride Road Rail Vehicle (RRV) compliance checks has been implemented and is an on-going activity.

System safety

System safety is an indication of the overall safety of passengers, workforce and the public in respect of the risks associated with all aspects of the design, construction, maintenance and operation of the railway system.

Infrastructure wrongside failures

This measure comprises the number of higher risk (hazard index of 50 or above) failures of infrastructure. Table 5.3 shows the number of Infrastructure wrongside failures for 2010/11 compared to previous years.

From 2009/10, the definition was revised to include instances of animal incursion where only a large boned animal was struck by a train. In 2010/11, there has been a 31 per cent increase from the previous year, primarily attributable to an increase in track related failures and animal incursions of the railway boundary.

Category A SPADs

This measure reports all Category A signals passed at danger (SPADs), which are those instances where signals have been passed when a stop aspect, end of in-cab signalled movement authority, or indication (and any associated preceding cautionary indications), was displayed correctly, in sufficient time for the train to be stopped safely at the signal or end of in-cab movement authority. Table 5.4 shows the number of Category A SPADs for 2010/11 compared with previous years.

Performance is 8.7 per cent worse than in 2009/10, which saw the lowest ever recorded number of Category A SPADs. No single contributory factor accounts for this increase and we continue to work with rail industry colleagues to address SPAD risks.

Level crossing misuse

This measure comprises the number of incidents where a motorised vehicle is struck by, or strikes a train, or any incident where a non-motorised vehicle or pedestrian is struck by a train, or any near miss with a motorised vehicle, or non-motorised vehicle or pedestrian. Table 5.5 shows level crossing misuse for 2010/11 compared to previous years.

Whilst there has been a 24 per cent increase in reported near misses with pedestrians, there has been a reduction in the number of pedestrian fatalities, and there have been no child fatalities at level crossings. In addition there has been a 64 per cent reduction in the number of collisions with vehicles and an 18 per cent reduction in near misses with vehicles.

We are developing and enhancing our strategy for reducing level crossing risk, including the continuation of our annual national advertising campaign aimed at raising awareness among motorists of the dangers of misusing level crossings.

Irregular working

This measure comprises the number of incidents of irregular working that introduce significant risk to the railway (categorised as potentially significant and potentially severe) based on an evaluation of their actual or potential consequence. Table 5.6 shows the MAA for irregular working incidents for 2010/11 compared to previous years.

Whilst the number of potentially severe incidents showed two per cent deterioration, there has been an 18 per cent improvement in the overall number of events recorded, with a 23 per cent improvement in potentially significant incidents. Specific actions have been implemented to address irregular working incidents associated with:

- signalling;
- equipment and materials;
- engineering work protection arrangements; and
- the working of engineering trains.

Criminal damage

This comprises the number of malicious acts on, or directly affecting, Network Rail infrastructure, normalised per 100 route miles. Table 5.7 shows the number of malicious acts per 100 route miles for 2010/11 compared to previous years. The numbers for 2008/9 and 2009/10 have been restated following a review of the consistency of reporting of this measure across all routes.

Table 5.5: Level crossing misuse

	2006/07	2007/08	2008/09	2009/10	2010/11
Level crossing misuse (MAA) England & Wales				26.07	27.62
Level crossing misuse (MAA) Scotland				2.23	1.61
Level crossing misuse (MAA) Network-wide	26.38	28.46	31.31	28.38	29.23
Collisions with road vehicles	13	8	21	14	5
Train striking pedestrian	3	9	10	8	3
Near miss with road vehicle	162	154	145	138	112
Near miss with non-vehicle users	165	200	231	209	260

Table 5.6: Irregular Working

	2006/07	2007/08	2008/09	2009/10	2010/11
Irregular working MAA England & Wales				20.54	16.61
Irregular working MAA Scotland				1.15	1.08
Irregular working MAA network-wide	70.85	57.38	32.61	21.69	17.69
Potentially significant	800	674	347	231	179
Potentially severe	121	72	77	50	51

Table 5.7: Criminal damage (malicious acts)

	2006/07	2007/08	2008/09	2009/10	2010/11
Malicious acts per 100 route miles	6.285	5.539	5.220	4.418	4.416

The result in 2010/11 is broadly the same as for 2009/10. Whilst there is an improvement of over 30 per cent in obstructions placed on the line, and missiles fired/thrown or vandalism, this is offset by an increase of over 35 per cent in the number of instances of interference with equipment and theft of equipment/materials. These now constitute 46 per cent of all criminal damage incidents as against 29 per cent last year. We continue to work with rail industry colleagues, representatives of the local communities, and the British Transport Police with the aim of reducing railway crime.

Public safety

There has been a significant reduction in public fatalities, with total fatalities (suicides, trespassers and level crossing users) reducing from 283 in 2009/10 to 239 in 2010/11. Trespass accidental fatalities reduced by 52 per cent from 64 in 2009/10 to 31 in 2010/11. Suicides reduced from 210 in 2009/10 to 204 in 2010/11 (note that the final classification of suicides/trespasser fatalities can take many months due to awaiting coroners' verdicts). Public fatalities at level crossings also reduced from nine in 2009/10 to four in 2010/11. There were no child trespasser fatalities in 2010/11.

Environment

Introduction

We continue to work to reduce our impact on the environment, in particular to reduce the carbon output associated with travelling by rail. Our three core aims remain:

- to make more sustainable purchasing decisions in sourcing key materials;
- to be more energy efficient and reduce reliance on fossil fuels in running the railway; and
- to protect the natural environment.

During 2010/11 we amended our Environmental Sustainability Index (ESI). This was to reflect that some measures are less useful to us as our priority areas for action in environmental issues have changed. Data no longer included in the ESI is still collected for other reporting purposes and is available for reference as needed.

The main changes are:

- an increase in the categories of incidents included to cover new regulations on environmental damage and bring reporting in line with incidents being reported to environmental regulatory bodies;
- that carbon dioxide and waste data are reported against programmes of work rather than by key contractors to facilitate data collection;
- the inclusion of a new target for waste management for programmes of work;
- the water recovered metric was removed as there is no local water requirement near the Severn and the carbon cost to treat and transport the water to where it may be used cannot be justified; and
- to provide a simplified suite of measures for implementation during CP4 and forecasting for the Initial Industry Plan (IIP).

Table 5.8: Environmental performance

<i>Indicator</i>	<i>Measure</i>	<i>2009/10 result</i>	<i>2010/11 Result</i>	<i>2010/11 target (from Delivery Plan 2010)</i>
Carbon dioxide emissions	CO2 emissions relating to managed stations, offices and depots (expressed as a change on 06/07 estimated base year)	Overall carbon footprint -13%	Managed stations ¹ -10% Offices ² Depots ³ -8%	-7%
Non-track waste (Operational recycling)	Stations, office and depot waste mass recycled or re-used (against delivery plan target)	16%	28%	30%
Waste (Infrastructure recycling)	Renewals and enhancement activity waste mass recycled or re-used	92%	90%	95%
SSSIs (Land management)	The number of SSSIs classified as favourable or recovering status (against delivery plan target)	82%	100%	75%

Notes:

13. This covers areas in managed stations used exclusively by Network Rail or shared by Network Rail and third parties, but excludes spaces used exclusively by third parties.
14. Carbon performance relating to offices cannot be assessed at present due to a lack of verifiable data for energy consumption at landlord managed facilities. We are working to secure more accurate data for future reporting.
15. Depot energy performance data is calculated based on accurate data for approximately 33 per cent of our depots and extrapolated using employee numbers to estimate a figure for 100 per cent of our depots. We are continuing to work at improving our data quality by metering (see below).

Environmental performance table

Our Corporate Responsibility report includes a full range of sustainability performance measures. This contains sections on sustainable supply chain and the environment. Table 5.8 gives details on environmental performance measures which are concerned with our key impact areas of carbon, waste and biodiversity. These are described in more detail in the narrative at the end of this section.

Environment initiatives**National pollution prevention programme**

The programme works are complete but due to the number of locations, geographical spread and technical complexity of some installations, handbacks of about eight per cent of individual sites to operators have yet to be agreed. We continue to pursue handback agreements.

Automatic meter readers (AMRs)

The AMR (smart meter) project will install just over 5,000 electricity smart meters. These will considerably improve understanding of electricity consumption enabling actions to be taken to reduce usage as well as make it easier to report on our performance against targets and on our participation in the Carbon Reduction Commitment Energy Efficiency Scheme. Implementation of the scheme commenced on 1 April 2010.

Carbon reduction programme

The Carbon Reduction Strategy has produced energy action plans for our managed stations. Energy surveys were also undertaken at a sample of six infrastructure maintenance depots in the Crewe area and our Westwood national leadership centre near Coventry. Options for implementing the measures with the best benefits are being assessed.

Sustainable lineside

The Sustainable lineside project has identified planting solutions and management options to mitigate vegetation-related risks to the operational railway on eight pilot sites with one site identified as the 'control' site for research purposes. Risks at the trial sites include embankment and/or cutting stability, trespass and vegetation that is incompatible with running a safe railway. The solutions and management options aim to reduce the intensity of maintenance required and enhance the nature conservation value of the lineside environment, without increasing the risk to the operational railway.

Ecology assessments have been carried out on the pilot sites to identify their baseline nature conservation value as well as that of the surrounding areas.

The trials are expected to be planted by the end of 2011, dependent on weather. A period of monitoring will then follow that will continue until 2015/16, when reports on findings will be completed. If the trials are successful, we intend that these solutions and management options for our lineside will be rolled out via a revised Biodiversity Action Plan and revised Engineering Standards (as appropriate).

The project will also help inform the potential opportunity for sections of lineside to be used to create and trade habitat as an offset to development when proposed new legislation comes into effect.

Sites of special scientific interest

The aim of this project was to bring 21 Sites of Special Scientific Interest (SSSIs) in England to favourable or recovering status, in support of the UK Government's Public Service Agreement. Work was substantially completed in April 2011.

We sought agreement with Scottish Natural Heritage to identify sites in Scotland that require similar improvement. This work is being planned for delivery during the rest of CP4.

We have approached the Countryside Council for Wales to identify similar sites in Wales.

On train metering

On board electricity meters enable operators of electric trains to measure their actual electricity consumption accurately. This will support their work on energy efficiency as well as allowing them to be billed for traction electricity according to what they actually use.

Prior to April 2010 all operators of electric trains were billed using modelled consumption rates. We have developed a new system to allow on train metering facilities to be used to measure the actual usage of electricity and be billed according to on these metered figures. More accurate electricity consumption data will provide an added incentive for train operators to reduce traction power consumption by applying better train driving techniques and switching train equipment off when trains are stabled.

The first operator to opt for on train metering was Virgin Trains on the West Coast Main Line. Subsequently, London Midland and Southern¹ have also introduced metering.

However, as electricity rates vary by time of day and geographically, there have been considerable technical challenges to delivering this new capability. The project went live in June 2011, with an interim solution for Virgin Trains for 2010/11.

Solar photovoltaic installations at managed stations

King's Cross The project to redevelop and expand the station includes refurbishment of the main station roof. We are taking this opportunity to install a solar photovoltaic (pv) glazing system within the central 'lantern' sections of the eastern and western roofs to provide a source of renewable energy for the station. The solar pv installation will help offset the increased energy consumption of the expanded station which includes a substantial new concourse on the west side of the station as well as an upgrading of facilities to modern standards, both of which will result in increased electricity consumption. The installation is due to be commissioned early in 2012.

Blackfriars The redevelopment of Blackfriars station, part of the Thameslink Programme, is due for completion in spring 2012. It will be the second of our major projects to incorporate the large scale use of photovoltaic cells. These will be integrated into the station roof and the electricity generated will be consumed in the station.

¹ Only part of the Southern fleet of trains has currently opted in.

Future developments

We are conducting a comprehensive review of our approach to sustainability generally, and specifically in the way we manage and report our environmental impacts. This will likely lead to proposals which will have significant implications both in the shorter term and also which we will reflect in developing proposals for CP5. We will report on these in more detail in the Annual Return 2012 as well as through other public reporting channels such as the Corporate Responsibility Report.

Section 6 – Enhancement Programme

Introduction

This section of the Annual Return reports on our progress in delivering enhancements to the rail network in the year 2010/11. Some of these enhancements have been driven by the commitments made during the CP4 settlement and have been funded by that settlement. Others have been generated by stakeholders who have had development opportunities which we have supported (third party projects) or by new government promoted initiatives such as electrification. Many of the enhancement projects which have been delivered in this financial year had their genesis prior to 2009.

In all cases the enhancements have been consistent with our route strategies in developing the rail network for the benefit of passengers and freight users.

Many of our enhancement projects are driven by the need to improve the station environment and the connectivity of the rail service to other modes of transport, in this category are the development of rail interchanges, car parks, remodelling and improvements to existing stations and in some instances the development of new stations. Other enhancement projects are driven by the need to improve the flexibility and capability of the network to handle longer and heavier trains to increase the carrying capability of services and/or to improve their journey times.

Summary of progress in the year

We have made steady progress during the year in delivering the enhancement schemes that we have committed to during CP4 and are broadly on schedule for the various milestones we set by the end of 2010/11. Some highlights for the year include:

Airdrie – Bathgate: This new rail link opened on 12 December 2010. It was delivered in just over four years and sees four additional trains an hour run between Edinburgh and Glasgow. New stations were also built. The project re-establishes a link lost in the 1950s and increases the options for people travelling between Scotland's two main cities.

Thameslink: Work continued in several locations in the South East to deliver the multi-billion pound Thameslink programme with the

main focus of progress in three locations across London.

- **Blackfriars:** Work to lay a new through track began in November, which is a key strategic point on the route. Steady progress was also made on the construction of the new station which, when complete, will span the Thames;
- **Borough Market:** A new viaduct structure was moved into place in October 2010;
- **Farringdon Station:** Foundation work began for the new multi-storey integrated ticket hall.

Access for all: This programme is designed to improve access to the railway for everyone through the installation of new lifts, footbridges and tactile platform paving. During the year work was completed at 10 stations.

Reading: Reading is one of the busiest parts of the country's rail network and its complicated track layout constricts the number of trains that can run. A major piece of work was completed in the Christmas holiday when a new bridge was slid into place at Caversham Road.

Capacity improvements on the East Coast: Platform lengthening works continued this year with the successful opening of longer platforms at Royston for 12-car trains. We were also granted a Transport and Works Act order to build a flyover at Hitchin which will remove a substantial bottleneck on the network.

Newport: In September, we opened a new station in Newport, in time to serve the needs of passengers travelling to watch the Ryder Cup. The station design is highly innovative and is built from the same type of material used to construct the Eden Project. It has already won an Institution of Civil Engineers (ICE Wales) award for sustainable design. The project was delivered to time and to budget and has increased the capacity at the station.

King's Cross: A new platform was opened and good progress was made on the new western concourse. The project remains on schedule for completion before the Olympics.

Paisley corridor improvements: This scheme is designed to improve commuter journeys into Glasgow from Ayrshire and the Clyde coast. During the year a substantial

number of advance and enabling works were completed, including the commissioning of two new platforms at Glasgow station and track work on the Elderslie loop.

Additional CP4 schemes: We have been asked to deliver a number of other projects over and above those set out in the original funding for CP4, thus demonstrating the confidence that government and other funders have in our capability. The main additional schemes where development work progressed during the year are: Crossrail (on-network works), Edinburgh to Glasgow improvement programme, electrification of the Great Western main line and the North West electrification scheme.

In order to become more efficient, we set up the Efficient Project Governance workstream which reviewed a number of internal processes and procedures. Its purpose was to increase efficiency to reduce both the time and cost of projects for the remainder of CP4, as well as lay solid foundations for the delivery of CP5. This includes a refresh of the GRIP (Governance for

Railway Investment Projects) process, which is now a company standard. We also introduced a framework for tier one contractors as well as introducing new contractual arrangements such as guaranteed maximum price/ partnership contracts, and are making best use of modular solutions, especially with regard to signalling.

Change control

The CP4 enhancement programme is funded through the ORR's final determination for CP4 as well as through subsequent agreement to fund additional schemes such as the "on network" works for Crossrail, the electrification programme and the Edinburgh to Glasgow improvement programme. Each of the projects and funds described in this return has a defined set of outputs and key dates that we have committed to meet. Material changes to these can only be implemented after consultation and via a formal change control process. The changes agreed by ORR during the year are given below in Table 6.1 and those still under consideration at the time of writing are shown in Table 6.2.

Table 6.1: Changes approved by ORR

	Project	Change
3.01	Felixstowe to Nuneaton freight capacity scheme	Revised scope due to project development.
3.02	Southampton to Basingstoke W10 diversionary route	Revised scope and output due to project development.
10.02	WCML traction power supply upgrade project	Project revised to reflect the 'Stafford 2018' timetable and revised priority of works.
10.03	Stafford area improvement project	Project revised to facilitate delivery of DfT's 'third generation' December 2016 train service.
11.00	Thameslink Programme	Change to key milestone in order to utilise an Easter possession.
15.06	Suburban area 10-car / 12-car operations to Victoria and London Bridge	Revised scope due to project development.
15.07-15.13	Kent train lengthening	Revised scope due to project development.
16.03	Route 2 – power supply enhancements	Revised scope and milestones due to project development.
17.01	Gatwick airport remodelling and passenger capacity scheme	Additional works to better meet customer requirements and a revised programme taking into account the impact uncertainty in third party funding.
18.03	Alexandra Palace to Finsbury Park Third Up line	Outputs updated to better meet customer requirements.
18.06	Hitchin grade separation	Revised scope due to project development.
18.08	North Doncaster Chord (previously Shaftholme Junction remodelling)	Revised scope and outputs due to project development.
19.00	East Coast Main Line overhead line electrification	Revised scope and milestones due to project development and a revised delivery programme to reduce disruptive access requirements.
20.00	St Pancras – Sheffield linespeed improvements	Revised scope, outputs and milestones due to project development.
22.01	Bromsgrove electrification	Outwith change control process due to uncertainty in third party funding.

Table 6.1: Changes approved by ORR		
22.05	Route 17 – train lengthening	Revised scope and milestones due to project development.
22.06	East Midlands train lengthening	Revised project to ensure more efficient delivery of outputs.
23.01	Capacity improvements (Leeds area)	Outwith change control due to rolling stock uncertainty.
23.02	South Yorkshire – train lengthening	Outwith change control due to rolling stock uncertainty.
23.03	South Yorkshire – stabling for Northern	Outwith change control due to rolling stock uncertainty.
24.01	Route 20 – platform lengthening	Outwith change control due to rolling stock uncertainty.
24.02	Route 20 – stabling for Northern	Outwith change control due to rolling stock uncertainty.
24.04	Route 20 capacity enhancements	Outwith change control due to rolling stock uncertainty.
26.04	Maidenhead and Twyford (relief lines).	Outwith change control due to rolling stock uncertainty.
30.00	Tier 3 project development fund	Purpose of the fund amended to allow delivery at client request.
32.01	Airdrie – Bathgate	Revised delivery milestone due to severe weather.
32.03	Borders new railway	Milestones agreed with the client.
33.01	Ayrshire and Inverclyde Infrastructure Enhancements for Class 380 Train Introduction	New project added; also scope, output and milestone amendments.
33.02	Waverley Steps redevelopment	New project.
33.03	EGIP – Edinburgh Gateway (Gogar) intermodal transport interchange	New project.
33.04	EGIP – Haymarket North Lines electrification	New project.
33.05	EGIP – infrastructure works	New project.
33.06	EGIP – Edinburgh to Glasgow electrification	New project added; currently out with the change control process.

Table 6.2: Changes requested and still under consideration (as at June 2011)		
ID no.	Project	Change
08.00	Access for All	Further definition of delivery dates.
09.00	King's Cross	Clarification of delivery milestones.
12.00	Intercity Express programme	Revision to reflect DfT requirements and train characteristics.
15.02 to 15.13	Southern train lengthening programme	Scope and delivery milestones due to project development.
16.06	Route 6 power supply upgrade	Revised scope due to project development.
18.01	Capacity relief to the ECML (GN/GE joint line)	Various scope and delivery milestones to reflect project development.
18.06	Hitchin grade separation	Revised scope due to project development.
26.01	Barry to Cardiff Queen Street corridor	Revised scope and delivery milestone due to project development.
33.01	Ayrshire and Inverclyde infrastructure enhancements for Class 380 trains	New scope and delivery milestone.
33.05	EGIP – infrastructure	Revised scope requirements and revised delivery milestone.

Enhancement Expenditure

The CP4 Enhancement programme allows us to manage work packages based on their contribution to the outputs required and the synergies and dependencies between projects. Within the packages of projects our obligations may be different for each project and this is more fully covered in our document CP4 Delivery Plan 2011 Enhancements Programme.

Actual expenditure incurred on each enhancement programme in 2010/11 and the cumulative total for the first two years of CP4 is shown in Table 6.3. The table groups expenditure separately for those schemes that were funded by the 2008 periodic review settlement (PR08) and those that were agreed after the review was determined.

Table 6.3: Enhancement expenditure in 2010/11 (£ million at 2010/11 prices)

	2010/11	CP4 cumulative
PR08 funded schemes in England and Wales		
NRDF (Network Rail Discretionary Fund)	31	107
NSIP (National Stations Improvement Programme)	27	45
SFN (Strategic Freight Network)	7	9
Performance fund	46	62
Seven day railway fund	5	7
CP5 development fund	8	15
Safety and environment fund	22	54
Access for all	47	103
Adjustment due to change of funding from DfT	-111	-111
King's Cross	105	195
WCML Committed Schemes	15	23
Thameslink	504	916
Intercity express programme	4	7
Reading	59	90
Birmingham New Street gateway project	1	1
Platform Lengthening – Southern	26	35
Power supply upgrade total	22	22
Southern capacity	2	3
ECML improvements	14	24
ECML overhead line enhancement	6	11
Midland Mainline St Pancras – Sheffield line speed improvements	3	4
East Midlands resignalling – Nottingham Station area	1	1
Midlands Improvement Programme total	3	4
Northern Urban Centres – Leeds	1	1
Northern Urban Centres – Manchester	3	3
Trans Pennine Express linespeed improvements	1	1
Western Improvements Programme	16	28
North London Line capacity enhancement	29	72
GSM-R on freight routes	0	0
Station security	2	4
PR08 funded schemes in Scotland		
Tier 3 project development	1	1
Small projects fund	4	5
Airdrie to Bathgate	87	227
Paisley corridor improvements	51	73
Borders railway	0	0
Glasgow to Kilmarnock	2	16
Other – schemes carried over from CP3 and unallocated overheads	9	95
Total for PR08 funded schemes	1,053	2,153

Table 6.3: Enhancement expenditure in 2010/11 (£ million at 2010/11 prices)

Non PR08 funded enhancements		
Crossrail	47	87
Electrification	5	5
Edinburg to Glasgow improvement programme	22	23
Ayrshire Inverclyde	17	17
Third party promoted	126	262
Other – promoted by Network Rail or DfT	68	128
Funded directly by third parties (including £111m DfT)	392	720
Total for non PR08 funded schemes	677	1,242
Total enhancement expenditure	1,730	3,395

England and Wales

Programme ID 1.00. Network Rail Discretionary Fund (NRDF).

The Fund is a mechanism for funding minor schemes which have an appropriate whole industry business case. The schemes may be either linked to renewals or standalone schemes. The Fund is primarily aimed at interventions that result in an increase in the capacity or capability of the network. Our obligation is to work with our customers and stakeholders to identify the best use of the funds available.

The NRDF spend in 2010/11 was £31 million (2009/10 was £73 million, reflecting a number of significant schemes under construction in that year). At £104 million spend in CP4 so far, the Fund remains on target to spend the funding available in the control period.

Governance of the Fund was the subject of a review by the Independent Reporter during the year and was found to be satisfactory; a number of agreed recommendations have been implemented.

All schemes seeking funding continue to be subject to rigorous business case analysis and appraisal. In CP4 the hurdle rate benefit to cost ratio to Government has been set at 2 to 1 (1.5 to 1 in CP3). The Fund therefore promotes schemes that would be considered “high value for money” by Government. Schemes must have a positive whole industry NPV and the net cost (the amount that will be drawn down from the fund) must not exceed £5 million without the prior agreement of the (DfT). Schemes with a total cost in excess of £5 million are eligible where additional funding is provided by Network Rail or others such that the draw down on the NRDF is within this limit.

To date in CP4 over 50 NRDF schemes have been completed. Around a 100 further schemes are in development or delivery. A detailed list of NRDF schemes can be found within our “CP4 Delivery Plan 2011 Enhancements Programme” publication.

A number of the schemes delivered during the year are examples of where the Fund has been used to contribute to multi-funded projects, thus increasing the overall impact of the NRDF. These schemes include Southampton to West Coast W10 Gauge Clearance, Olive Mount Chord Gauge Enhancement, Birmingham Moor Street Wing Yip Bridge and Metheringham Station Bus Interchange.

Programme ID 2.00. National Stations Improvement Programme (NSIP).

Current Project Stage: Various

The National Stations Improvement Programme (NSIP) is a joint rail industry initiative involving Network Rail, Train Operating Companies (TOCs) and the Department for Transport. The programme is funded primarily by the DfT and aims to deliver £165 million worth of station improvements to a minimum of 150 medium sized stations in England and Wales during CP4. In many cases this funding has been supplemented by contribution from train operators, Local Authorities and other interested parties raising the potential provision by around £73 million. Since the programme began £26 million of third party funding has been secured.

The programme adopts a new approach to the working partnership between Network Rail and the TOCs. Through the formation of 17 Local Delivery Groups (LDGs) the programme encourages and empowers the LDGs to make decisions at a local level. The LDGs are jointly chaired by Network Rail and the TOCs. LDGs integrate their plans with other programmes of work, and deliver the right solution in the most efficient manner complimenting all the interfaces for each station.

Our obligation is to work with stakeholders to identify the best use of available funds and to deliver the proposed programme of station works delivered by the cross industry local delivery groups. Projects can also be delivered by the TOCs or third parties where agreed by the LDGs.

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

As the programme develops the scope of NSIP works has evolved beyond the initial "high street" type works to more complex projects. For the completed projects the scope has included new customer information screens, cycle facilities, seating, signage, waiting shelter improvements, new canopies, new station buildings, booking hall refurbishments, subway improvements and improvements to station retail.

In addition to the completed projects which benefitted 26 stations in 2009/10, 113 stations have benefitted from completed projects in 2010/11. A further 280 projects are planned for completion during CP4.

Progress in 2010/11

Completed projects at the following stations listed by Station Facility Owner (SFO):

SFO	Stations
Arriva Trains Wales	Rhymney, Mountain Ash, Pembrey and Burry Port, Chepstow, Maesteg, Pencoed, Dingle Road, Eastbrook, Hengoed, Church Stretton, Craven Arms, Gobowen, Leominster, Lydney, Milford Haven, Penmaenmawr, Pontyclun, Tenby, Whitchurch (Salop), Pontlottyn, Taffs Well, Tirphil, Tondy, Welshpool, Caldicot, Llanbradach, Aber, Brithdir, Cardiff Central, Chester.
Chiltern Railways	Aylesbury, Princes Risborough, Leamington Spa, Warwick, Gerrards Cross.
East Midlands Trains	Derby, Kettering.
First Great Western	Pershore, Ealing Broadway, Southall, Honeybourne.
First Capital Connect	Harpenden, Kentish Town, Harringay, Bedford, Flitwick, Leagrave, Royston, Finsbury Park, Hatfield, Stevenage, West Hampstead, Welwyn Garden City.
London Midland	Bloxwich, Bloxwich North, Landywood, Cannock, Hednesford, Rugeley Town.
Merseyrail	Liverpool Central, Rock Ferry.
Northern	Altrincham, Accrington, Huyton, Rochdale, Wakefield Kirkgate, Hartlepool, Halifax, Harrogate.
South West Trains	Ash, Ashurst New Forest, Beaulieu Road, Bagshot, Bracknell, Camberley, Chiswick, Dorchester South, Earlsfield, Effingham Junction, Frimley, Godalming, Grateley, Guildford, Hilsea, Honiton, Kew Bridge, Mortlake, Overton, Wraybury, Farnborough, Fareham, Fleet, Poole, Syon Lane, West Byfleet, Whimple, Richmond, Clapham Junction, Surbiton, Teddington, Fratton, Hounslow.
Southeastern	Lewisham, Canterbury West, Dover Priory.
Southern	Gipsy Hill, Streatham Hill.
TransPennine Express	Middlesbrough, Stalybridge, Scarborough, Dewsbury.
Virgin Trains	Runcorn, Preston

Examples of completed works

Canterbury West Station (Southeastern) – Current Project Stage: Completion

The NSIP project at Canterbury West delivered a package of interventions, which combined are intended to make a significant improvement to passenger facilities at the station.

The project was delivered by Southeastern, and work included:

- enlarging the booking hall by moving the ticket office back to create more space for the increased passenger flows expected following the introduction of the High Speed Service, and creating a positive travelling environment and a 'gateway' to Canterbury;
- provision of new improved lighting to the concourse;
- fitment of a new floor to the booking hall;
- installation of three automatic doors to front of station;
- installation of automated opening devices to existing doors on to the platform from the booking hall;
- improvement to the passenger toilet facilities on platform 1;
- installation of a new DDA compliant toilet;
- enlarging the café seating area to provide an improved waiting environment for passengers;
- supplying and installing a shutter system for the café so that the waiting area can remain open after the café has closed;
- refurbishing the existing semi redundant buildings on platform 2 to create a waiting room and tenancy space;
- upgrading the lighting;
- installation of cycle parking compound between the rear of platform 1 and the 'Goods Shed' car park;
- working with Canterbury City Council to improve way-finding signage to the city centre;
- provision of a space for a real time bus information screen; and
- upgrading the CCTV.

The project started in July 2009 and completed in December 2010. The project was delivered £112,000 under budget at £1,363,000. These savings have been reinvested back into the programme.

Halifax Station (Northern Rail) – Current Project Stage: Completion

The NSIP project at Halifax commenced on site in May 2010 and completed in September 2010. The project was supported and part-funded by West Yorkshire Passenger Transport Executive.

The project was delivered by Northern Rail and work included:

- construction of a new glazed waiting/ retail area at concourse level;
- renovation and refurbishment of platform level waiting area;
- seating and signage throughout station;
- improved cycle parking facilities;
- remodelling of car park/ access road; and
- refurbishment of passenger toilet.

The project came in on budget and was delivered on time.

Chester Station (Arriva Trains Wales) – Current Project Stage: Completion

The NSIP project was delivered by ATW and works included:

- new waiting room;
- new public toilets;
- new café;
- additional staircase;
- new lift lobby;
- refurbishment of lift; and
- installation of CCTV.

The project started in October 2009 and completed in December 2010. The project came in on budget and was delivered on time.

The project was also supported and part-funded by Merseytravel, North West Development Agency and the Railway Heritage Trust.

Programme ID 3.00. Strategic Freight Network (SFN).

The Department for Transport (DfT) announced in its high level output specification (HLOS) (July 2007) funding to facilitate the implementation of a Strategic Freight Network. It will add capacity and capability to the network in CP4 to allow an increase in the number of freight trains along with larger loading gauge and longer trains. This is delivered by five schemes, detailed below, which each provide an enhancement for freight customers. These have been developed with the Strategic Freight Network Steering Group. This comprises of Network Rail, the freight operating companies and freight users, the Association of Train Operating Companies (representing passenger operators), DfT, Welsh Assembly Government and Transport Scotland.

Felixstowe to Nuneaton freight capacity project. Programme ID 3.01.

Current Project Stage: Single Option Development

The provision of two key physical interventions was identified in the option selection study (completed March 2009), as follows:

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

Progress in 2010/11

- following consultation with regional and industry stakeholders the scope of the Ipswich Chord line was enhanced from single track to double track. The scope change was funded through the use of funds released through award of a Trans European Network – Transport grant on another project on the Felixstowe Nuneaton corridor;
- investment Authority to cover the change of scope of Ipswich Chord from single to double track was obtained in August 2010.

Development of this option has continued through the year, in particular the documentation to form the Development Consent Order application which will be made in May 2011;

- public consultation on the proposals was carried out in Ipswich in June 2010 and February 2011; and
- the Ely Loops project completed GRIP Stage 4 in March 2011, in preparation for seeking GRIP Stages 5-8 authority.

Milestones:

This next committed delivery milestone is for completing by March 2014 and the project is on target to meet that date.

Southampton to West Coast Main Line W10/W12 Diversionary Route via Andover. Programme ID 3.02.

Current project stage: Detailed Design

This project delivers a W10 Diversionary Route between Southampton and Basingstoke to enable intermodal traffic to run without disruption whilst maintenance and renewal takes place on the core route via Eastleigh. The identified scope of the project includes:

- reconstruction of 16 overbridges with a standard "Conarch" solution;
- demolition of two overbridges;
- demolition of an arched overbridge and replacement of it with a footbridge;
- track lowering and slewing at eight overbridges;
- bridge modification (notching) at three sites in association with trackwork; and
- modification of four station canopy awnings.

Progress in 2010/11

- single Option Development and Outline design has been undertaken for all identified foul structures on the route;
- a GRIP Stage 4 estimate has been produced and signed off;
- possession worksites have been booked and an integrated possession plan has been produced;
- AFC reduced from £55 million to £33.8 million; and
- GRIP 4 stagegate review was undertaken on schedule as per the milestones below.

Milestones in the year for ID 3.02

Activity/Output	Date	Date Met/Expected
Completion of GRIP 3	June 2010	May 2010
GRIP 4 stagegate review complete	January 2011	January 2011

This project has a committed delivery milestone of completion by June 2013 and the project is on target to meet that date.

***Channel Tunnel south of London route fund.
Programme ID 3.03.***

Introduction

The Channel Tunnel south of London route fund currently has two component projects; Channel Tunnel second route and Redhill to Reading London Orbital freight study.

Current Project Stage: GRIP 2

The output of the Channel Tunnel second route is to provide an alternative route for freight between the Channel Tunnel and Willesden which is both clear for W9 gauge and Class 92 haulage, in addition to the single route currently available via Maidstone East. This will provide an alternative route during times of maintenance and renewals on the current route. The route being considered in this project is Dollands Moor – Ashford – Tonbridge West Junction – Redhill – Selhurst – Streatham Common – Balham – Clapham Junction – Latchmere Junctions and the West London Line to Willesden.

The output of the Redhill to Reading London Orbital project is to provide a study into a third route for freight between the channel tunnel and markets north and west of London that is both clear for W9 gauge and Class 92 haulage. This is in addition to the route currently available via Maidstone East and the output being delivered in the Channel Tunnel second route project (above). The route being considered in this project is Redhill – Guildford – Farnborough North – Wokingham – Reading.

Progress in 2010/11

Channel Tunnel Second Route

- remits agreed with the Strategic Freight Network Steering Group;
- pre-feasibility studies to identify the scope of works have been completed; and
- GRIP 3 remits and Project Requirement Specifications are being finalised for baseline plan.

No milestones were committed to be delivered last year.

The projects are to be completed within CP4 and are on target to meet that date.

Redhill to Reading London Orbital Study

A GRIP 2 feasibility study on the Redhill to Reading London Orbital route was completed in September 2010. The study identified that to enable the operation of Class 92, W9 gauge, electrified freight trains substantial infrastructure works would be required along the route between Redhill – Guildford – Farnborough North – Wokingham – Reading. The results of the study were used in the development of the London & South East RUS consultation draft which was published in December 2010.

The project has delivered the remitted scope of works to the agreed cost and in advance of the delivery date, delivering in September 2010 against a programmed target of November 2010.

***In-fill gauge projects fund.
Programme ID 3.04.***

The In-fill gauge projects fund currently has three component projects.

***Water Orton to Doncaster Rail Gauge
Enhancement***

Current Project Stage: Single Option Development

This project will provide W10 and W12 gauge between Water Orton and Doncaster via Castle Donington, the Erewash Valley and Beighton Junction. The scope includes the route section from Wichnor Jn to Lichfield Trent Valley. It will connect South Yorkshire and the East Midlands to the existing and planned high gauge routes that extend to/from the West Midlands.

Progress in 2010/11

- the cost/ scope/ outputs of the project have been confirmed and baselined to clear 59 foul structures to provide both W10 and W12 gauge. During the year work has been ongoing in developing solutions for these structures to GRIP 4; and
- an opportunity has been identified to clear a foul structure in 2011 at Castle Donington. The works to reinstate a connection to the Castle Donington Freight Terminal will be combined with a track lower, which will provide a cost saving to the project and avoid additional possessions. These works were undertaken on Sunday 30 January 2011.

No milestones were committed to be delivered last year.

This project is to be completed within CP4 and is on target to meet that date.

London to Peterborough via the Hertford Loop on the ECML ("ECML South")

Current Project Stage: Single Option Development

This project will provide W10 and W12 gauge on the southern end of the East Coast Mainline, including the links to the North London Line in both an east and westbound direction. The main functionality of this project is to provide a high gauge diversionary route for intermodal traffic to/from Felixstowe when the route via March is unavailable.

Progress in 2010/11

- the scope and outputs of the project have been confirmed and baselined to clear 20 foul structures to provide both W10 and W12 gauge. During the year work has been ongoing in developing solutions for these structures to GRIP 4;
- single option development site surveys and investigations have continued.

No milestones were committed to be delivered last year.

This project is to be completed within CP4 and is on target to meet that date.

European gauge from Exchange Sidings near Barking to terminals in the vicinity

Current Project Stage: Single Option Development

This project will upgrade the capability of the rail network to permit the movement of European gauge GB1 and GB2 freight traffic moving to/from the Channel Tunnel Rail Link (CTRL) and the freight terminals in the Barking and Dagenham area. The project has. The CTRL offers significant opportunities for the movement of freight traffic between the UK and mainland Europe via the Channel Tunnel. The project has been developed in response to a requirement to operate European gauge rolling stock GB1 and GB2 into and out of the freight exchange sidings between Barking and Dagenham and is the first step to extending GB levels of gauge clearance to key markets within the UK.

Progress in 2010/11

- the scope and outputs have been confirmed and baselined to confirm two foul structures that require alteration to achieve GB2 levels of gauge clearance;
- the route between HS1 and Dagenham Ford sidings was cleared to GB2 gauge in January 2011;
- single Option Development site survey works on remaining structure are complete; and
- design issued for approval.

No milestones were committed to be delivered last year.

This project is to be completed within CP4 and is on target to meet that date.

Train lengthening projects fund. Programme ID 3.05.

Current Project Stage: Option Selection

The train lengthening projects fund currently has three component projects these are:

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

The projects are examining the intervention required to deliver the capability to run longer freight trains of 775 metres long on those three routes and considering the incremental enhancement to 640 metres from the current length.

Progress in 2010/11

Pre-feasibility has been completed for each of the projects identifying the options for lengthening up to 775 metres for feedback to the Strategic Freight Network Steering Group. Option selection work is currently ongoing.

No milestones were committed to be delivered last year.

This project is to be completed within CP4 and is on target to meet that date.

Programme ID 5.00. Seven Day Railway.

Current Project Stage: Option selection

The funding is to support delivery of the regulated output measures for Network Availability during CP4. These are measured by the Possession Disruption Indices (PDI) for passenger and freight (PDI-P and PDI-F).

The primary benefits of the fund are based on directly improving the PDIs. Secondary benefits include Route Categorisation initiatives (e.g. diversionary route capabilities), shortened possession limits or times, additional market opportunities, improved passenger and freight operator resilience to planned disruption, and reduced bus mileage.

In working with our customers to produce Joint Network Availability Plans (JNAPs), we are consulting with the Train and Freight Operating Companies to understand their requirements and identify where there may be an opportunity to invest from the seven day railway fund to meet these requirements.

Progress in 2010/11

- to date, since the start of CP4, over 50 projects have been identified which have authorised funding for option selection. 29 of these projects have progressed onto single option development and beyond;
- the projects cover a wide variety of interventions which allow access to the network to remain open for longer periods of time, so improving the journey experience to service users. These projects include improvements to assist maintenance activities such as additional access points, junction lighting, improved isolation points, introduction of new plant, infrastructure enhancement such as the provision of an additional platforms, additional crossovers, turn back facilities as well as timetable studies to identify opportunities for implementing single line working. In addition, funding has been provided to some major signalling enhancement schemes to allow them to deliver their works in a less disruptive access regime;
- during the year, Route categorisation principles have become embedded within our planning processes. The December 2011 timetable and accompanying Engineering Access Statement have been developed on the basis of Route Categorisation. Our Network Availability Implementation Plan was originally published in September 2009 and an updated version three published at the end of March 2011;
- Joint Network Availability Implementation Plan (JNAPs) have been reviewed and updated with our customers. This process continues to mature, and there have been significant improvements witnessed; and
- levels of disruption to both passenger and freight services from planned engineering work remain better than the regulatory requirements for the end of the control period. We do anticipate upward pressure on the PDIs towards the end of the control period, so we are putting in place measures to manage this.

Seven day railway funded schemes completed in 2010/11 are:

- additional platform at Chesterfield – which reduced rail replacement requirements and better optimised possession regimes;
- RRV access at Christchurch – minimising the impact and disruptions of weeknight possessions on the Waterloo – Weymouth route have now become non-disruptive;
- new stabling facility at Worcester – empty coaching stock moves are reduced and possessions have become less disruptive; and
- Cembre clipping machines – a 12 hour possession involving clipping/ de-clipping of rail reduces to an eight hour possession and these machines have been deployed across the country to maintenance teams.

**Programme ID 7.00.
Safety and Environment Fund.**

Current Projects: Various

Network Rail's funding in CP3 included a fund for safety and environment enhancements to meet legal requirements. As some of the schemes initiated would not complete until CP4 a roll-over of funds was provided in the PR08 settlement. Our objective is to deliver the schemes authorised from this fund. The following provides a summary of progress with these schemes, some of which have been completed in 2010/11 but a number of which continue beyond.

Current Project: Various

The fund is comprised of the following 11 categories:

1. Energy Efficiency

- *On train metering*
By providing this facility to train operators they are able to opt to use it to measure their trains' actual use of electricity and thereby understand what measures can be adopted to improve and minimise consumption. The first train operator to opt in was Virgin Trains from April 2010 and a further two have opted in from April 2011.
- *Non-traction metering*
This is the provision of around 5500 automatic electricity meter readers, providing Network Rail with more accurate bills, improved electricity consumption knowledge, better compliance with environmental legislation and the opportunity to make financial efficiencies through improved management and reduction of consumption. Installation will continue into 2012/13.
- *Carbon reduction commitment*
The aim of this commitment is to develop a strategy and identify options for reducing Network Rail's carbon dioxide emissions. The S&E Funded element of this project covered the initial development stage, and the remainder of the project will be taken forward as a self-funded capital expenditure project.
- *Photovoltaic cells on Blackfriars Station roof*
The Blackfriars station redevelopment is scheduled to be one of Network Rail's first major projects to incorporate the large scale use of Photovoltaic (PV) cells. The PV cells will form part of the station roof design and supply up to 70 per cent of the

station's electrical needs. Excess electricity will be fed back into the national grid. Physical delivery is likely to be re-phased into 2012/13 due to the re-sequencing of the Blackfriars Bridge west side platform roof works.

2. Environment protection

- *Pollution prevention*
The National Pollution Prevention Programme (NPPP) is an amalgamation of a group of pollution prevention projects into a single national programme with the aim of achieving compliance with the Control of Pollution (Oil Storage) Regulations and the Groundwater Regulations. All physical works undertaken as part of the NPPP have been completed. This included the commissioning items at 91 Light Maintenance Depot (LMD) sites, preparation of 'as fitted' drawings and operations and maintenance manuals, handback procedures, resolving contract claims and addressing snagging items, including upgrading an interceptor at Neville Hill Depot (Leeds) to address a flooding problem.
 - *Sites of special scientific interest*
This project brought a number of Sites of Special Scientific Interest in England to favourable or recovering status during 2010/11.
 - *Sustainable Lineside*
This programme identified biological planting solutions and management options to mitigate/prevent risks to the operational railway. Following pre-planting surveys, the next phase of work is ongoing to develop the solutions which will be trialled, monitored and, if considered successful, will be rolled out nationally.
 - *Thornaby Depot oil pollution*
This project seeks to address the risk of oil seeping into an adjacent water course. The work, which will be undertaken during 2011/12, includes cleaning out a drainage run and installing filters and booms.
- 3. Infrastructure failure**
- improvements to the design of switches and crossings continues into 2011/12.
- 4. Level crossing closure**
- 16 level crossing closures are being progressed, most of which will continue into 2011/12 and beyond, due to the timescales associated with obtaining the necessary closure permissions; and
 - National User Worked Crossing (UWC) level crossings closure programme which, since its inception, has either closed or is in the process of closing over 450 UWCs.

5. Passenger safety

- trap point risk mitigation works on the Great Northern area, completed in 2010/11;
- the installation of enhanced security cameras on 30 First Great Western leased stations, completed in 2010/11; and
- slip, trip and fall mitigation measures installed at twelve Managed Stations, completed in 2010/11.

6. Route crime

- installation of forward facing cameras on rolling stock leased to Northern Rail continues into 2011/12.

7. Security

- improvements to the CCTV Control Hub at British Transport Police's headquarters, planned for completion in 2011/12;
- improved connectivity to the CCTV Control Hub at British Transport Police's headquarters, planned for completion in 2011/12; and
- a national programme of installation of enhanced security measures at key operational locations, planned for completion in 2011/12.

8. Signals Passed At Danger (SPADs)

- installation of LED-type 'OFF' indicators at Aberdeen and Inverness stations was completed in 2010/11. These reduce the risk of a train passing a signal at danger, making it easier for the station train dispatch staff to read the signal indication; and
- a project was commenced on London North Eastern route which seeks to reduce the risk of a starting train passing a signal at danger and entering the conflict area beyond a signal, and is planned for completion in 2012/13. Following assessment, six signals were identified as requiring further mitigation work, which will involve lowering the line speed at four of the signals (in the Leeds area) and providing a banner repeater signal at a signal at Newcastle and an "OFF" indicator at a signal at Derby.

9. Vegetation management

- a national lineside tree survey of Network Rail's operational corridors is underway and continues into 2011/12. The survey seeks to assess the condition and any potential risk posed to the railway or to third party property by lineside trees. It will also visually assess any third party trees of concern (to the railway). A national database will be created, holding information of all tagged trees, leaf fall information and stumps on cutting slopes.

10. Workforce safety

- ten enhancement projects, four of which were completed in 2009/10 and two in 2010/11 (improvements to the On Track Machinery fleet servicing facilities in Anglia and Scotland routes). These programmes of work aim to reduce the risks of working at height, and from slips, trips and falls. Four projects (improvements to access points nationally; improvements to catchpit covers nationally; remotely controlling Clachnaharry Swingbridge by moving the bridge controls to Inverness Signalling Centre and closing the existing signal box; and junction lighting improvements on London North Western route) continue into 2011/12.

11. Workforce health

- reducing the risk of injury to signallers caused by excessive signal lever pulls in mechanical lever signal boxes by assessing and, where necessary, implementing appropriate enhanced risk mitigation measures (e.g. enhanced maintenance, motorisation of signals/points) for the highest risk signal levers. Following assessment, a total of 316 levers were identified as requiring enhancement, 298 of which were addressed in 2009/10 and 16 that required either motorisation or a heavy mechanical repair were completed during 2010/11. Work continues into 2011/12 to address the remaining two locations.

Programme ID 8.00. Access for All.

Current Project Stage: Various

The objective of the Access for All Programme is to deliver an accessible route at as many stations as possible. The locations have been selected for consideration by the DfT for England and Wales, and Transport Scotland for Scotland, 135 and 13 stations respectively.

Our obligation is to deliver projects that are authorised from the Access for All fund and is scheduled to run into the first year of CP5. The programme delivered enhancements at 22 stations in CP3 and is in a position to complete another 126 in CP4, subject to agreement of accelerating CP5 spend. Programme integration analysis continues along with the industry's Integrated Station Plans, the National Stations Improvement Programme and station renewals. This is done to make sure synergies and opportunities are exploited and has been achieved through active stakeholder management minimising business disruption. Within this framework we have completed 75 per cent of planned stations.

Over the last 12 months the Programme has undergone review by the Independent Reporter with no critical issues being identified. The report illustrated Network Rail's ability for effective optioneering and efficient delivery '*In particular, the Independent Reporter finds that Network Rail selects the 'right option' for the creation of accessible routes. By consistently selecting the 'right option' Network Rail has achieved a key criterion to demonstrate value for money.*' However, the ORR also recognised that the rate of station completions was less than expected.

A further review was undertaken by Steer Davies Gleave, commissioned by DfT, looking at wider

Access for All Programme Benefits. The output report from this review was finalised in August 2010 and based on a sample of Access for All sites quantified the impact of the programme (see figure below). Their conclusion was that 'The overall result implies that the Access for All programme led to an 11 per cent increase in demand amongst the mobility impaired, a 21 per cent increase amongst wheelchair users, a five per cent increase amongst encumbered passengers and a one per cent increase amongst unencumbered passengers.'

The report also contains substantial business case analysis and is available on request from DfT.

Station specific outputs.

For each station identified we must achieve an unobstructed and obstacle free "accessible route" within Network Rail controlled infrastructure, from at least one station entrance and all drop off points associated with that entrance, to each platform and between platforms served by passenger trains.

Scope of works

This is decided on a station by station basis but typically includes the provision of lifts or ramps to an existing, or new, footbridge or subway with the appropriate signage, information systems, non-slip surfaces and colour contrasting handrails as necessary.

Progress in 2010/11

- option selections agreed with DfT/TS 24;
- outline designs signed off 26;
- detailed designs signed off 19; and
- stations completed in 2010/11 nine.

The completed stations were: Canterbury West, Cupar, Easterhouse, Highbury and Islington, Horley, Hooton, Huddersfield, Middlesbrough and Staines.

Milestones in the year for ID 8.00						
	Mobility impaired	Wheelchair	Hearing	Sight	Encumbered	Unencumbered
Aware and significant increase	18%	47%	15%	4%	11%	2%
Aware and slight increase	44%	18%	19%	36%	6%	3%
No increase or not aware	38%	35%	65%	60%	83%	95%
Trips per year	37	28	67	26	63	121
Increase in trips per year	3.8	4.9	4.7	1.2	2.7	1.2
% increase in trips	11%	21%	8%	5%	5%	1%

Programme ID 9.00. King's Cross.

Current Project Stage: Construction, testing and commission

The King's Cross Station Redevelopment Programme is a major redevelopment project covering the complete station including the main line and suburban train sheds and includes both renewals and enhancement elements. A key objective of the project is to provide an integrated seamless transport interchange between Kings Cross main and suburban train sheds, incorporated with London Underground (via their northern ticket hall recently opened below the proposed new station concourse) and with the adjacent St Pancras station. Many elements of the existing station are being updated, modernised and renewed including:

- the east and west range offices;
- station roofs, platforms and footbridge; and
- façades.

Enhancements include:

- a completely new western concourse three times the size of the existing one, incorporating a mezzanine level with footbridge access to platforms 0 to 8;
- a new platform beneath the eastern range offices;
- a new iconic square to the south of the station; and
- a new access road and service yard for station deliveries in conjunction with the adjacent property developer, Argent.

This project supports an improved network capability through an increased station capacity to handle future passenger forecasts at peak times plus increased train path availability by construction of a new platform.

Other key outputs include:

- creation of a high quality passenger environment;
- improved circulation space and additional facilities;
- increased retail opportunity within the new concourse;
- additional commercial opportunity by refurbishment of the east and west range

offices; maximising the heritage environment within the confines of a Grade 1 listed station.

Progress in 2010/11

Main Train Shed Platform Works:

- platforms 2/3 and 6/7 refurbishment complete (including installation of new escalators and lifts for future passenger footbridge);
- concourse extension to platforms 5/6 and 7/8.

Main Train Shed Gateline Installation:

- installation and commissioning of automatic ticket gates to Platforms 0 to 5 as required by DfT, twelve months earlier than planned.

New Platform (Platform 0):

- new platform installation complete and operational to support introduction of new May 2010 timetable.

Shared Service Yard:

- service yard works and access road completed.

Western Range:

- structural, remedial and refurbishment works continuing throughout the western range: including offices, new booking hall, first class lounge and gateline facilities.

Western Concourse:

- main steelwork to new concourse structure complete, secondary steelwork and roof cladding works underway. Internal mezzanine level structural works complete.

Roof Refurbishment:

- main train shed roof refurbishment works continuing. First photo-voltaic glazing panels installed to roof. Suburban train shed refurbishment works commenced.

Public Realm Works:

- Kings Cross Square design competition awarded and outline design underway;
- other public realm works, taxi ranks, etc, commenced.

Final Delivery:

This project has a committed final delivery milestone of completion by September 2013 and the project is on target to meet that date.

Milestones in the year for ID 9.00

Activity/Output	Date	Date Met
Platform 0 commissioned	June 2010	May 2010
Plant room and shared service yard commissioned (interim state)	September 2010	June 2010

**Programme ID 10.00.
West Coast Main Line committed
schemes.**

**Bletchley Re-Modelling Project.
Programme ID 10.01.**

**Current project stage: Final Design and
Construction**

The purpose of the project is to renew signalling and track assets in the area of Bletchley station and the nearby carriage sidings. It also supports the provision of capacity enhancements which contribute to the delivery of DfT's HLOS strategy.

Progress in 2010/11

- successfully completed all final design activities;
- commenced physical works on site;
- Drayton Road Junction installed; and
- Water Eaton Road Junction installed.

This project has a committed delivery milestone of completion by September 2013 and the project is on target to meet that date.

**West Coast Power Supply Upgrade.
Programme ID 10.02.**

Current project stage: Option Selection & Single Option Development

The scope of the overall programme is to deliver an upgraded traction power supply system to support the operation of the indicative 2018 Stafford design scenario timetable and 2030 freight service forecasts.

Phase one was completed in time for the December 2008 timetable change. Phase two is substantially complete.

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 works required in the route section from Great Strickland to Carstairs (Phase 3C) are subject to further review in light of the future train service requirement.

Progress in 2010/11

- a number of Option Selection Reports have been substantially completed for Phases 3B and 3C, specifically; Protection & Control Study, Distribution Equipment Study, and Overhead line equipment study;
- single Option Development for Phase 3A of the project has been substantially completed including the production of Approval-In-Principle designs, technical work scopes, project programme access strategy, procurement strategy cost estimate for GRIP 5-8 with the required authority obtained in April 2011, Quantified Cost and Schedule Risk Assessments;
- Network Change has been established for the 12kA fault level system design for the trial site between Patford Bridge / Long Buckby Wharf and Hillmorton. A business case has been established for the roll-out of 12kA fault level system design for the remainder of the Phase 3A area;
- Network Change has been issued for consultation for 12kA fault level for the remainder of the Phase 3A area and for proposed changes to neutral sections in the Phase 3A area; and
- an initial load modelling assessment has been jointly completed with the North West Electrification project, with further analysis due to complete by spring 2011. A load modelling assessment has also been remitted for the Phase 3C area of the project.

Milestones in the year for ID 10.01

Activity/Output	Date	Date Met/Expected
Commence GRIP stages 5-8	December 2010	June 2010
Commencement of physical works	December 2010	November 2010

Milestones in the year for ID 10.02

Activity (Phase 3A: North Wembley – Whitmore)	Output	Date	Date Met/Expected
GRIP 3 (stage gate review complete)	Single option selected	August 2010	August 2010

Milestones in the year:

The project milestones were updated as part of the March 2011 refresh of the Delivery Plan. In respect the key dates for 2010/11 were revised to those in the table. This project has a committed delivery milestone of completion by 2019 and the project is on target to meet that date

**Stafford Area Improvement Project.
Programme ID 10.03.**

Current Project Stage: Option Selection

The project supports the implementation of a new service specification on West Coast Mainline through the provision of additional fast line capacity, additional freight capacity on the Trent Valley route at Stafford Station and additional capacity on the Birmingham – Manchester axis. In addition a package of line speed enhancements between Stafford and Crewe has been developed.

Progress in 2010/11

- the project has continued to undertake GRIP 3 option selection work throughout the period under review;
- three indicative alignment options for Norton Bridge Grade Separation as well as a range of works in the Stafford area have been developed from the GRIP 2 proposals to a position where option selection was completed in February 2011 for Option A1;
- the project has carried out the first round of technical and public consultation on Norton Bridge grade separation in late 2010; and
- the project has formally notified the Infrastructure Planning Commission (IPC) that the project will require IPC determination during GRIP stage 4.

The Delivery Plan milestones have not been met as they relate to the delivery of new infrastructure works designed to facilitate a superseded train service specification. A new, more detailed train service specification has been developed and agreed with DfT in late 2009 and it is against this that the current infrastructure options have been developed.

These options have been designed to offer better value and be less intrusive to the local area. It is this iteration/clarification process that has led the project to miss the Delivery Plan milestones for end of GRIP 3/start of GRIP 4. We are working with the ORR to amend the Delivery Plan to accurately reflect the revised output, programme and milestones applicable to the project.

Milestones in the year for ID 10.03		
Activity/Output	Date	Date Met/Expected
GRIP 3 complete	September 2010	February 2011
GRIP 4 commencement	December 2010	May 2011

Programme ID 11.00. Thameslink.

Current Project Stage: Various

The Thameslink Programme will provide the stations and railway systems to enable modern 12-car trains to travel from Bedford, Peterborough and Cambridge to destinations such as Brighton, Horsham, East Grinstead, Sevenoaks and Maidstone East through a central London core at a peak rate of up to 24 trains per hour. The scope of works to achieve this are grouped into three key outputs.

Key output zero (KO 0) to allow a consistent train service to run throughout the Thameslink Programme KO1 construction periods was completed in March 2009.

Key output one (KO 1) allows 12-car train length operation between Bedford and Brighton by December 2011. An improved service capacity of up to 16 train paths per hour between St Pancras International (Low Level) and Blackfriars stations and the re-opening of the Blackfriars bay platforms is planned for April 2012. Delivery is currently on target to deliver these outputs.

Key output two (KO 2) provides for the complete 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 milestone has been deferred from December 2015 (change control applied for), as outlined by the Secretary for State for Transport in November 2011.

These are some of the key projects in this programme.

N280 Outer Areas

To extend platforms and enhance stations to accommodate 12-car trains from the introduction of the KO 1 timetable and to manage passenger numbers to KO 2 and beyond.

This encompasses works at Bedford, Radlett, Harlington, Flitwick, Elstree & Borehamwood, Luton, Harpenden, St Albans, West Hampstead, Mill Hill Broadway and Luton Airport Parkway stations. Project sites require multidisciplinary

coordination including all railway systems disciplines as well as station, rail bridge and passenger footbridge installations.

N222 Farringdon Station

Farringdon Station is being remodelled to accommodate increased passenger numbers and improve existing interchanges with London Underground and a new interface with Crossrail.

The project will deliver a new station entrance and concourse from Turnmill Street, an extension to the pre-existing LU concourse and a new station entrance and concourse on Cowcross Street.

N221 Blackfriars Station

The Blackfriars Station and Bridge Project involves the re-development and expansion of the existing station complex. The station will be enlarged with a new north bank concourse and station building, new wider 12-car platforms spanning the River Thames and a brand new south bank station entrance. All four platforms will be covered by a new single east-west span roof above their entire length. A photo-voltaic cell scheme to produce solar energy for the station has been incorporated into the roof design. This is inline with corporate and stakeholder objectives. Blackfriars Underground station will be enlarged and extensively rebuilt with new escalators, lifts and improved customer and staff facilities.

N242 KO1 Signalling

The project will commission a high capacity, conventional coloured light signalling scheme between Kentish Town and Loughborough Junction to accommodate the more intensive service and 12-car trains.

N244 KO1 Electrification & Plant

The project is upgrading the electrification system on the Thameslink routes to provide sufficient power for the additional and longer trains.

On the Midland Main Line this involves the upgrade of the overhead line system with autotransformer feeding equipment between Kentish Town and Borehamwood. On the DC third rail electrification network, new substations and additional lineside cabling is being commissioned to support the train service.

Milestones in the year for ID 11.00

Activity/Output	Date	Date Met/Expected
Blackfriars track switch	December 2010	December 2010

N232 Borough Viaduct Project

The project will provide a new twin-track viaduct on the south side of the existing tracks to facilitate the provision of four tracks through the existing 'bottlenecks' between London Bridge and Metropolitan junction. This will allow Thameslink and Charing Cross services to operate over dedicated tracks improving capacity and reliability.

N420 London Bridge Station & Bermondsey Dive-under

London Bridge will be significantly redeveloped, with the main station concourse and a pedestrian thoroughfare created at street level (between Tooley St and St. Thomas St). We are building a station big enough for approximately two-thirds more passengers than use the station today.

The station will also accommodate additional tracks from the new Borough Viaduct, as the configuration of the station will be changed to nine through tracks and six terminating tracks. This realignment enables the increase to 18 Thameslink trains paths per hour through the station and a total of 86 train paths per hour into and through the station as a whole. A dive-under will be constructed in the Bermondsey area, which will allow Thameslink services from the Sussex Route to access London Bridge on dedicated tracks.

N421 London Bridge Railway Systems (including ATO)

The railway systems project will upgrade the track, signalling, electrification and telecoms to accommodate the more intense service and longer trains. This includes the commissioning of Automatic Train Operation (ATO) between Blackfriars and St Pancras International (Low Level), which is required to deliver 24 train paths per hour.

Progress in 2010/11**Farringdon:**

- completed Integrated Ticket Hall (ITH) Substructure;
- temporary Station Operations Room completed;
- EDF Substation demolition completed and new substation commissioned;
- erection of steelwork for ITH;
- commenced erection of North Train Shed Roof Superstructure; and
- works completed to allow installation of ticket gate line in Turnmill Street Concourse.

Blackfriars:

- completed GRIP 5 Stage gate;
- commenced roof installation to span the length of the bridge;
- commenced demolition of the Western Piers;
- bridge rib corrosion remedial works substantially complete;
- completed eight week blockade to support track switch;
- interim Station opened on time; and
- completed photo-voltaic cell detailed design.

Borough Viaduct:

- completed construction of concrete piers for Park St and Hop Exchange Viaduct;
- completed erection of Borough Market Viaduct beams & deck;
- commenced delivery & installation of Borough High Street Bridge Steel Structure on Borough Market Viaduct; and
- completed pilling works for Railway Approach Viaduct.

KO1 Railway Systems

- the Blackfriars track slew was completed;
- Canal Tunnel Junction achieved GRIP 4;
- the specialist track development beneath St Pancras Chambers achieved GRIP 3;
- Core Area signalling scheme achieved GRIP 4; and
- all E&P DC Traction packages achieved GRIP 4 and the new TP Huts at Clayton Tunnel North and South were both commissioned.

Outer Areas

- Bedford sidings – GRIP3 to start on site achieved in 12 months;
- the platform extension at Elstree and Borehamwood was completed using the Herring modular system;
- West Hampstead station building completed GRIP 5;
- value management exercise on Bedford station saved circa £20M; and
- the development of the platform extensions at Sandy, Biggleswade and Arlesey achieved GRIP 3.

KO2 (including London Bridge):

- selected the single option for the design of the main station redevelopment and revised signalling and track layout;
- received confirmation of the funding commitment to complete this project, on announcement of the DfT's Comprehensive Spending Review;
- engaged Multidisciplinary Contractors for the delivery of GRIP 4 design development; and
- commenced on site survey works, as the first of a series of Enabling Works to be completed prior 2013, when the main works commence post-Olympics.

Programme ID 12.00. Intercity Express Programme (IEP).

Current Project Stage: Various: Feasibility to single option Development

During the majority of the year the project has been subject to a value for money review, however on the 1 March 2011 the Department for Transport confirmed that Great Western Mainline Electrification and IEP would proceed. As a result the programme of work is now being reordered to focus on GWML implementation first followed by East Coast Main Line.

As agreed with DfT and ORR, Network Rail has continued to progress development of infrastructure capability works (traction power upgrade, platform alterations, gauge clearance, and OLE alterations) to delivery plan milestones. These will deliver infrastructure ready to accept the operation of the new Intercity Express trains allowing for the replacement of some existing trains on a 'like for like service' basis i.e. no increase in service levels.

For CP4, the original total funding covers the implementation works on the East Coast route and development and detailed design on the Great Western route. This is now subject to change and Network Rail is working with DfT and ORR on a revised delivery plan and funding requirement.

Progress in 2010/11

- ECML Traction Power Upgrade to autotransformers completed GRIP 2. GRIP 3 is progressing, due to complete in November 2011:
 - connection applications submitted to National Grid for new 400kV feeder station at Peterborough;
 - order placed with Yorkshire Electricity Distribution Limited (YEDL) for new 132kV transformer at Ardsley Feeder station;
- ECML platform extensions completed GRIP 4 platforms between London and Newcastle;
- ECML overhead line equipment (booster overlaps and neutral sections) completed GRIP 3;
- ECML gauge clearance GRIP3 works progressing, due to complete June 2011;
- GWML gauge clearance GRIP3 works progressing, due to complete mid-summer 2011; and
- GWML Infrastructure Capability works continued to develop through feasibility.

Milestones in the year for ID 12.00

Activity/Output	Date	Date Met/Expected
East Coast pre series Engagement of DNO for provision of new supply connections at Tallington and Newark	March 2010	February 2011
East Coast series routes. Engagement of DNO for provision of additional supply connection at Ardsley	March 2010	February 2011
Engagement of DNO for provision of new supply connection at Cambridge	June 2010	October 2011
Start of detailed design for East Coast train test route (London / Doncaster)	September 2010	tbc
Contract awarded to preferred bidder (all routes)	December 2010	tbc
Start of detailed design for East Coast train test route (London / Doncaster)	March 2011	tbc
Start of detailed design for East Coast series routes (Aberdeen / Inverness and Hitchin -Kings Lynn	March 2011	tbc

Milestones in the year:

This project had a committed delivery milestone of completion of the ECML works by September 2014 and significant implementation of GWML works by September 2015. However Network Rail can confirm that these milestones will be amended to reflect the revised delivery timescales set out in the DfT announcement on 1 March 2011.

Engagement with Distribution Network Operators (DNOs) was achieved later than originally proposed for Peterborough and Ardsley due to a strategic change in the way that Network Rail approaches DNO and the National Grid. The agreed national strategy is now to undertake feasibility before submitting connection applications and engaging with DNO. This delays the milestones but shortens the subsequent programme so final completion milestones are unchanged. Modelling has confirmed that there is no requirement to continue with a supply point at Tallington.

The feasibility of upgrading supply points on the Cambridge route will continue until autumn 2011. The December 2010 milestone for contract award is a DfT Milestone and is on-hold pending a decision on the future of the IEP programme. Similarly, detailed design will not progress until there is clarity of the IEP programme requirements.

Following the confirmation of the revised IEP delivery timescales and the associated and interdependent decision to electrify the GWML to Bristol and Cardiff a revised IEP programme for the GWML implementation is currently being produced.

**Programme ID 13.00.
Crossrail and Reading.**

Crossrail and Reading are two separate projects, with different objectives and clients. Both projects, however, have the potential to provide significant capacity improvements to the Great Western Main Line (GWML). As there are opportunities to share access time and resources during implementation, a single team was established, the Crossrail and Reading Programme team, to deliver these two important schemes in the most effective way benefiting from those synergies. This team also includes the Western Integration team, responsible for coordinating these projects with others on the GWML as there are multiple interfaces between the Crossrail On Network Works (ONW) and other Network Rail projects including Electrification and IEP.

Crossrail. Programme ID 13.01.**Current Project Stage: GRIP 4**

Crossrail, which is partly financed by Network Rail, links Maidenhead and Heathrow Airport in the west with Shenfield and Abbey Wood in the east. It includes 23km of sub-surface railway tunnelled beneath the centre of London.

Network Rail is delivering the ONW for Crossrail Limited (CRL), who is delivering the project for the joint sponsors, TfL and DfT. The ONW comprises enhancements to the existing railway network, on either side of the central tunnels, necessary to deliver the timetable and performance levels required by the joint sponsors.

The requirements on Network Rail are set out in the Network Rail Client Requirements which also incorporates the On Network Functional Requirements. Within these documents CRL sets out the infrastructure capability which is needed to operate the Crossrail train service described within their Access Option.

Milestones in the year for ID 13.01

Activity/Output	Date	Date Met/Expected
KD1 submission to CRL of OTP for the ONW	September 2010	September 2010
GRIP 3 complete for ONW	December 2010	November 2010

Network Rail is also delivering various directly cash funded works for CRL. These are enabling works necessary to support the commencement of tunnelling (for example the relocation of equipment cases at the portals) and are not included in the outputs given in the Delivery Plan.

Scope of works

The ONW comprise the following infrastructure enhancements along 76km of existing railway:

- platform extensions for stations from Maidenhead to Abbey Wood and Shenfield to cater for 205m long electric trains;
- improvements at stations to cater for the increased numbers of passengers;
- new station at Abbey Wood;
- doubling the capacity of Stockley Viaduct at Airport Junction to improve access to Heathrow Airport;
- providing a grade separated junction at Acton; and
- other operational improvements including freight loops and turn back sidings to support the timetable.

Progress in 2010/11

- on 1 September 2010 Network Rail submitted its Key Date 1 (KD1) submission to CRL which contained the indicative Overall Target Price (OTP) for delivery of the ONW within the budget;
- GRIP 3 was completed for the ONW at the end of November 2010;
- GRIP 4 commenced for Acton, Stockley and the South East section of the Crossrail route;
- successful demolition of Dog Kennel Bridge (between Langley and Iver on the GWML) during Christmas 2010; and
- in early 2011, CRL confirmed revised dates for delivery of Infrastructure Capability, approximately one year later than the previous dates.

Milestones in the year

The GRIP 4 programme for the ONW has been accelerated and substantial completion is planned to be achieved by 31 December 2011 with all remaining work packages completing by August 2012.

Reading Station area redevelopment and southern platforms. Programme IDs 13.02 and 13.03.

Current Project Stage: GRIP 5 Detailed Design

Reading station area redevelopment (RSAR) is designed to deliver significant capacity and performance improvements throughout the area for GWML and cross country passenger and freight services. The southern platform project is an integral part of the redevelopment project and is required to support the proposed plan to operate 12-car services on the Waterloo lines. This programme has a number of assumptions including the provision of funding in CP5.

The outputs required comprise a minimum of four additional train paths per hour in each direction, six additional platforms (five new and one bought back into use), 125 per cent improvement on through line platform capacity and 37 per cent improvement in train delay minutes.

Scope of works

- new Thames Valley signalling centre replacing the Reading signal box;
- new platforms and platform extensions;
- new train maintenance facility replacing existing facilities;
- grade separation to allow trains to cross the GWML;
- extensive track layout reconfiguration and resignalling throughout the area; and
- passive provision for a possible future extension of Crossrail and the introduction of Airtrack.

Milestones in the year for ID 13.02

Activity/Output	Date	Date Met/Expected
Key output 0: enabling works complete – Signalling enabling works	December 2010	December 2010
Key output 0: enabling works complete – Install temporary crossover in Goods lines	December 2010	December 2010

Progress in 2010/11

- the RSAR Project team relocated to the Royal Mail building in February 2010;
- a new Driver Training Academy was successfully completed in July 2010;
- all consents except for the Viaduct and East Chord were successfully obtained during 2010 including the Station and Depot;
- signalling enabling works were successfully completed over the Christmas period 2010, facilitating the demolition of Reading Signal Box during early 2011;
- two old sections of Caversham Road Bridge were replaced during the New Year the period to create additional space for new lines; and
- consolidated Stage Gate 4 Review for Single Option Development was completed in January 2011.

The project is also in the process of asking the ORR to consider its proposals to deliver the work one year earlier.

**Programme ID 14.00.
Birmingham New Street.**

Current Project Stage: Implementation

The Gateway project will redevelop station infrastructure at Birmingham New Street to provide greater capacity for passenger handling to the year 2035 and enhanced facilities. The project is jointly funded by Network Rail, Advantage West Midlands, Birmingham City Council (BCC), Centro and the Department for Transport, with BCC as client.

Progress in 2010/11

- unconditional funding secured;
- GRIP 5 design signed off by funding partners;
- works commenced at platform level, in-hinterland and in-deconstruction of Stephenson Tower;
- deconstruction of NCP car park completed;
- property occupation secured in Stephenson Street and Pallasades;
- Station Change concluded; and
- John Lewis secured as new “anchor” store within south side development.

Milestones in the year:

Detailed design from the contractor was submitted late due to poor access for land surveying and additional time to finalise the architectural designs. This led to a delay in commencing enabling works.

This project has a committed delivery milestone of opening the concourse for use by the public by March 2015 and the project is on target to meet that date.

Milestones in the year for ID 14.00

Activity/Output	Date	Date Met
Complete Detailed design	March 2010	April 2010
Transfer land to Network Rail	March 2010	May 2010 ¹

16. Access to the land has been granted by licence but the final transfer is dependent upon the vendor. There are no programme issues as Network Rail has sufficient access to the land required. This project has a committed delivery milestone of opening the concourse for use by the public by March 2015 and the project is on target to meet that date.

England and Wales: Defined Outputs

The Programme is split as seen below:

Programme ID 15.00. Southern Platform Lengthening.

Current Project Stage: Detailed design

The objective of this Government funded and Network Rail delivered enhancement programme is to enable the relevant train operating companies to lengthen services to deliver the HLOS capacity into the following London terminus stations:

- Fenchurch Street, Liverpool Street, Waterloo, London Bridge, Victoria.

The programme involves a total of 290 platform extensions across four routes. In addition there are 37 stations at which will be using either Driver Only Operated (DOO) or Selective Door Opening (SDO).

Selective Door Opening (SDO) is considered where the business case justifies looking for alternatives to a platform extension, for example, at less frequented stations. This is a continuous process and has been done in conjunction with the Department for Transport (DfT) and Train Operators. There is a likelihood that the number of SDO may increase.

The following facilities will be provided on each platform extension: adequate lighting, signage, CCTV and PA coverage and back fences.

Waterloo International Integration. Programme ID 15.01.

Current Project Stage: Single Option Development

The project is part of an overall programme to deliver ten-car operations on both the Windsor and Suburban lines into London Waterloo by the end of CP4. This is supported by lengthening platforms at Waterloo station to facilitate ten-car operations into platforms 1 to 4. Additionally, the option to convert Waterloo International Terminal for domestic services has been included within the project scope.

Progress in 2010/11

- the single option development of Waterloo Southside (extending platform 1 to 4 to ten-car length) has progressed in line with programme; and
- however, during the single option development of Waterloo International Terminal significant technical and property issues were identified which impacted on the deliverability of the option and increased the project costs. This resulted in additional work to develop options to mitigate these risks. In addition, during 2010/11 access to the terminal was restricted due to a number of events taking place at platform level. The terminal is owned and operated by British Railway Board (Residuary). The restriction on access delayed a number of key design surveys. These were concluded in February 2011. These delays have impacted upon the milestones.

Table 6.5: Programme split

Anglia	West Anglia Outer Cambridge Island Platform Tilbury & Ockendon Branch
Kent	Kent Train Lengthening
Sussex	Sussex Route Suburban
Wessex	Wessex ten-car suburban Waterloo to Windsor, Hounslow and Chertsey

Milestones in the year for ID 15.01

Activity/Output	Date	Date Met/Expected
Single Option developed	December 2009	November 2010
GRIP 4 – single option development	June 2010	April 2011
Submit investment authority for GRIP 5-8	June 2010	June 2011
GRIP 5 – Detailed design completed	December 2010	June 2013
GRIP 6 – Construction started (Waterloo International Terminal)	December 2010	July 2012

The project has a delivery milestone of completion in December 2013, however due to the delays in single option development the revised date to complete the project is March 2014.

Twelve-car capability on the Tilbury Loop and Ockendon branch. Programme ID 15.02.

Current project stage: Detailed design

This project has a delivery plan milestone of project implementation by December 2011 and is currently on schedule to meet this commitment.

The project's scope is to deliver the necessary infrastructure to allow operation of 12-car trains on the Tilbury Loop and Ockendon branch. This will require platform extensions at the following stations:

- Pitsea;
- Stanford le Hope;
- East Tilbury;
- Tilbury Town;
- Grays;
- Ockendon;
- Purfleet;
- Rainham; and
- Dagenham Dock

Progress in 2010/11

- detailed design and implementation contract awarded;
- GRIP 5 detailed designs progressed with four of nine station submissions received from contractor as planned;
- contractor site surveys completed; and
- initial site de-vegetation completed.

No milestones were committed to be delivered last year.

This project has a committed delivery milestone of completion by December 2011 and the project is on target to meet that date.

West Anglia Outer 12 Coach Trains. Programme ID 15.03.

Current project stage: Detailed Design

This project has a delivery plan milestone of project implementation by December 2011 and is currently on schedule to meet this commitment.

The project's scope is to deliver the necessary infrastructure to allow operation of 12-car trains on West Anglia "Outer" services (Liverpool Street to Stansted Airport and Cambridge).

This will require platform extensions at the following stations:

- Broxbourne (platforms 2 and 3 only);
- Cheshunt (platforms 1 and 2 only);
- Sawbridgeworth; and
- Stansted Mountfitchet.

The following stations have platforms that are not being extended, but will be made capable of being served by 12-car trains that have selective door operation (SDO) fitted:

- Roydon;
- Harlow Mill;
- Elsenham;
- Newport;
- Great Chesterford; and
- Shelford.

Milestones in the year for ID 15.03		
Activity/Output	Date	Date Met/Expected
Complete single option development and outline design for each location (all other locations)	June 2010	June 2010
Complete single option development and outline design for each location (Cambridge)	June 2010	November 2010
Tender for detailed design and implementation phase (Broxbourne)	September 2010	July 2010
Tender for detailed design and implementation phase (Cambridge)	December 2010	May 2010
Tender for detailed design and implementation phase (all other locations)	December 2010	July 2010

Progress in 2010/11

- outline design signed for all stations;
- Network Change established;
- Station Change established; and
- detailed design and delivery contractor appointed.

All three tendering milestones were delivered early due to reaching agreement to undertake advanced tender exercises for the works whilst the outline design was concluding. The single option development for Cambridge was delayed whilst negotiations with the local authority concerning listed building consent were progressed.

This project has a committed delivery milestone of completion by December 2011 and the project is on target to meet that date.

**10-car South West Suburban Railway.
Programme ID 15.04.**

Programme ID 15.04 includes the following schemes:

Main Suburban Waterloo to Shepperton

Current Project Stage: Single Option Development

Highlights of this programme are:

- extension of 85 platforms across 42 locations; and
- alteration of some railway infrastructure to facilitate ten-car train operation.

This project has a committed delivery milestone of completion by December 2013 and the project is on target to meet that date.

Progress in 2010/11

- single option development authority was obtained in May 2010, following which a design consultant was appointed and single option development commenced;
- GRIP 4 stage gate review was held during February 2011; and
- GRIP 5-8 investment authority was granted in April 2011.

This project has committed delivery milestones of completion of various dates up to December 2013 and the project is on target to meet those dates.

*Waterloo to Windsor and Eton Riverside
(via Richmond) Train Lengthening
(including Putney)*

Current Project Stage: Detailed Design

Highlights of this programme are:

- 44 platforms being extended across 16 stations; and
- alteration of railway infrastructure to facilitate the platform extensions such as crossing movement at Barnes, and significant track and signalling alterations at Twickenham.

Progress in 2010/11

- single option development has been completed and detailed design has commenced; and
- Putney option selection and single option development had been completed.

Milestones in the year for ID 15.04

Activity/Output	Date	Date	Met/Expected
Completion of single option development stage for Windsor, Whitton, Ashford, Vauxhall (platforms 1, 2, 3 & 4)	September 2010	September 2010	September 2010
Waterloo to Windsor and Eton riverside (via Richmond) – GRIP 4 completion (Putney)	February 2011	January 2011	January 2011
Waterloo to Windsor and Eton riverside (via Richmond) – GRIP 6 commences. Start on site (all except Putney)	March 2011	March 2011	March 2011
Hounslow Loop – GRIP 4 stage gate review complete. Detailed design option confirmed	March 2011	February 2011	February 2011
Staines to Weybridge Route – GRIP 4 stage gate review complete. Detailed design option confirmed	September 2011	February 2011	February 2011
Raynes Park to Dorking – GRIP 4 stage gate review complete. Detailed design option confirmed	September 2011	February 2011	February 2011

Hounslow Loop and Staines to Weybridge Route Train Lengthening

Current Project Stage: Single Option Development

Highlights of this programme are:

- 19 platforms being extended across ten stations; and
- alteration of railway infrastructure to facilitate the platform extensions such as crossing removal at Hounslow.

Progress in 2010/11

- single option development has been successfully completed.

Milestones in the year:

Completion of GRIP 4 for Staines to Weybridge was originally scheduled for March 2010. The project development was on hold for eight months due to the Windsor route development being delayed and taking priority for completion due to earlier completion milestone. It was changed to December 2010 in the September 2010 Delivery Plan, then September 2011 in the December 2010 Delivery Plan. We met this milestone in February 2011 as some assumed difficulties in the development did not materialise.

Completion of GRIP 4 for Raynes Park to Dorking was originally scheduled for March 2011. It was changed to September 2011 in the last update of the CP4 Delivery Plan. We met this milestone in February 2011, as some assumed difficulties in the development did not materialise.

Completion of GRIP 4 for Hounslow loop was originally scheduled for September 2010. The project development was on hold for eight months due to the Windsor route development being delayed and taking priority for completion due to earlier completion milestone. It was changed to March 2011 in the December 2010 Delivery Plan. We met this milestone as shown above in February 2011.

This project has committed delivery milestones of completion by various dates up to December 2013 and the project is generally on target to meet those dates. Agreement of Network and Station Change has been a challenge, and Putney platform 1 has been added into the scope, which has delayed completion of Putney to May 2012.

Clapham Junction Station Capacity and Platform Lengthening. Programme ID 15.05.

Current Project Stage: Single Option Development

This project provides the capability for ten-car trains to call at platforms 14 and 15 at Clapham Junction.

Ten-car capability is also required at platform 9 but it has been confirmed that this can be achieved without physical works.

Progress in 2010/11

Option Selection has been completed. Single option development has started and is scheduled for completion in July 2011.

No milestones were committed to be delivered last year.

This project has a committed delivery milestone of completion by December 2013 and the project is on target to meet that date.

Sussex route suburban area 10-car/12-car operations to Victoria and London Bridge. Programme ID 15.06.

Current Project Stage: Various

The project delivers platform extensions at 28 stations along five operational routes within the Sussex suburban area. The routes are:

- London Bridge/East Croydon to Victoria via Streatham Hill (ten-car capability);
- Victoria to Sutton/Epsom Downs via Norbury (ten-car capability);

Milestones in the year for ID 15.06

Activity/Output	Date	Date Met / expected
East Grinstead Route – GRIP Complete 4 stage gate review	June 2010	June 2010
Sydenham Route – Complete GRIP 4	September 2010	June 2010

- Victoria to Horsham/Epsom via Hackbridge (ten-car capability);
- Victoria/London Bridge to East Grinstead via Clapham Jn fast lines and Sydenham fast lines respectively (12-car capability); and
- London Bridge to East Croydon/West Croydon via Sydenham slow lines (ten-car capability).

There are a number of complex sites within this programme of work which involve significant track and signalling work to accommodate the platform extension works.

Progress in 2010/11

- single option development for stations along the Streatham Hill, Norbury and Hackbridge routes is continuing and is coming towards conclusion. GRIP 4 stage gate review was carried out at the end of February 2011.
- East Grinstead station platform lengthening is in GRIP stage 5 and due to start construction in June 2011.
- handover of the three stations along the East Grinstead to Victoria/London Bridge route (Oxted, Upper Warlingham and Sanderstead) to Southern Railway in January 2011 following completion.
- single option development has been completed for the London Bridge to East Croydon/West Croydon via Sydenham slow lines and the Victoria/London Bridge to East Grinstead via Clapham Jn fast lines and Sydenham fast lines respectively. Authority to proceed through to completion was sought in July 2010.

Milestones in the year:

The completion date for GRIP 5 and the commencement date for GRIP 6 for the East Grinstead route was removed in line with the new milestone format at the last update of the CP4 Delivery Plan. Originally East Grinstead was packaged with the trial sites (Oxted, Upper Warlingham and Sanderstead) and upon reviewing the Train Lengthening programme it was decided to separate the trial sites from the

work at East Grinstead for greater clarity. Therefore it is now scheduled for delivery of the Trial sites at Sanderstead, Upper Warlingham and Oxted by September 2011 and East Grinstead Station by December 2011.

This project has committed delivery milestones for completion by various dates up to December 2013. The project is on target to meet that date.

Kent Train Lengthening. Programme ID 15.07 to 15.13.

Current Project Stage: Detailed Design and Construction (Gravesend in Single Option Development)

This project provides the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver the HLOS metrics. These works include platform extensions, signal moves (at stations) and modification to the existing train despatch systems to enable 12-car operations.

There are 54 stations included in the scope of the Kent Train Lengthening project. Of these stations 26 only require modification to the train despatch systems to allow for 12-car operations. Of the remainder, there are:

- 15 stations which require a platform extension of between 10 – 40 metres, which includes six stations with signal moves;
- nine stations with extensions of less than ten metres, which includes two stations with signal moves;
- three stations where signal moves are required to release the use of platforms which sit beyond the existing platform starter signal; and
- one station (Gravesend) which requires major re-signalling and building of a new platform to create additional functionality provide greater capacity.

Milestones in the year for ID 15.07		
Activity/Output	Date	Date Met/Expected
Commence detailed design, GRIP 5 (West of Dartford)	June 2010	July 2010
Award construction contract	September 2011	January 2011
Commence detailed design, GRIP 5 (East of Dartford)	June 2011	July 2010

This project has a committed delivery milestone of completion by May 2012 for all stations West of Dartford (including Dartford). Those stations east of Dartford, namely Stone Crossing, Greenhithe, Swanscombe, Northfleet and Gravesend are committed for delivery by May 2014. Out of these five, Gravesend construction works will commence in 2013 but the rest will be completed with the remainder of the Kent Delivery programme (by May 2012) to achieve contracting efficiency.

Progress in 2010/11

- authority has been gained for detailed design and implementation for stations in scope (except Gravesend);
- contractors have been appointed and detailed design and construction are underway; and
- completion of GRIP 4 for stations east of Dartford was originally scheduled for December 2010. This was changed to December 2011 at the last update of the CP4 Delivery Plan. We are on track to meet that revised milestone with all stations except Gravesend having already completed GRIP 4 and Gravesend station well into GRIP 4.

Milestones in the year:

Two of the above milestones were scheduled to be met in the 2011/12 financial year yet were achieved early. This is largely due to the contracting strategy which meant that all Kent stations requiring physical works, except Gravesend, have been packaged together and a single detailed design and construction contract was awarded for those works in January 2011.

This project has a committed delivery milestone of completion by October 2012 for the majority of the sites and May 2014 for the Dartford to Rochester route and the project is on target to meet those dates.

Programme ID 16.00. Power Supply Upgrade.

Routes 1, 2 and 3 power supply enhancements: Programme IDs 16.01, 16.03 & 16.04.

Current project stage: GRIP 5 for Sussex – East Grinstead Branch; GRIP 4 for the rest of Wessex and Sussex scope; GRIP3 for Kent scope

Completion will enable longer trains and different rolling stock to operate on the national rail network in Wessex, Sussex and Kent drawing increased quantities of traction power from the direct current third rail system.

The programme relates to train lengthening proposals agreed with Department for Transport for the period to end of CP4 (to end March 2014).

Progress in 2010/11

Purchase of equipment required to enhance the existing traction power system.

Milestones in the year for ID 16.01 (Kent)		
Activity/Output	Baseline Date	Date Met / Expected
Completion of GRIP 3 (infrastructure)	April 2011	March 2011

Milestones in the year for ID 16.03 (Sussex)		
Activity/Output	Baseline Date	Date Met / Expected
East Grinstead Branch		
GRIP 3 stage gate review completed	May 2011	September 2010
GRIP 4 stage gate review completed	March 2011	December 2010
Other Routes		
Completion of GRIP 3	April 2011	December 2010

Milestones in the year for ID 16.04 (Wessex)			
Activity/Output	Other Routes	Baseline Date	Date Met / Expected
Completion of GRIP 3		April 2011	December 2010

Completion of scope review and traction power modelling for East Grinstead branch enhancements which are required for the December 2011 timetable change when 12-car trains will operate on this branch in the morning and evening peak. The East Grinstead branch installation contract has been tendered with the contract awarded in March 2011.

The project has completed the scope review in Wessex, Sussex and Kent and completed GRIP 3 Single Option Selection for Wessex and other routes in Sussex. GRIP 4 Single Option Development commenced in parallel with validation modelling and train and infrastructure load monitoring.

In Kent we have completed GRIP 3 for infrastructure works. During the year the milestone changed from June 2010 to April 2011 due to uncertainty around the expected rolling stock. This rolling stock becomes available when the new rolling stock for the Thameslink routes is delivered and used on routes in Kent. In 2010/11 the proposal to order additional trains was part of HM Treasury's Comprehensive Spending Review. The requirement was confirmed in November 2010, which has enabled the project to conclude GRIP 3 in March 2011. This GRIP 3 assumes Class 465 trains are lengthened to 12 carriages where all carriages use their maximum traction capability. The infrastructure required is comparable to the high current railway provision for the Eurostar on other routes in Kent.

Completion of the GRIP 3 milestone for East Grinstead and all scope in Sussex was originally scheduled for June 2010. In the September 2010 Delivery Plan update the GRIP 3 date was changed to May 2011 due to the ongoing project scope review. The East Grinstead scope was re-confirmed in July 2010, allowing GRIP 3 for this element to be delivered in September 2010.

In the December 2010 Delivery Plan update the milestones for the East Grinstead branch were separated from the other Sussex route scope which is required for the December 2013 timetable changes. At this time the completion date for GRIP 3 for other routes was defined as April 2011, with the GRIP 4 completion date for East Grinstead scope defined as March 2011. Following acceleration and prioritisation of this scope GRIP 3 of other routes was delivered in December 2010 and GRIP 4 of the East Grinstead scope was also delivered in December 2010.

Completion of GRIP 3 milestone was originally scheduled for September 2010. In the September 2010 Delivery Plan update the date was changed to April 2011 due to the scope review delaying completion of GRIP 3. However, following a review of resource deployment, GRIP 3 was delivered early in December 2010.

Progress to final delivery

The enhancements in Sussex and Wessex are being accelerated for delivery by the expected timetable change and train lengthening dates of December 2011, 2012 and 2013. The delivery requirements for Kent are subject to discussion with the Department of Transport and the Office of Rail Regulation with a GRIP 3 for Rolling Stock Options proposed in 2011/12.

Route 1 New Cross enhancement to power supply. Programme ID 16.02.

Current project stage: Option Selection

This project supports an increase in capacity of the network through an increase in power availability allowing the HLOS capacity metric to be achieved in South London, North Kent and Surrey.

The project is to modify and extend National Grid's 275kV substation at New Cross, to provide a replacement to the existing 66kV railway power supply feed which will be decommissioned and life extension of some existing equipment.

Progress in 2010/11

- National Grid has confirmed the delivery of the 275/33kV super grid transformers to be July 2013 and November 2013. This gives a good amount of float to this element of the project with readiness of the new supplies programmed for August 2014;
- investigations during the year to share a cable tunnel with EDF Energy which is to follow a similar route to one required by Network Rail was unsuccessful. This would have eliminated the concerns raised over the constructability of the project; and
- as a result of the above, the design has been deemed necessary for further studies to be undertaken to establish an achievable method for executing the project as there are concerns as to how achievable it is going to be to lay the required cables from New Cross Grid to the proposed Network Rail electrical intake point.

This project has a committed delivery milestone of completion by December 2016 and the project is on target to meet that date.

Programme IDs 16.05, 16.06 & 16.07 : Routes 5, 6 and 7 Power Supply enhancements.

This project will deliver enhancements to existing traction power supply infrastructure required to facilitate the operational plan assumed with train operators to deliver the agreed CP4 capacity metrics.

Current project stage: Detailed Design

This project has a delivery plan milestone of project implementation by December 2011 and is currently on schedule to meet this date.

Route 5 – West Anglia main line	
Location	Scope
Northumberland Park	Increase FSC to 18.5 MVA
Rye House	Increase FSC to 16.5 MVA
Ugley	Increase FSC to 6 MVA
Milton	Increase FSC to 12.5 MVA

Route 6 – Thameside	
Location	Scope
West Ham	Increase FSC to 14 MVA
Southend Central	Increase FSC to 14 MVA

Route 7 – GE main line	
Location	Scope
Hill House	Neutral section and associated 25kv cabling and substation replacement.
Hythe	Neutral section and associated additional substation extension. New 25kV supply circuit from UKPN. Increase FSC to 13 MVA
Rayleigh	Upgrade existing 25kV supply circuit from UKPN.
Springfield	Increase FSC to 18 MVA
Stowmarket	Increase FSC to 10 MVA

FSC = Firm Supply Capacity

Milestones for ID 16.05		
Activity/Output	Date	Date Met / Expected
Completion of modelling	March 2010	June 2010
Complete programme specification	March 2010	June 2010
Complete outline design – GRIP 4 designs suitable for tendering detailed design and implementation stage	September 2010	July 2010
GRIP 6 commences	September 2010	August 2010

Milestones for ID 16.06		
Activity/Output	Date	Date Met / Expected
Completion of modelling	March 2010	June 2010
Complete programme specification	March 2010	June 2010
GRIP 4 stage gate review complete	September 2010	September 2010

Milestones for ID 16.07		
Activity/Output	Date	Date Met / Expected
Completion of modelling	March 2010	June 2010
Complete programme specification	March 2010	June 2010
GRIP 3 stage gate review complete	September 2010	September 2010
Complete outline design	December 2010	November 2010
GRIP 4 stage gate review complete	October 2010	December 2010

In summary the capacity metrics for CP4 require additional and lengthened rolling stock on each of the routes, as well as the introduction of new Class 379 rolling stock on Route 5.

Progress in 2010/11

- design studies complete and orders placed with Distribution Network Operator for Firm Supply Capacity (FSC) upgrades at several locations, a new supply circuit at Hythe and an upgraded supply circuit at Rayleigh;
- outline design completed for on-network scope; and
- tender process has been completed for on-network scope. Detail design due to commence March 2011.

The Milestones in the year for ID 16.07 were revised in the quarterly Delivery Plan updates which accounts for the revised order of completing Outline Design and GRIP 4 stage gate review.

These projects have committed delivery milestones (assets ready for use) of December 2011 and the projects are on target to meet those dates.

Programme ID 16.08 DC Regeneration.

Current project stage: GRIP 3

This project is to enable rolling stock to operate with regenerative braking on all DC routes in Wessex, Sussex and Kent.

The scope of works encompasses the testing of DC systems, and rolling stock, and the modification of contact breakers, transformer settings and other equipment to allow regenerative braking.

No further work is required to achieve this in Kent and Sussex.

In Wessex where power is supplied to London Underground Limited (LUL) rolling stock, segregation of Waterloo and City Line power supplies may be required to allow older LUL stock to continue to operate reliably. Segregation is not proposed for the District Line, it is not viable as older stock will be removed in 2013.

The scheme is also developing options to raise the inner area DC nominal voltage from 660V to 750V (so that voltage across the whole DC network is at 750V). This is **not required** to enable regenerative braking but has other benefits including reduced energy losses.

Implementation authority is expected to be sought in autumn 2011.

Progress in 2010/11

- testing of rolling stock types has been completed;
- transformer tap changing strategy (from 660V to 750V) complete; and
- segregation options clarified.

The milestones “*Agree technical and commercial arrangements with LUL and South West Trains – September 2010*” has been withdrawn as it was no longer relevant or required.

The project is on target to achieve the committed delivery milestone of completion by March 2014.

Programme ID 17.00. Southern Capacity.

Gatwick Airport remodelling and passenger capacity scheme. Programme ID 17.01.

Current Project Stage: Single Option Development

The project will deliver improved performance, reduced journey times and removal of the existing capacity constraint at Gatwick caused by the express services crossing over four running lines every 15 minutes. Passenger congestion will be reduced and accessibility improved. The signalling interlocking will be renewed as part of this project.

These outputs will be achieved through the construction of a seventh platform, with associated track and signalling, to accommodate the move of the airport services from the slow line platforms. Enhancements will be made to the passenger facilities on platforms 5 / 6 to improve passenger circulation and access to and from the station concourse. Full accessibility will be provided onto the new platform via a new walkway linked into the existing concourse.

Milestones for ID 17.01

Activity/Output	Date	Date Met/Expected
Funding identified and scope agreed	March 2010	October 2010 (funding)
Funding identified and scope agreed	March 2010	June 2010 (Scope)

Progress in 2010/11

This project was placed on the “projects outwith change control” list due to the funding uncertainties from third parties. The funding was then agreed in October 2010 and became a live project. The single option for the track layout, signalling and concourse works has been assessed against the available budget and stakeholder aspirations. Concourse improvements have been developed in coordination with the structural changes required to deliver the pedestrian bridge link to the new platform 7 as well as improved vertical circulation from the concourse to the proposed Gatwick Express platforms 5 and 6.

Milestones in the year:

These were revised in the December 2010 Delivery Plan with the milestones for “Complete GRIP 4 stage gate review” being moved to a future year and “Design and build commencement (GRIP 5-8)” being removed due to the new milestone formatting.

This project is on course to meeting its committed delivery milestone of completion by January 2014.

East Croydon Passenger Capacity Scheme. Programme ID 17.02.

Current project stage: Outline Design Development

The station capacity improvement project delivers a mid-platform dispersal bridge that redirects passengers requiring the town centre and office district away from the existing congested concourse and associated access ramps by providing a second entrance to the west of the station. The bridge will also provide level access between platforms via lifts. The project also looks to remodel the existing station concourse to improve pedestrian flows into the town centre.

Progress in 2010/11

- the outline bridge design has been completed;
- Network Rail has agreed the third party funding of the scheme with London Borough of Croydon;
- planning permission has been achieved for the bridge;

- Network Rail has the agreement and support from the train operators for the bridge scheme;
- property agreements have been set in place to allow the bridge to be built;
- discussions are progressing to create an eastern pedestrian link into the Railway bridge once the Developer to the East obtains their planning permission; and
- an amended concourse design has been agreed in principle with the train operators.

The September 2010 milestones slipped due to additional work required to agree final project scope and to value manage the scheme. However, we are now back on programme and planning approvals were completed four months ahead of schedule.

This project has a committed delivery milestone of completion by December 2013 and the project is on target to meet that date.

Seven Sisters Improved Access. Programme ID 17.03.

Current project stage: Output Definition

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

Further development work will give more detailed scope and level of works required. It is anticipated that the scope of work will include widening staircases, extending canopies and providing additional seating, lighting and CIS equipment.

The project will build upon the development work undertaken by the NSIP programme.

Progress in 2010/11

No milestones were committed to be delivered last year.

This project has a committed delivery milestone of completion by March 2014 and the project is on target to meet that date.

Milestones for ID 17.02		
Activity/Output	Date	Date Met/Expected
GRIP 4 stage gate review complete	September 2010	December 2010
Commence planning approvals	September 2010	November 2010
Complete planning approvals	June 2011	February 2011

**Programme ID 18.00.
East Coast Main Line Improvements.**

Capacity Relief to the ECML (GN/GE Joint Line). Programme ID 18.01.

Current Project Stage: Option Selection

The project will generate additional passenger train paths on the East Coast Mainline (ECML) between Peterborough and Doncaster through the provision of W9 and W10 gauge cleared paths on the GNGE Joint Line (Peterborough to Doncaster via Spalding and Lincoln), and the upgrade of structures and track to accommodate the predicted increase in annual gross tonnage. Additional infrastructure upgrades will be introduced to provide an alternate route for freight that compares favourably with day time ECML journey timings. Improved access to the south end of GN/GE is required to allow rail traffic to / from East Anglia to cross the East Coast Main Line without conflict. Level crossings will be upgraded as required driven by increased traffic and line speeds.

The project will allow an increase in Long Distance High Speed (LDHS) and freight services as part of a programme of ECML schemes as identified in the ECML Route Utilisation Strategy to support the increased passenger kilometre HLOS metric for route 8 for longer distance journeys to and from London.

Progress in 2010/11 (Access to south end of GN/GE)

- GRIP 3 underway;
- options further refined June 2010;
- consultation undertaken with local authority, presentation made to Council Members September 2010;
- extensive consultation undertaken with operators and strategic freight group relating to timescale for implementation;
- most likely option appears to be grade separated, with only one flat crossing option to be explored; and

- the Delivery Plan recognises that a grade separated option is unlikely to be deliverable in CP4, and the schedules associated with such options confirm that these options could not be delivered in CP4.

Progress in 2010/11 (Route)

- GRIP 3 underway;
- methodology for delivery confirmed;
- single option selection underway;
- scope further clarified;
- further accelerated track enhancements physically completed;
- consultation with stakeholders progressed;
- importance of journey time ahead of linespeed recognised;
- delivery plan content proposed to be modified through 'change control';
- detailed surveys completed;
- detailed structural assessments underway;
- track renewal scope confirmed and understood;
- detailed signalling scope in development;
- exposure to project risk reduced; and
- AFC reduced from £362 million to £241 million.

The delivery plan was updated to change the GRIP3 milestone from Q2 of 2010 to November 2011 to correctly reflecting the quantum of work associated with meeting a journey time objective.

Bridge strengthening and track renewals work remains on schedule for completion in December 2013.

Level crossing works (and signalling) remain on schedule for completion in March 2014.

The most likely southerly access solution appears to be a grade separated junction, with delivery beyond the CP4 timescale. This is an accepted outcome in the delivery plan.

Peterborough Station Area Capacity Enhancements. Programme ID 18.02.

Current Project Stage: Single Option Development

The scheme will generate additional passenger train paths on the East Coast Mainline (ECML) at Peterborough by segregating East Anglian traffic from the East Coast Main Line through the development of a new island platform (6 and 7) to the west of the station. East Anglian freight traffic will be accommodated by means of a 775m goods loop to the west of the station area. Standage for 775m freight trains accessing / egressing the Spital Ladder from / to East Anglia will be possible via platform 5.

Extensions to the existing platforms 2 and 3 will be provided to accommodate 12-car Thameslink trains. Extensions to the existing platforms 4 and 5 will be provided to accommodate Intercity Express Programme trains. Both station bridges will be extended (funding issues being resolved) to the new island platform, with step free access being incorporated into the main footbridge to all platforms on behalf of the Access for All programme.

The rear face of the existing platform 3 is to be built out to the Up Fast to accommodate southbound Long Distance High Speed (LDHS) services (funded from NRDF).

The scheme will allow an increase in Long Distance High Speed and freight services as part of a programme of ECML schemes as identified

in the ECML Route Utilisation Strategy to support the increased passenger kilometre HLOS metric for route 8 for longer distance journeys to/from London.

Progress in 2010/11

- option selection complete November 2010;
- extensive consultation undertaken with local authority, train and freight operating companies;
- 775m freight standage provided for all routes to and from East Anglia (in response to industry comments);
- single option selected for step free access (Access for All);
- continuing to liaise with Thameslink and Intercity Express Programmes;
- all performance modelling complete with outputs confirmed;
- continuing to liaise closely with Werrington Junction and GNGE Joint Line Upgrade teams; and
- possession strategy consultation ongoing prior to submission of possession applications.

The above performance and output modelling activities comprise an integral element of the GRIP 3 stage gate review. To achieve GRIP 3, the process involves validation of the performance modelling, hence the perceived delay in the completion of the milestone.

This project has a committed delivery milestone of completion by June 2014 and the project is on target to meet that date.

Milestones for ID 18.02		
Activity/Output	Date	Date Met/Expected
Performance benefits modelling	December 2009	November 2010
Confirmation of Benefits	September 2010	November 2010
GRIP 3 Stage Gate review complete	November 2010	November 2010

Alexandra Palace to Finsbury Park Third Up line. Programme ID 18.03

Current Project Stage: Detailed Design

This project provides for an additional third passenger line in the Up direction (towards London) from Alexandra Palace (leading off from the Up Hertford line to the north of Alexandra Place station) through to the top of Holloway Bank. It also includes associated platform faces at Alexandra Palace and Finsbury Park stations, to allow the trains to serve these locations. This allows some Gordon Hill/Hertford to Moorgate inner suburban services Moorgate to operate independently from Alexandra Palace of outer suburban and Long Distance High Speed (LDHS) services.

The project will allow an increase in LDHS and freight services as part of a programme of East Coast Mainline (ECML) schemes as identified in the ECML Route Utilisation Strategy to support the increased passenger kilometre HLOS metric for route 8 for longer distance journeys to/from London.

Progress in 2010/11

- GRIP 4 single option development completed and approval-in-principle designs produced;
- invitations to tender for GRIP 5-8 were issued in December 2010 in line with the project programme;
- GRIP 5-8 authority was secured in February 2011;
- possession requirements have been defined in conjunction with the NDS planning team and included in the Rules of the Route for the 2012 timetable year;
- value management and value engineering exercises were carried out to reduce unnecessary complexity and costs;

- Network Change was established in March 2011;
- consultation has been continued with First Capital Connect in relation to Station Change which was issued in February 2011 and is expected to be finalised in April 2011; and
- work has been carried out on behalf of the Thameslink Programme to develop a single option for 12-car extensions to platforms 3 and 5 at Finsbury Park. The project has also coordinated with the Thameslink depot connection team to ensure compatibility of design.

This project has a committed delivery milestone of completion by June 2014 and the project is on target to meet that date.

Finsbury Park – Alexandra Palace Third Down Line improvements. Programme ID 18.04.

Current Project Stage: Detailed Design

This project supports the improved use of the Down Slow two line between Finsbury Park and Alexandra Palace thereby allowing some Moorgate to Gordon Hill/Hertford inner suburban services to operate independently of other inner and outer suburban and Long distance high Speed (LDHS) services south of Alexandra Palace through improving linespeeds on the Down Slow two line.

The project will allow an increase in LDHS and freight services as part of a programme of East Coast Mainline (ECML) projects as identified in the ECML Route Utilisation Strategy to support the increased passenger kilometre HLOS metric for route 8 for longer distance journeys to/from London.

Milestones for ID 18.03

Activity/Output	Date	Date Met/Expected
Network Change – Regulatory approval	March 2011	March 2011
Station Change – Regulatory approval	March 2011	April 2011
Authority to progress GRIP 5-8	March 2011	February 2011
GRIP 4 stage gate review complete	March 2011	February 2011

Milestones for ID 18.04

Activity/Output	Date	Date Met/Expected
Network Change – Regulatory approval	March 2011	March 2011
Station Change – Regulatory approval	March 2011	March 2011
Authority to progress GRIP 5-8	March 2011	February 2011
GRIP 4 stage gate review complete	March 2011	February 2011

Progress in 2010/11

- GRIP 4 single option development completed and approval in principle designs produced;
- invitations to tender for GRIP 5-8 were issued in December 2010 in line with the project programme;
- GRIP 5-8 authority was secured in February 2011;
- possession requirements have been defined in conjunction with the NDS planning team and included in the Rules of the Route for the 2012 timetable year;
- value management and value engineering exercises were carried out to reduce unnecessary complexity and costs;
- Network Change was established in March 2011; and
- consultation has been continued with First Capital Connect in relation to Station Change which was issued in February 2011 and is expected to be finalised in April 2011.

This project has a committed delivery milestone of completion by June 2014 and the project is on target to meet that date.

East Coast Mainline (ECML) Level Crossings. Programme ID 18.05**Current Project Stage: GRIP 4**

The project supports the increase in passenger and freight services on the East Coast Main Line between King's Cross and Northallerton and between Newark Northgate and Lincoln, by eliminating or reducing the safety risks associated with level crossings. Once relevant crossings are risk scored, proposed options are to be developed for each crossing to enable understanding of costs, planning issues, timescales, business case and risks. Delivery will be subject to confirmation of the preferred option in each case and obtaining any necessary external consents.

Progress in 2010/11

- authority gained for GRIP stages 4-8;
- tender strategy approved and tender issued for GRIP stages 4-8;
- work has continued to gain local authority and planning consent where required, including local consultation;
- the March 2011 milestone for completion of GRIP 4 has been amended to September 2012 to align with the consents timescales (planning permission and level crossing orders); and
- the scheme is on target to meet delivery plan completion milestones.

No milestones were committed to be delivered last year. This includes the GRIP 4 stage gate review which was the subject of change control in order to bring consistency to milestone reporting. The project is on target to complete this milestone by the current committed date.

This project has a committed delivery milestone of completion by March 2014 and the project is on target to meet that date.

Hitchin Grade Separation.
Programme ID 18.06

Current Project Stage: Detailed Design

This project will eliminate conflicting movements at Hitchin on the East Coast Main Line (ECML), where the branch line to Cambridge divides from the main line. The conflicts are between trains towards London from the Peterborough direction and trains from London which leave the main line towards Cambridge. This removes a major constraint in developing timetables, thereby allowing an increase in Long Distance High Speed (LDHS) and freight services as part of the overall programme of schemes on the ECML as well as reducing junction layout risk. This scheme also provides for greater flexibility during maintenance, engineering and operational perturbation.

The project consists of a flyover to the north of Hitchin Cambridge Junction from the Down Slow to the Down Cambridge line and a 70mph Down Fast to Down Slow crossover immediately north of Hitchin Cambridge Junction. The line speed from Down Fast to Down Slow crossover was originally 75mph. The change from 75mph to 70mph has been passed and agreed via change control with the client.

Progress in 2010/11

- public inquiry held and completed in May 2010;
- inspector's report issued to Secretary of State;
- Secretary of State approved the Transport and Works Act Order in March 2011;
- contract to complete Outline Design awarded and completed including Approval in Principle;
- Network Change issued to relevant operators. No objections to scope received although discussions on-going re compensation claims/possession proposals with FCC;

- Down Fast to Down Slow crossover installed as part of planned track renewals;
- signalling interlocking capacity work completed as part of planned renewals;
- authority for TWA related activities secured to maintain programme post TWA approval; and
- design and build tender issued and tenders returned.

Milestones in the year:

The change to the standard milestone format led to three milestones being withdrawn during the year. Network Change approval was originally due in September 2010 but issues needed to be resolved through the Form A design process before it was issued, with the intention of de-risking the likelihood of objections being received through addressing train operator concerns in advance. Network Change has been accepted by all operators with exception of FCC who has lodged a precautionary objection based on journey time disbenefit and compensation for access. Work is on-going with the CRE team to address their issues with Network Change estimated to be established by end of June 2011. The completion of outline design was due in December 2010 and was delivered in January 2011 due to a number of issues relating to the viaduct design and signalling design that needed to be resolved with HQ and Territory Engineering Teams. The TWA Order was approved in March 2011 following updated information being provided to Secretary of State regarding planning conditions.

This project has a committed delivery milestone of completion by June 2014 and is on target to meet that date.

Milestones for ID 18.06

Activity/Output	Date	Date Met/Expected
GRIP 4 stage gate review complete	January 2011	January 2011

**York Holgate Junction Fourth Line.
Programme ID 18.07.**

Current Project Stage: GRIP 5 detail design

The project will provide an additional connection into platform 11 and platform 10 via a crossover from the new line, along with operational improvements on platforms 9 and 10.

The project will eliminate conflicting moves from the Leeds line passenger services that are operating to the North East and Scotland and all other passenger services. This reduces a major constraint in developing timetables on the East Coast Main Line (ECML) thereby allowing an increase in Long Distance High Speed (LDHS) and freight services as part of a programme of ECML schemes as identified in the ECML Route Utilisation Strategy to support the increased passenger kilometre HLOS metric for route 8 (ECML) for longer distance journeys to/from London.

Progress in 2010/11

- GRIP 4 Stage gate review completed;
- GRIP 5-8 authority authorised by Network Rail investment panel (ERIP);
- competitive tendering of the design & build awarded to Colas;
- completion of Form B designs; and
- consultation with City of York council and Ward officers with regard to construction programme, access strategy and any possible disruption to local resident's businesses.

Milestones in the year:

This project has a committed delivery milestone of completion by September 2012 and the project is on target to meet that date, with a planned commissioning October 2011 and realisation of infrastructure benefits in the December 2011 timetable change.

Milestones for ID 18.07		
Activity/Output	Date	Date Met/Expected
GRIP 4 stage gate review complete	September 2010	May 2010

North Doncaster Chord (Shaftholme Junction remodelling). Programme ID 18.08.

Current Project Stage: Single Option Detail design (GRIP 5)

The project will allow 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 them via the new chord on a more direct route, thereby creating capacity on this constrained two track section of the ECML, while at the same time reducing mileage and journey times for the majority of the re-routed freight trains.

Progress in 2010/11

- further value management and value engineering exercises carried out;
- completion of Outline design at a Form A level (GRIP 4) for the new chord;
- internal authority gained to move the project into GRIP 5-8;
- inception meeting held with Infrastructure Planning Committee (IPC);
- in accordance with IPC guidance our Statement of Community Consultation both Public & technical has been completed;
- Network Change has been established;
- agreement with Doncaster Metropolitan Borough Council to close Joan Croft level crossing on the ECML and replace with a road bridge;
- environmental impact assessment has been completed;
- invitation to tender for GRIP 5-8 (with GRIP 6-8 subject to Development Consent Order award); and
- Dynamis performance modelling was completed confirming the chord alignment & gradients met the Outputs with reference to engine types and trailing loads.

This project has a committed delivery milestone of completion by June 2014 the project is on target to meet that date. This is subject to ground conditions being consistent with investigation to date and the delivery of the DCO in line with the Planning Act (2008) regulations.

First Capital Connect Train Lengthening. Programme ID 18.10.

Current Project Stage: Implementation (Royston Down) and Detailed Design (Letchworth)

The project provides infrastructure enhancement to support the delivery of London HLOS capacity metrics in CP4. The specific requirements are for platform extensions for operation of longer vehicle trains and future Thameslink trains at Letchworth Up and Down platforms and Royston Down platform. This includes, where necessary, the provision of additional Driver Only Operated train dispatch equipment on these platforms, and possible relocation of existing equipment.

Progress in 2010/11

- investment authority gained for GRIP 4-8 for Royston and Letchworth;
- Royston Down platform extension was completed in time to meet FCC's December 2010 timetable change and delivered under budget; and
- GRIP 4 has been completed for Letchworth and tenders issued for GRIP stages 5-8. Letchworth is programmed to be delivered by October 2011.

Milestones in the year:

This project has a committed delivery milestone of completion by June 2012 and the project is on target to meet that date.

Milestones for ID 18.08		
Activity/Output	Date	Date Met/Expected
Commence IPC order preparation for the submission of a as Development Consent Order (DCO) which has replaced the TWA process	June 2009	June 2009
Interim GRIP 4 stage gate review completed	December 2010	December 2010

Milestones for ID 18.10		
Activity/Output	Date	Date Met/Expected
GRIP 4 stage gate review complete	January 2011	December 2010

**Programme ID 19.00.
ECML OLE.**

**East Coast Main Line Overhead Line
Electrification Performance Improvements.**

**Current Project Stage: GRIP Stage 6
Construction, Test & Commission**

Scope of works

This project is split into the following distinct elements:

- defect survey – full survey of approximately 1900 wire runs of the ECML to record all defects, all outstanding campaign changes and any existing non-conformances;
- campaign changes – the implementation of 11 campaign changes. This is the removal of components or designs with known reliability problems with a modern fit-for-purpose equivalent;
- defect removal – in line with the campaign change delivery, all defects identified as a risk to performance will be removed with highest priorities being delivered first. A separate work stream will be used for tunnels where a non-intrusive survey is not practicable; and
- neutral sections – the upgrade of 78 neutral sections to a more reliable type.

Following completion of the survey, the project identified defect removal/campaign changes to 1252 wire runs on the ECML from London King's Cross to Marshall Meadows incorporating the Hertford, Cambridge and Doncaster to Leeds branch lines.

Progress in 2010/11

- defect removal and campaign changes in tunnels have been completed;
- 361 wire runs of defect removal and campaign changes have been undertaken;
- installation of 34 neutral sections; and
- the anticipated final cost has reduced to £33.2m because of an efficient project delivery strategy, reduced contractor costs and the de-scoping of the vegetation works.

Milestones in the year:

Change Control to amend the milestones was approved by ORR in November 2010 and the table below has been updated to reflect the changes.

The original project timescales were delayed for the following reasons:

- assessing potential synergies and efficiencies with other projects; and
- access restrictions not previously anticipated.

The defect removal and campaign changes (tunnels) activity was completed although the milestone was met late due to the availability of suitable access.

The project is on course to achieve the final delivery dates on the remaining activities.

Milestones in the year for ID 19.00

Activity/Output	Date	Date Met/Expected
Defect removal and campaign changes (tunnels)	June 2010	September 2010

**Programme ID 20.00.
St Pancras – Sheffield linespeed
improvements.**

Current Project Stage: GRIP Stage 3 – Option Selection

This project will improve the capability of the infrastructure to enable a minimum eight minute improvement in journey times between London and Sheffield for Class 222 operated services calling at Leicester, Derby and Chesterfield.

Progress in 2010/11

- identification of a single option and validation that it generates the opportunity for the required journey time benefits;
- detailed topographical and asset surveys undertaken in order to confirm viability of single option; and
- high-level track designs and surveys for the 17 work packages that comprise the single option are being developed to build confidence in anticipated final cost and reduce implementation risks.

Milestones in the year:

The milestone relating to the Commencement of the Level Crossing Closure Programme was the subject of Change Control in order to bring consistency to milestone reporting across projects. The level crossing closure programme has commenced in accordance with the project programme and is expected to be completed by December 2013. We are on target to meet this date.

**Programme ID 21.00.
Nottingham Resignalling.**

Current Project Stage: GRIP Stage 4 – Single option development

The project will enhance capacity through remodelling, re-signalling and re-design of platform layout at the west end of Nottingham. This will enhance the layout leading to improved services operating through Nottingham and improved performance. The project also migrates the control of the area into the East Midlands Control Centre in Derby.

Progress in 2010/11

- GRIP Stage 4 Single Option Development substantially complete;
- Network Change Notice for all works is in process of being consulted externally; and
- advanced civils and track works have commenced in preparation for GRIP 5-8 Authority in April 2011.

Milestones in the year:

No milestones were committed to be delivered last year. This includes the GRIP 4 completion and commencement of GRIP 5 milestones, which were the subject of Change Control in order to bring consistency to milestone reporting. The project is on target to complete both of these milestones ahead of the current committed dates.

The project is set to complete on January 2014 and we are on target to meet that date.

Milestones in the year for ID 20.00		
Activity/Output	Date	Date Met/Expected
Commence additional GRIP 3 works	May 2010	May 2010

**Programme ID 22.00.
Midlands Improvement Programme.**

Bromsgrove Electrification. Programme ID 22.01.

Current Project Stage: Option Selection

Network Rail has a CP4 output commitment to enable the extension of services on the Birmingham Cross City South in CP4. Currently London Midland operates six trains an hour to Longbridge with two trains an hour running on further to Redditch (Class 323 rolling stock). The output is that all services would be extended from Longbridge so that three trains an hour operate to Bromsgrove (and three trains an hour to Redditch under Programme ID 22.02).

The scope of the project includes:

- extension of four and a quarter miles of electrification from Barnt Green to Bromsgrove;
- immunisation of the existing signalling equipment between Barnt Green and Bromsgrove which will result in complete signalling renewal and control transfer;
- permanent way and signalling enhancements at the relocated Bromsgrove station to facilitate the turning back of trains; and
- five over-bridges between Barnt Green and Bromsgrove which have been identified for either bridge reconstruction or track lowering are to be examined due to potential insufficient clearance for electrification.

This project has a dependency on a third party funded project to enhance the functionality of the station at Bromsgrove, funding for which is currently under review.

Progress in 2010/11

A stand still letter was issued which puts the project on hold status, as noted in the ORR quarterly report Q1 of year two (April to July 2010). Bromsgrove Electrification is subject to third party funding being fully agreed for a new station at Bromsgrove. Relocating the existing station to a new station site is a pre-requisite for the outputs from Bromsgrove Electrification to be delivered. Network Rail is currently working with Centro to determine revised dates for the station relocation which is now to be funded and delivered by Centro.

Milestones in the year:

This project has a committed delivery milestone of completion by December 2013 but, because of the dependency on the functionality of the station, that date is likely to slip into CP5 and will need change control in due course.

Redditch Branch Enhancement. Programme ID 22.02.

Current Project Stage: Option Selection

This project enables the extension of services on the Birmingham Cross City South to Redditch. Currently London Midland operates six trains an hour to Longbridge with two trains an hour running on further to Redditch. The output is that all services would be extended from Longbridge such that three trains an hour operate to Redditch (and three trains an hour to Bromsgrove under Programme ID 22.01).

The scope of the project is to deliver a passing loop centered on Alvechurch station involving an additional platform face, 3000m of track, OLE and signalling alterations. In addition, the second platform at Alvechurch will require access such as a footbridge to be provided to cross the railway. Proposals include the removal of the footpath level crossing at Alvechurch to improve line speed and safety.

Milestones in the year for ID 22.01

Activity/Output	Date	Date Met/Expected
Station re-location GRIP 4 final option	June 2010	August 2011
Start development of single option	September 2010	TBC

Milestones in the year for ID 22.02

Activity/Output	Date	Date Met/Expected
GRIP 3 stage gate review complete	November 2010	April 2011

Progress in 2010/11

- in early 2010/11, the initial timetabling and Railsys modelling was completed identifying potential infrastructure options for double tracking between Alvechurch and Redditch which could deliver the required outputs of three trains an hour to Redditch. During the remainder of 2010, the option selection process was undertaken on these including engineering surveys, preliminary designs and, using the design data now available, re-validation of the options against the timetable and performance requirements;
- option selection was achieved through dialogue and discussion with London Midland as the loop solution requires a small timetable adjustment so that trains would cross closer to Alvechurch rather than Redditch. This preferred option, with a double track section through Alvechurch station, provides a solution that is the most affordable, while maintaining performance and achieving the required outputs; and
- an appraisal of legal powers under existing statutes showed that works could not be constructed under permitted development, as had been assumed in the timescales originally proposed for the project. A consents strategy seeking a Development Consent Order (DCO) from the Infrastructure Planning Commission is now being progressed.

Milestones in the year:

Early in GRIP 3, the initial development work on the timetable and performance took longer than planned but this analysis was essential in determining a set of options for surveys and preliminary designs needed for the option selection process. With the subsequent identification of a preferred option at Alvechurch further development is required to agree a preferred layout of the station. These two factors have lengthened the duration of GRIP 3 and caused a delay to the stage gate review, the start of development of the single option and detailed design milestones.

This project has a committed delivery milestone of completion by December 2012 and this date is

unlikely to be achieved due to the planning requirement timescales required to obtain a Development Consent Order before the works can commence. The project is reviewing the planning, design and construction timescales to minimise slippages and keep the commissioning date within CP4 and to provide the basis of a change control on the milestones.

Line Speed Improvements Wrexham to Marylebone. Programme ID 22.03.

Current Project Stage: Implementation

This output is to be delivered by Chiltern Railways as an integral part of the Evergreen 3 project, which includes linespeed improvements, infrastructure enhancements and fleet upgrade to deliver a 100-minute fastest journey time between London (Marylebone) and Birmingham (Moor Street). A contribution is to be made to the Evergreen project in respect of line speed improvements at Aynho Junction which will deliver one minute towards the journey time reductions.

Progress in 2010/11

- Form "A" and Form "B" designs signed off; and
- construction started on site

The Evergreen project was the subject of an Independent Review by ORR between October and December 2010 which concluded that the original target date for completion of the whole project in May 2011 was probably not achievable.

Following this, a further review by Network Rail and Chiltern Railways has concluded that the current programme for completion of the project in May 2011 is unrealistic, and that changes are required to the project management structure. Further details are awaited, but a date for the project being commissioned in December 2011 has been agreed.

Milestones in the year for ID 22.03

Activity/Output	Date	Date Met/Expected
GRIP 5 complete	July 2010	July 2010
Start of Construction	December 2010	February 2011

Route 16 – South Ruislip Loop (formerly Gerrards Cross bay platform) ID 22.04.

Current Project Stage: Implementation

The project scope has been amended via change control and now comprises track and signalling alterations at South Ruislip in connection with capacity and speed improvements in the Northolt Junction area, rather than construction of a new bay platform at Gerrards Cross. This latter work no longer forms part of the scope of the Evergreen 3 project.

This output is to be delivered by Chiltern Railways as an integral part of the Evergreen 3 project, to which a contribution is to be made by Network Rail.

Progress in 2010/11

- Form “A” and Form “B” designs signed off; and
- construction started on site.

The Evergreen project was the subject of an Independent Review by ORR between October and December 2010 which concluded that the original target date for completion of the whole project in May 2011 was probably not achievable.

Following this, a further review by Network Rail and Chiltern Railways has concluded that the current programme for completion of the project in May 2011 is unrealistic, and that changes are required to the project management structure. A date for the project being commissioned in December 2011 has been agreed.

Route 17 – Train Lengthening ID 22.05.

Current Project Stage: Tranche 1 – Detailed Design and Construction, Tranche 2 Single Option Development

The project supports the industry capacity metric from the HLOS for West Midlands Route 17 and requirements for train operating companies’ operational plans. This is to be achieved by

extending station platforms to facilitate longer trains and using the option of selective door opening where necessary.

Progress in 2010/11

- the project has undertaken surveys, ground investigations and preliminary project design specifications at all sites and progressed into the detailed design phase for tranche 1 sites and option selection for tranche 2 sites;
- the project has met the committed milestone to start GRIP 5 on tranche 1 sites (Whitlocks End, Widney Manor, Yardley Wood & Wythall) in September 2010. For these sites a design and implementation contract was awarded in January 2011 Advance site clearance works started in March 2011;
- the project has met the committed milestone to start GRIP 4 on tranche 2 sites in September 2010. An Option Development contract was awarded for Spring Road, Cradley Heath, Langley Green, Kidderminster, Droitwich Spa, Hampton in Arden and Small Heath in January 2011. For Rugeley Trent Valley and Hednesford GRIP 3 works are being completed and for Lye a GRIP 4 option development tender is being progressed for contract award; and
- the project continues to have on-going liaison with London Midland. Site visits have been held with London Midland to assess buildability and value management to achieve efficiencies on stopping tolerances and signal sighting within Standards.

Milestones in the year:

The milestones for these projects were expanded during the year. Initially there were single milestones for the projects but these were split as the projects became better defined. The GRIP 5 milestones were removed during the year to fit with the new milestone format.

This project has a committed delivery milestone of completion by December 2013 and the project is on target to meet that date.

Milestones in the year for ID 22.04		
Activity/Output	Date	Date Met/Expected
GRIP 5 complete	July 2010	July 2010
Start of Construction	September 2010	September 2010

Milestones in the year for ID 22.05		
Activity/Output	Date	Date Met / Expected
Start GRIP 4 Tranche 2	September 2010	September 2010

**East Midlands train lengthening.
Programme ID 22.06.**

Current Project Stage: Project 1 is at GRIP Stage 6 – Construction. Project 2 is Detailed design. Project 3 is at GRIP Stage 8

The project provides infrastructure to support the delivery of Midlands HLOS capacity metrics in CP4. This will allow the increases in capacity in Table 6.6.

This is to be achieved through three separate projects:

- Loughborough. This element requires platform lengthening to accommodate 10x23m (class 222) at Loughborough station (platforms 1 & 2). The current platforms can only accommodate 4 Car class 222s so the new platform lengths will be more than double of the existing lengths (235m);
- Stansted Airport. This element requires platform lengthening to accommodate 4x23m (class 170) vehicle trains at Stansted Airport station (97m). This scheme is being developed and delivered by Network Development London and South-East as part of other works at the station; and
- Class 170 Selective Door Opening (SDO). This element is a funding contribution to Cross Country Trains for the fitment of SDO to the Turbostar (Class 170/1) fleet to enable 4x23m (Class 170) trains to call at all stations on the Birmingham to Stansted route. This includes infrequent calls at Whittlesea and Manea.

Progress in 2010/11

Loughborough:

- Form A for the Platforms, including M&E (mechanical and electrical), gauging for track alignment, signal location and physical signal works – was completed and signed off;
- Form A – signalling design, where wires and cabling are to be located was completed ;
- Station Change was agreed;
- Stage Gate 4 review completed;
- Network Change agreed;
- listed building consent granted; and
- Jan 2011 to May 2011 installing new signals, cabling and location cases. All new signalling brought into use together in final weekend possession late April 11.

Stansted Airport:

- the works to extend Stansted platform 2 are planned in possessions booked for November 2011.

Class 170 SDO:

- the programme for the fitment of SDO completed in February 2011.

Milestones in the year

The milestones for these projects were expanded during the year. Initially there were single milestones for the three projects but these were split as the projects became better defined.

Table 6.6: Increases in capacity

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

Milestones in the year for ID 22.06

Activity/Output	Date	Date Met/Expected
Loughborough platform extension – GRIP 4 stage gate review complete. Detailed design option confirmed	December 2010	December 2010
Stansted Airport – GRIP 4 stage gate review complete. Detailed design option confirmed	January 2011	February 2011
Class 170 SDO – GRIP 4 stage gate review complete. Detailed design option confirmed	September 2010	August 2010
Class 170 SDO – GRIP 6 commences. Start on site	November 2010	December 2010
Class 170 SDO – GRIP 6 completion – Project operational	December 2010	February 2011

The Stansted Airport stage gate review milestone slipped to February 2011 because of delays in approving the outline designs. The Class 170 SDO programme suffered as the bad weather during December had an impact on the fitment programme. It was completed in February 2011.

The Loughborough element has a delivery milestone of March 2012 and the project is on target to meet that date. The Stansted Airport element has a delivery milestone of November 2011 and the project is on target to meet that date.

Programme ID 23.00. Northern Urban Centres (a) Yorkshire.

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

Capacity improvements (Leeds area). Programme ID 23.01.

Programme ID 23.01 includes the following projects:

Capacity improvements (Leeds area)

Current project stage: Output Definition, Pre-Feasibility, Option Selection

The project is to provide additional platform capacity at Leeds station. The original project was to provide an additional bay platform opposite platform 1 capable of taking at least 6 x 23m vehicle trains, and additional platform capacity on the south side of the station, focusing on lengthening platform 17 or an additional platform 18.

During the early development work an additional option was introduced, which was to create a through platform from two bay platforms 13 and 14. This is the option which is now going to be taken through pre-feasibility and option selection. Other capacity improvement schemes within the Leeds area are turnback facilities at Micklefield and Horsforth.

Significant interfaces

- there are potential interfaces with platform extensions on the West Yorkshire sections of the routes; and
- the scheme could interface with the Micklefield Turnback (East Leeds Parkway).

Progress in 2010/11

- regular communication has continued to take place between Northern Rail, the Network Rail client and the project team as Northern Rail's Operational Plan has evolved in order to make sure that the infrastructure interventions under development meet those requirements;
- timetable modelling work has been undertaken to confirm that the additional services which Northern Rail is planning to operate on the Skipton, Ilkley and Horsforth services can be accommodated within the existing infrastructure of Leeds station;
- Grip 4 was completed for Horsforth turnback and Grip 5-8 has now begun; and
- Grip 3 was completed for Micklefield turnback; this scheme has now being placed on hold.

The platform lengthening outline design slipped due to a lack of certainty of the Northern Rail operational plan.

The Horsforth turnback GRIP 4 delivery date has slipped due to the renewal element of the scheme, as well as the identification for two additional level crossing closures which were included in the Grip 4 scope.

The stabling scheme has been on hold for a year awaiting the finalising of the contract for Northern Rail's Operational Plan.

Milestones in the year for ID 23.01		
Activity/Output	Date	Date Met/Expected
Platform lengthening GRIP 4 – complete outline design	September 2010	October 2011
Horsforth turnback and additional signals GRIP 4 – complete outline design	September 2010	December 2010
Stabling GRIP 4 – complete outline design	December 2010	TBA
Stabling GRIP 4 – complete consents	March 2011	TBA

West and South Yorkshire Platform Lengthening, including South Yorkshire Train Lengthening. Programme ID 23.02.

Current Project Stage: Outline Design

This project concerns the provision of longer platforms at stations in West and South Yorkshire to meet the requirements of Northern Rail's CP4 Operational Plan and to meet HLOS passenger growth metrics.

The original project scope was to provide 143 metre platforms at stations on the routes from Leeds to Skipton and Ilkley to facilitate the operation of six-car trains of 23 metre vehicles, and to facilitate the operation of trains of varying lengths and formations on other routes in accordance with the Operational Plan. The scope has evolved as Northern Rail's Operational Plan has undergone further development; this has included the removal of the requirement to accommodate six-car trains on the Ilkley and Skipton routes as this no longer forms part of the Northern Rail Operational Plan.

Following the completion of option selection development for a total of 38 stations on routes in West and South Yorkshire, platform lengthening has been taken forward to subsequent development stages for stations where the requirement has been contractualised between Northern Rail and DfT.

Progress in 2010/11

- discussions have continued to take place on a regular basis with Network Planning and Northern Rail to refine the project scope in light of the evolving nature of Northern Rail's Operational Plan;
- following the contractualisation of the initial stages of Northern Rail's Operational Plan, authority has been obtained to progress platform extensions at three stations through to completion;
- following a competitive tendering exercise, a contractor has been engaged to deliver platform extensions at Cottingley and Mossley stations; and

- platform extensions at Deighton will be delivered by Network Rail's Buildings and Civils team in conjunction with the planned redecking of the timber trestle platforms at this location.

The Delivery Plan dates will not be amended until Northern Rail's Operational Plan has been agreed with the DfT, as this is the driver for the scheme. Northern Rail's expectation is that this will take place in the first half of 2011.

West Yorkshire Stabling (Northern Urban Centres)

Current Project Stage: Option Selection

Our obligation is to provide the necessary infrastructure to facilitate the operational plan agreed with train operators to deliver HLOS capacity metrics.

The scope of work necessary to meet the obligation for stabling was additional stabling and servicing in the Huddersfield and Skipton areas to accommodate up to 34 and 16 (additional) vehicles per night respectively for Northern Rail as part of the DfT Rolling Stock Strategy. These numbers have now reduced, but no final figures have been confirmed. Hillhouse stabling has now been placed on hold due to the dramatic reduction in the number for diesel motor unit expected.

Additional stabling facilities were considered at Harrogate, Huddersfield and Skipton to accommodate additional vehicles every night for Northern Rail as part of the DfT Rolling Stock Strategy. Only Skipton will be progressed at present.

The project has suffered delays as DfT has not finalised its Operational Plan for Northern Rail. The delivery plan milestones will now not be achieved.

Milestones in the year for ID 23.02

Activity/Output	Date	Date Met/Expected
Outline design completion	September 2010	October 2011

Milestones in the year for ID 23.02 – West Yorkshire Stabling (Northern Urban Centres)

Activity/Output	Date	Date Met/Expected
Outline design completion	December 2010	TBA
Complete consents	March 2011	TBA

Progress in 2010/11

- the scheme has been on hold throughout 2010/11; and
- regular communication is taking place between Northern Rail, the Network Rail Client and the project team to make sure that the infrastructure interventions meet the requirements of the rolling stock.

As detailed above, these milestones were not achieved.

**Programme ID 24.00.
Northern Urban Centres (b)
Manchester.**

**Route 20 – Platform Lengthening.
Programme ID 24.01.**

Current Project Stage: Option Selection

The project is to provide the infrastructure to allow for operating longer trains on the lines of route, in accordance with the Northern Rail Operational Plan. The project is to deliver suitable platform lengthening and/or alternative solutions that may be more appropriate. The viability of options for platform lengthening will be considered, balancing the anticipated cost against the alternative options of local methods of working.

The primary outcome is to provide functionality to allow passengers to board and alight and for the train formation to stop at each platform on the corridors where lengthened trains are proposed.

Progress in 2010/11

- output definition, pre-feasibility, option selection re-authority was secured in April 2010;
- surveys of the platforms have been completed;
- option selection report has been completed and estimates undertaken; and
- option selection completed in March 2011.

Northern Rail Delivery Plan is not yet finalised with the DfT. This uncertainty has delayed the issue of a remit for GRIP 1-3 by over 14 months.

Delays have been encountered because the surveys undertaken by Network Rail's Maintenance team were hampered by approximately eight weeks because of the severe weather in the winter of 2010.

**Route 20 – Stabling for Northern.
Programme ID 24.02.**

Current Project Stage: Pre Feasibility

The project is to provide the additional stabling, depot and light maintenance facilities required to accommodate the increased rolling stock planned for roll out to Northern Rail in CP4. Light maintenance would be removed from Newton Heath depot, freeing capacity at Newton Heath for heavy maintenance activities.

Network Rail has purchased Allerton depot. The remit is to survey the existing depot to determine the costs to refurbish or renew the buildings and equipment to provide an operational facility. The incremental scope of work and cost of providing maintenance facilities to undertake train examinations will be identified as part of this study.

Progress in 2010/11

- pre-feasibility client remit for Allerton depot was issued in May 2010;
- authority to undertake pre feasibility was granted in August 2010; and
- surveys of the existing depot facility have been completed.

The Northern Rail Operational Plan has not been finalised with the DfT. The original milestone date of GRIP 3 delivery in December 2010 will be agreed and changed when the operational plan is finalised.

Northern Rail has an aspiration to operate Allerton depot from December 2011.

Milestones in the year for ID 24.01

Activity/Output	Date	Date Met/Expected
GRIP 3 completion	June 2010	March 2011

Milestones in the year for ID 24.02

Activity/Output	Date	Date Met/Expected
GRIP 3 feasibility completion	December 2010	tbc

**Salford Crescent station redevelopment.
Programme ID 24.03.**

**Current Project Stage: Single Option
Development**

This project is to redevelop Salford Crescent station in order to support the operation of six-car units, improve passenger circulation and comply with DDA arrangements. It may be required to undertake minor remodelling of the track layout in order to support the operation of six-car units.

The project will also review the potential for an additional platform at the station in order to relieve overcrowding.

The primary objectives are to:

- accommodate future projected growth of passenger numbers by lengthening and/or widening station platforms;
- investigate whether an additional platform is feasible which could also relieve overcrowding at the station;
- remodel the station to improve passenger circulation space on the platforms, possibly by de-cluttering station buildings and furniture; and

- improve access arrangements in and around the station along with improving interchange facilities.

Progress in 2010/11

- option selection complete in December 2010;
- single option development authority was secured in March 2011;
- the option selection study confirmed that a third platform is not required to relieve overcrowding; and
- the option selected is to improve crowding and circulation on the island platform by removing the existing ticket office, waiting room buildings and stepped ramp to provide more available space. A new ticket office with waiting facility and access via a new footbridge, steps and a lift are to be provided. The platform is to be extended at each end to accommodate six-car trains.

Milestones in the year:

This project has a committed delivery milestone of completion by October 2014 and the project is on target to complete GRIP 6 in February 2014.

Milestones in the year for ID 24.03

Activity/Output	Date	Date Met / Expected
GRIP 3 stage gate review complete	December 2010	December 2010

**Programme ID 24.04.
Route 20 Capacity Enhancements.**

**Current project stage: Stalybridge
– detailed design Hadfield – on hold.**

This scheme combines track and signalling renewals with the installation of an additional bay platform turnback at Stalybridge station. It includes some remodelling and line speed increases through the station. A new control system is to be provided for Stalybridge, Ashburys and Guide Bridge which will be located at Manchester South Signalling Control Centre.

The scheme will provide increased flexibility for network operation and train movements. The proposed additional bay platform adjoining the Ashton branch will result in increased capacity for Manchester Victoria services in support of the DfT HLOS and will remove conflict from Stalybridge Junction, enhancing performance of the Stalybridge – Manchester Piccadilly services. There will also be a new platform face for through trains.

**Progress in 2010/11 (Stalybridge
Intervention):**

- outline design has been completed and approved;
- single option development stage gate review was completed in May 2010;
- authority for detailed design, construction, handback and close out was secured in August 2010;
- the detailed design and build contract tenders have been returned and are under review; and
- Network Change has been consulted and returned comments are being addressed.

Milestones in the year:

The Hadfield line interventions are on hold pending Northern Rail Operational Plan.

The project intervention at Stalybridge has a committed delivery milestone of June 2013 and the project is on target to meet that date. The interventions at Hadfield will be re-evaluated, once the Northern Rail Operational Plan is contractualised and the client's uncertainty is resolved.

Milestones in the year for ID 24.04		
Activity/Output	Date	Date Met/Expected
Stalybridge GRIP 4 Completion	September 2010	May 2010
Output definition Hadfield intervention	March 2010	on hold
Hadfield intervention completion GRIP 2	December 2010	on hold

**Programme ID 25.00.
Northern Urban Centres (c) Liverpool
– Manchester Journey Time
Improvements.**

**Manchester to Leeds Journey Time
Improvements.**

**Current Project Stage: Liverpool to
Manchester – Outline design: Manchester to
Leeds – Pre-feasibility**

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

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

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

Passive provision will be made for W9 and W10 gauging.

The primary output is a contribution to the route 10 and route 20 HLOS passenger kilometre metrics by stimulating further passenger demand through improving journey times between Leeds and Manchester via Diggle, and Manchester and Liverpool via Chat Moss.

Reductions in journey times between these cities are a move towards the Government's target journey time of 30 minutes between Liverpool

Lime Street and Manchester via Chat Moss and 43 minutes between Manchester and Leeds. It is recognised that achieving improved journey times will require both the defined infrastructure interventions, combined with an industry agreed timetabling intervention.

The line speed improvements will manifest as revised sectional running times over the section between Liverpool Lime Street and Leeds. The scope of infrastructure and timetabling works required to achieve these time savings is currently been assessed.

Specific infrastructure interventions being examined for the Liverpool to Manchester route via Chat Moss are Edge Hill to Astley Increased Permissible Speed (DSE) from 75mph to 90mph and Astley to Patricroft Increased Permissible Speed (DSE) 40/60mph to 75mph.

The Manchester to Leeds route will examine capacity type schemes, with the aim of reducing journey times.

Significant interfaces

There are interfaces with stakeholders including DfT, TOCs, FOCs, Merseytravel, GMPTE and West Yorkshire PTE. There are interdependencies with other projects including the seven day railway renewals and resignalling schemes.

Progress in 2010/11

Option selection was completed during 2010/11 and whilst it has been possible to identify line speed improvements between Liverpool and Manchester it has not been possible between Manchester and Leeds, as it has already been subject to modernisation and line speed improvement. Therefore the scheme has been split into two, with Liverpool to Manchester progressing into outline design and Manchester to Leeds being taken forward as a journey time improvement scheme.

Liverpool to Manchester JTI		
Activity/Output	Date	Date Met/Expected
GRIP 3 Completion	June 2010	September 2010
GRIP 4 Commences	September 2010	November 2011

Manchester to Leeds		
Activity/Output	Date	Date Met/Expected
GRIP 3 Completion	June 2010	December 2011
GRIP 4/5 Commences	September 2010	February 2012

Milestones in the year:

The milestone for the GRIP 3 completion was not met as further work on the business case was required to achieve a more integrated single option solution.

The project has a committed delivery milestone of completion by March 2014 and the project is on target to meet that date. The Manchester to Leeds project has slipped as a result of redefining the scope of the project. It is expected to be change controlled once GRIP 2 is completed.

***Programme ID 26.00.
Western improvements programme.***

***Barry – Cardiff Queen Street corridor.
Programme ID 26.01.***

Current Project Stage: Single Option Development

This scheme aims to deliver an increase in network capacity and capability on the lines between Barry through Cardiff Central to Cardiff Queen Street from the current 12 trains per hour (tph) to 16tph. This will be achieved by the following enhancements:

- Cardiff Queen Street platform 1a;
- Cardiff Queen Street Bay platform;
- Cardiff Central platform 8;
- Cardiff East Crossover platform 4 to Up Barry and bi-directional signalling in platforms;
- Cardiff Central Platform 5 Bay re-instatement. (but see point below and progress point 4);
- Station Building improvements at Cardiff Queen St and Cardiff Central south entrance;
- Treforest Curve doubling;
- City Line linespeed enhancement; and
- Cogan Junction enhancement.

Progress in 2010/11

- the scheme has completed single option development including approval of the signalling scheme plan, signal sighting, layout risk assessments, outline designs for track, stations and associated civil engineering works. Computer models for signal sighting have been completed and will be used as the basis of driver and signalling training in due course;

- the overall programme of commissioning work has been developed and consulted with Train Operating Companies and key stakeholders;
- detailed estimates have been developed based on the above outline designs and financial authority is being progressed for the main detailed engineering design and construction;
- the design programme was adjusted in 2010/11 to accommodate revised outline design work (now completed) to incorporate electrification standards into the signalling scope; and
- in order to support the funding of the required new station buildings associated with the additional platforms at Cardiff Central and Queen St., it is proposed that Cardiff Bay Platform 5 enhancement be removed from the scope subject to final agreement with the ORR. This element is not required to support the core output of 16 trains per hour in the Barry to Queen St. corridor and is instead associated with other potential train-service enhancements to Maesteg.

Milestones in the year:

No milestones were committed to be delivered last year.

This project has a committed delivery milestone of completion by December 2016 and the project remains on target to meet that date. The project gained GRIP 5-8 Authority in May 2011.

Cotswold Line Re-doubling.
Programme ID 26.02.

Current Project Stage: Detailed design and Construction

The objective of this project is to increase capacity and improve performance by re-doubling two sections of single line between Charlbury and Ascott-under-Wychwood, and Moreton-in-Marsh and Evesham. The result of the extra 20 miles of track will significantly increase the capacity for both passenger and freight operators, as well as improving the robustness of the timetable, with subsequently less delays due to the currently restricted infrastructure.

In addition to the above infrastructure works, improvements will be delivered by increasing line speeds between Wolvercote Jn and Norton Junction, through removal of several speed restrictions on the approach to the single to the double line junctions and the removal of the token exchanges at Moreton-in-Marsh, Evesham and Norton Junction/Worcester Shrub Hill. The provision of turn-back signals at Charlbury, Moreton-in-Marsh and Evesham will improve the flexibility of the route during periods of maintenance engineering and operations perturbation.

Progress in 2010/11

- contracts were successfully awarded in October 2010 to Amey (Signalling, Stations, Power and Telecoms) and to Amey Colas (Plain line and S&C installation);
- Honeybourne Bridge single deck was removed and replaced with a double track span in October 2010;
- Rail Safety and Standards Board gave approval to reduce the platform lengths at Charlbury and Honeybourne from 222 million to 140 million in November 2010. This was supported by First Great Western;

- the installation of 20 miles of plain line track commenced on 12 December 2010. This work includes the removal of the old track formation and installation of new ballast, sleepers and rails. The project plans to deliver one mile per week of plain line, during midweek nights until May 2011;
- 20 miles of troughing route completed and new cable installed and tested;
- detailed design completed for stations and footbridge in January 2011;
- station construction commenced in February at Charlbury and Ascott-under-Wychwood; and
- trains and possessions all booked for the two blockades in May/June and August 2011.

Milestones in the year:

It is now planned to deliver the scheme in two stages to meet our stakeholders aspirations, these are June 2011 for Charlbury and Ascott-under-Wychwood and August 2011 for Moreton and Evesham. The project is on target to meet those dates.

Westerleigh Jcn – Barnt Green Line Speed Enhancement. Programme ID 26.03.

Current Project Stage: Single Option Development

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

Milestones for ID 26.02

Activity/Output	Date	Date Met/Expected
Main Works: Commencement	June 2010	June 2010

Milestones for ID 26.03

Activity/Output	Date	Date Met/Expected
Option selection completed	March 2010	October 2010
Single option development authority	April 2010	May 2010
GRIP 6 commences	September 2010	September 2010

Significant interfaces

- track renewals programme 2010/11 through to 2012/13;
- Bromsgrove station relocation project;
- Bromsgrove electrification and Redditch branch improvement; and
- Birmingham Gateway project.

Key assumptions

Delivery of this project is dependent on the availability of High Output renewals programme.

Progress in 2010/11

Development of the single option has taken place with a focus on the track enhancement elements of the project. Detailed designs for all track works are well advanced. All surveys of footpath crossings and signalling works have also been completed. Work on producing a detailed estimate of the cost of the project is underway. Possession plans for the 2011 timetable have been finalised with all possessions for work to complete the project by December 2012, requested in line with the Network Code process.

A review of the 110mph speed raising possibilities has concluded that this is too expensive, and outstrips the funding available. However the renewed track will have the necessary componentary installed to allow higher running and 110 mph running will only be possible once a number of level crossings are enhanced, several of which are due for renewal in CP5.

The delay for the option selection and authority was caused by reviews to specific items of scope which took longer to resolve than expected but have resulted in reduced levels of risk and a reduction in the overall project cost.

Milestones in the year:

This project has a committed delivery milestone of completion by December 2012 and the project is on target to meet that date.

***Maidenhead and Twyford (relief lines).
Programme ID 26.04.***

This project was originally required due to the proposed HLOS vehicle procurement for this line of route, and the existing locations above, being capable of handling seven-car trains. The HLOS vehicle procurement is now not going forward, and so the need for this scheme is being reviewed.

***Programme ID 27.00.
North London Line capacity
enhancement.*****Current Project Stage: Implementation**

The project supports an increase in both capacity and capability of the network between Willesden High Level and Stratford via Gospel Oak. This is achieved by re-signalling to reduce headways and by a major re-configuration of the lines between Camden Road East Junction and Dalston Kingsland, enabling two of the four lines between Highbury & Islington and Dalston to be dedicated to East London Line services. Platforms have been lengthened to accommodate longer trains (from three to four-cars).

Train performance is maintained by the elimination of DC traction (the reconfigured lines are 25kV AC throughout) and removal of junction conflicts at Camden Road East and Dalston Junctions, the latter having been abolished. Improved provision for regulating freight trains has been provided between Camden Road and Highbury & Islington and at Stratford.

Works already completed have enabled the previous North London Line three-car services to be lengthened to four-car. Completion of the works will enable the current service of four trains per hour (six in the peaks) to be increased to six trains per hour (eight in the peaks and throughout the Olympic period). The project remains on target for an increased train service to commence in May 2011.

Milestones for ID 26.04

Activity/Output	Date	Date Met/Expected
Start output definition	June 2009	See above
Decision on project progression	June 2010	See above

Milestones for ID 27.00

Activity/Output	Date	Date Met/Expected
Commissioning complete (GRIP 6)	June 2011	May 2011

Progress in 2010/11

- transfer of rail services from No. 2 lines to the completed No. 1 lines – (end of all lines blockade of North London Line) was achieved ahead of time in June 2010;
- four-car train operation commenced in September 2010;
- the new signalling between Camden Road and Stratford was commissioned in January 2011;
- East London Line services were extended to Highbury & Islington in February 2011; and
- the remaining signalling between Camden Road and Willesden High Level was commissioned in February 2011.

Milestones in the year:

This project has a committed delivery milestone of completion by September 2011 and the project is on target to meet that date.

***Programme ID 28.00.
GSM-R coverage of freight-only lines.***

Current Project Stage: Option Selection

This project supports the provision of GSM-R radio on all freight-only branch lines in Great Britain.

The National Radio Network (NRN) operational license for southern England (i.e. south of the 'Severn / Wash line') expires in 2012. Northern England, Wales and Scotland will lose the NRN license in December 2015.

The 40 freight-only branch lines south of the 'Severn-Wash' line will be installed with GSM-R base station sub-system equipment and brought into operation by December 2012.

As a minimum, the system will provide a level and quality of driver-signaller communication equivalent to the existing NRN service. The current (baseline) scope includes the installation of trackside GSM-R base transceiver equipment together with connections to the Fixed Telecoms Network (FTN). Assumed scope volumes for freight-only branch lines are, for the time being, derived from the same design rules applied elsewhere on the GB railway for the provision of GSM-R. Any viable relaxation of the design rules will be identified on a site-by-site basis during the project development phase and managed as programme efficiency.

Where branch lines are part-privately owned, radio coverage will be provided to minimum operational standards only as far as the NRCI boundary.

Progress in 2010/11

- development remit produced;
- discussions have been held with rail industry partners and telecoms providers to explore the feasibility of alternative delivery options involving third parties; and
- a project manager has been appointed to lead the development and analysis of different delivery solutions.

No milestones were committed to be delivered last year.

This project has a committed completion milestone of July 2013. The project is on target to meet that date.

**Programme ID 100.
Network electrification programme.**

**Great Western Main Line Electrification.
Programme ID 100.01.**

Current Project Stage: Feasibility

The current objective of this programme is to develop to GRIP 3 the extension of AC electrification at 25 kV OLE of the Great Western Main Line (GWML). Development work so far is based on the announcement by DfT on 23 July 2009 indicating government support for electrification from Maidenhead (the furthest extent of the Crossrail project) to Oxford, Newbury, Bristol and Swansea. On 25 November 2010 electrification to Oxford and Newbury was confirmed by the new Government. A further DfT announcement on 1 March 2011 confirmed Government support for further electrification from Didcot to Bristol and Cardiff. This change will be the subject of a proposal to change the Network Rail Delivery Plan. This project is to facilitate the further introduction of electric train service operation on the Great Western Main Line (GWML) between London and Oxford, Newbury, Bristol and Cardiff.

Delivery of electrification of the open routes between major junctions will be achieved by use of the application of modular techniques of construction and the deployment of rapid delivery systems, such as a high output plant system.

The current DfT target is for electrification to be completed for electric train operation to Newbury, Oxford and Bristol by December 2016 and to Cardiff by December 2017. A full programme, including implementation, will be developed and delivered as part of the GRIP 3 outputs, with implementation likely in a number of different phases.

Progress in 2010/11

- pre-feasibility (GRIP 2) has been completed;
- the specification for the high output plant system has been produced; and
- electrification works to be delivered by the Reading Station Area Re-modelling project have been identified.

Milestones in the year:

These were introduced in the June 2010 Delivery Plan. The GRIP 2 report was completed in October 2010 as a result of further optimisation of the estimate to improve the value for money of the project.

There is no committed delivery milestone for this project. Changes to project scope as a result of the DfT announcements on 25 November 2010 and 1 March 2011 will result in a revised plan for GRIP 3 and will impact on the previous GRIP 3 milestone of August 2011.

**North West Electrification.
Programme ID 100.02.**

Current Project Stage: Feasibility

The objective of this programme is to develop to GRIP 3 a programme of infill AC electrification at 25 kV OLE of the following routes in North West England:

- Liverpool to Manchester (Liverpool to Earlestown and Manchester to Newton-le-Willows);
- Huyton to Wigan;
- Preston to Blackpool; and
- Deal Street Junction to Euxton Junction (Manchester to Preston).

This relates to the scope that was announced by DfT on 23 July 2009 and 9 December 2009 as having government support. This project facilitates the introduction of electric train operation on passenger and freight services on the routes shown above.

Milestones for ID 100.01

Activity/Output	Date	Date Met/Expected
Completion of GRIP 2 report	July 2010	October 2010

The current DfT target is for electrification to be completed in 2016. A full programme, including implementation, will be developed and delivered as part of GRIP 3 outputs, with implementation likely in a number of different phases.

Progress in 2010/11

- pre-feasibility (GRIP 2) has been completed for Liverpool – Manchester; and
- completion of feasibility for advanced structure clearance, enabling works between Manchester and Newton-le-Willows.

These were introduced in the June 2010 Delivery Plan. The GRIP 2 report date for other routes was changed from January 2011 to March 2011 in the December Delivery Plan due to the complexity of integration with the Liverpool – Manchester project which was already in GRIP 3.

There is no committed delivery milestone for this project, but we are on schedule to meet the committed GRIP 3 milestone (September 2011).

Milestones in the year:

Milestones for ID 100.02		
<i>Activity/Output</i>	<i>Date</i>	<i>Date Met/Expected</i>
Completion of GRIP 2 report for Liverpool – Manchester	July 2010	July 2010
Completion of GRIP 2 report for other routes	March 2011	May 2011

Scotland

Programme ID 30.00. Tier 3 Project Development Fund.

Current Project Stage: Fund Purpose

The fund is primarily aimed at initial development for future projects that will enhance the network in Scotland and will contribute to the Scottish Government's target of promoting sustainable economic growth. Schemes will be developed to a point where a decision about next steps can be made.

Funding

All project proposals are submitted by Network Rail for approval by Transport Scotland prior to any commitments being made.

There are currently 11 schemes being developed under this fund, two of which are complete and progress is shown below.

Progress in 2010/11

- individual schemes within the Development Fund are progressing well and to the client requirements;
- during 2010 the ORR agreed to progress selected schemes to Single Option Development; and
- there is scope for additional schemes to be ratified during CP4 for development.

Milestones for ID 30.00	
Scheme	Milestone reached 2010/11
Grangemouth east facing freight connection	Pre-feasibility completed, no further work being undertaken
G&SW line speed increases	Pre-feasibility completed, no further work being undertaken
Rail enhancements between Aberdeen and the Central belt	At Output definition
Linespeed increase between Carstairs and Haymarket	At Output definition
Motherwell area stabling and servicing	At Output definition
Motherwell North enhancements	At Output definition
Mossend freight loops	At Output definition
Mossend freight loops	At Output definition
Further electrification of the rail network	Pre-feasibility stage complete
Carstairs Junction remodelling	Pre-feasibility stage underway
Aberdeen North bay platform	Option Selection underway
Rail enhancements between Aberdeen and Inverness	Option Selection underway
Dalmarnock Station redevelopment and enabling works	Single Option development
Rail enhancements on the Highland Main Line	Single Option development

Scotland: Programme funds

Programme ID 31.00.

Scotland Small Projects Fund.

This programme comprises of 21 projects which are at various stages of development from output definition to project close out. All projects are programmed to be completed during CP4.

Progress in 2010/11 of key projects:

Glasgow South Suburban Renewals (GSSR, LLF690)

Current Project Stage: Single Option Selection

Various enhancements in synergy with major signalling renewals, comprising: doubling of existing single lead junction at Busby Junction; signalling capacity enhancement on Glasgow Barrhead & Kilmarnock line; turnback facilities at Whitecraigs station on Neilston line.

Grangemouth Branch improvements

Current Project Stage: Project Close out

New infrastructure to enhance freight capacity on the Grangemouth Branch. Project has been successfully completed.

Laurencekirk Loop:

Current Project Stage: Option selection

This consists of a new freight loop for freight traffic between Aberdeen and Dundee on the Up line.

E & G Main Line Additional Station Shelters

Current Project Stage: Project Close out

Additional passenger facilities at Croy, Falkirk High and Polmont on the Edinburgh to Glasgow Main line, successfully delivered.

Aberdeen Station – New north Bay Platform

Current Project Stage: Option Selection

New Northbound Platform at Aberdeen station to increase capacity on the through lines.

Ladybank to Hilton Junction Line speed Improvements

Current Project Stage: Construction, Testing & Commissioning

Linespeed increase over 13 track miles. Scope consists of minor track renewal, tamping, risk assessment and speed board changes.

Hurlford Line Speed Increase

Current Project Stage: Output Definition

Removal of an existing permanent speed restriction by moving a signal to achieve correct braking distance for the proposed higher linespeed with associated speed board changes.

Larbert Aster Track Circuit Replacement

Current Project Stage: Project Close Out

Provision of an additional signal between Carmuir West and Greenhill Lower to increase capacity. Project has been successfully delivered.

Midcalder S & C Renewal

Current Project Stage: Pre-Feasibility

Redouble junction at Midcalder from current single lead on the Shotts line through alignment with the switch and crossing track renewal scheme.

Dumfries Station Improved Turnback Facility

Current Project Stage: Single option Selection

Provision of a new turnback facility at Dumfries Station.

Stirling North to Dunblane Minor Renewals and Enhancement (previously titled Bridge of Allan)

Current Project Stage: Option Selection

Provision of a new signal section in the down direction between Stirling and Dunblane which will improve headways / capacity on the route.

Barnhill Line Speed Improvement

Current Project Stage: Output Definition

Linespeed improvement between Perth and Barnhill for passenger trains.

Newbridge West Junction Signalling & Crossing Renewal

Current Project Stage: Project Close out

Removal of redundant signals and crossings with a corresponding change in track alignment to permit an increase in linespeed. Successfully completed and linespeed raised.

West Highland Line Radio Electronic Token Block Improvements (RETB)

Current Project Stage: Project Close out

The project incorporates a modification to the way RETB Tokens are issued and returned at Banavie Signalling Centre as part of the ongoing Signalling Renewal of the RETB Interlocking. This is expected to achieve a five minute journey time saving.

*Wick Platform Permissive Working***Current Project Stage: Project Close out**

This project introduced signalling to permit two train working in the platform at Wick Station to reduce the number of shunts required.

*Stirling Middle:***Current Project Stage: Option Selection**

The doubling of Stirling Middle junction increases capacity and provides higher linespeed to/from Alloa for both passenger and freight services.

*Paisley Corridor Improvements Scheme***Current Project Stage: Detailed design**

To provide bi-directional working in the Shields Junction area as part of the larger scheme.

*Edinburgh and Glasgow Permanent Speed Restriction Easements.***Current Project Stage: Detailed Design**

Project to raise the linespeed in the Bishopbriggs area of the Edinburgh to Glasgow main line.

*Ladybank Junction Enhancements***Current Project Stage: Output Definition**

Proposed increase in linespeed for trains between Edinburgh and Perth / Inverness.

*Camelon Line Speed Improvement***Current Project Stage: Output Definition**

Linespeed improvement between Carmuir East Junction and Falkirk Grahamston.

Scotland: specified projects

Programme ID 32.00. Scotland Projects.

Airdrie to Bathgate & Linked Improvements. Project 32.01.

Current Project Stage: Construction, Testing and Commissioning

The project supports the provision of an electrified railway between Airdrie and Bathgate capable of operating a minimum of four passenger trains per hour at a line speed of 80 mph although 90mph should be the target speed where reasonably practical, in each direction using modern electric multiple unit (EMU) rolling stock. The project will:

- re-commission the 15 mile closed railway between Drumgelloch and Bathgate;
- enhance the existing network between Airdrie and Drumgelloch and between Bathgate and Edinburgh with electrified double track throughout; and
- provide:
 - three new stations (Caldercruix / Armadale / Blackridge);
 - two relocated stations (Drumgelloch / Bathgate);
 - three upgraded stations (Airdrie / Livingston North / Uphall); and
 - one new LMD (Light Maintenance Depot).

The project has delivered measurable performance / enhancement improvements with:

- the advance works in double tracking the Bathgate branch and doubling the single lead junction at Newbridge junction;

- the provision of second platforms with Disability Discrimination Act compliance at Airdrie, Livingston North and Uphall stations;
- the provision of a relocated and enhanced station at Bathgate providing 400 new car parking spaces;
- the opening of a new station at Blackridge with 54 car parking spaces; and
- the provision of a new Light Maintenance Depot at Bathgate.

Progress in 2010/11

- Bathgate station and Bathgate LMD were completed and opened to plan on 18 October 2010;
- driver training commenced on 25 October 2010 (one week later than planned), due to a delay in commissioning the overhead line equipment;
- the route opened for public services as planned on 12 December 2010;
- Blackridge station also opened as planned on 12 December 2010;
- completion of the access roads / pavements etc to the intermediate stations at Armadale, Caldercruix, and Drumgelloch were delayed due to the unexpected prolonged severe winter weather, deferring their opening (Caldercruix – 13 February, Armadale – 4 March, and Drumgelloch – 6 March 2011);
- Uphall station car park extension is ongoing, completion delayed until June 2011 due to unforeseen ground contamination; and
- relocated cycle path is circa 80 per cent complete. Surfacing operations have been held up by adverse weather and now due for completion by April 2011 in time for spring / summer use.

Milestones for ID 32.01		
Activity/Output	Date	Date Met/Expected
Commence blockade Drumgelloch to Airdrie	May 2010	May 2010
Commence blockade Airdrie station	July 2010	July 2010
Route available for driver training	October 2010	October 2010
Public opening of new service	December 2010	December 2010

Paisley Corridor Improvements.
Programme ID 32.02.

Current Project Stage: Detailed design and implementation.

This project aims to enhance capacity on the Glasgow Central to Ayrshire and Inverclyde routes. This is being done by means of:

- additional platforms at Glasgow Central;
- three tracking and some four tracking of the Paisley corridor (between Shields Jn and Paisley Gilmour St); and
- extension of the loop at Elderslie.

The project also includes a full signalling renewal of the Paisley Corridor. Signalling control of this area, plus the routes to Ayr, Ardrossan, Largs, Wemyss Bay and Gourock, will be transferred to the West of Scotland Signalling Centre.

Under a number of enabling and advance works packages, the project has already completed the loop extension works at Elderslie, overhead line equipment enabling works on the main Paisley Corridor and provision of an extra bridge deck at Hillington Road, in anticipation of the third line.

Progress in 2010/11

- awarded the design & build contract for non-signalling work on the main Paisley corridor in April 2010, the associated signalling contract having been awarded in March 2010;
- completion of the new platform works at Glasgow Central in May 2010;
- commencement of main construction works in December 2010 with the installation of the new crossover at Brown Street; and
- detailed design works for main corridor infrastructure well advanced.

Milestones in the year:

Commission of the enhanced infrastructure remains on programme for completion in January 2012 with all remaining milestones on the project expected to be met.

Milestones for ID 32.02		
Activity/Output	Date	Date Met/Expected
Award Main Line D&B contract – all other disciplines except for S&T	April 2010	April 2010
Complete Glasgow Central Works	June 2010	May 2010

Milestones for ID 32.03		
Activity/Output	Date	Date Met/Expected
Complete GRIP Stage 4 (Track connection)	April 2010	July 2010
Draft operational interface agreement for the connection	May 2010	May 2010
Final draft of operational interface agreement for the connection agreed and submitted to ORR for approval	September 2010	October 2010

Borders New Railway. Programme ID 32.03.

Current Project Stage: Implementation and asset protection services.

The Borders Railway is a Transport Scotland managed project to build a new rail connection between the existing station at Newcraighall (south of Edinburgh) to Tweedbank in the Scottish Borders. This involves 35 miles of new railway and the construction of seven new stations. Transport Scotland are procuring the project on a Design, Build, Finance and Maintain (DBFM) Strategy and are in the early stages of this process. Transport Scotland is forecasting the completion of the project in March 2014.

Network Rail is building approx 300 metres of new track to facilitate the connection to the national rail network. This has a committed delivery milestone of September 2011. We will also provide asset protection services and develop the appropriate contractual arrangements for the ongoing interface with the DBFM contractor. The exact nature of the interface with the new Borders Railway for signalling and telecoms will not be known until the DBFM contract has been appointed and they develop a design.

Progress in 2010/11

- a contract for the design and build of the track connection was awarded in December 2010. The contractor has mobilised and completion is forecast prior to the September 2011 milestone;
- the final draft of the connection agreement was submitted to the ORR in December 2010. Discussions are continuing between Transport Scotland and the ORR on the requirement for an approval in principle; and
- Network Rail has been requested by Transport Scotland to provide input to their procurement process for the main project on the interface with Network Rail's signalling and telecoms infrastructure.

Milestones in the year:

The GRIP Stage 4 outline design was completed in accordance with the agreed milestone but final approvals were not obtained until July 2010. This will not affect the completion of the track connection works which is now ahead of the milestone schedule.

The discussions on the connection agreement were more onerous than originally anticipated and were a joint milestone with Transport Scotland.

Glasgow to Kilmarnock. Programme ID 32.04.**Current Project Stage: Completed**

Development of a twin tracked section of railway between Lugton and Stewarton capable of supporting the operation of half hourly passenger services between Kilmarnock and Glasgow.

The scope of the project includes approximately 5.5 miles of new track, new switch and crossings, enhanced signalling, new and refurbished station platforms and various structural works including the redecking of two underbridges.

Progress in 2010/11

- the project was completed during 2009/10 with key milestones met during this year;
- at the end of 2009/10, the principal contractor, Jarvis, went into receivership leaving some completion and snagging works outstanding. These works were awarded during the course of 2010/11 to Network Rail's Maintenance function and framework civil engineering contractor for completion; and
- the project team is currently working on preparation of the final account.

Scotland: Other programmes

Programme ID 33.00. Other Transport Scotland Tier 3 schemes.

33.01 Class 380 Introduction – stabling and route infrastructure works.

Current Project Stage: Construction

Ayrshire and Inverclyde Infrastructure Enhancements for Class 380 Train Introduction

Customer: Transport Scotland

Outputs

The purpose of this project is to provide enhanced infrastructure to support the

introduction of the proposed new Class 380 train from September 2010.

The key outputs of this scheme are as follows:

Route infrastructure

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

Stabling and depot works

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

Milestones for ID 33.01		
Activity/Output	Date	Date Met/Expected
New Rolling Stock depot enhancements – Ayr Townhead completion	August 2010	August 2010
New Rolling Stock depot enhancements – Yoker completion	June 2010	November 2010
New Rolling Stock platform extensions completion	October 2010	February 2011
OLE relocation work	March 2011	March 2011
Design of stepping distance alteration works	June 2010	June 2010
Completion of Ayr Townhead depot	August 2010	August 2010
Completion of Yoker depot	August 2010	November 2010
Delivery of lengthened platforms	August 2010	February 2011
Delivery of extended operational platform length	August 2010	August 2010
Delivery of ASDO enabling works	August 2010	August 2010
Completion of OLE relocation works	September 2010	September 2010
Delivery of lengthened platforms	October 2010	October 2010
Delivery of extended operational platform length	October 2010	August 2010
Delivery of ASDO enabling works	October 2010	August 2010
Delivery of Stepping distance alteration works	October 2010	November 2010
Delivery of Stepping distance alteration works	December 2010	February 2011

Progress in 2010/11

- planned project work was completed on time by March 2011 with permanent stepping works at Haymarket and Glasgow Central stations planned for delivery by July 2011 and December 2013 respectively;
- substantial completion of platform extension works was achieved during 2010 and the Ayrshire and Inverclyde platforms were made available to First ScotRail in advance of introduction of the Class 380 train. Signalling works at Ayr and Largs Stations were delayed due to availability of source records and signalling resources. The works at Troon were delayed due to administration of principle contractor. However, this has not impacted on the introduction of the train;
- stepping distance works was largely completed to programme. However, delays were experienced at Carlsdyke, Woodhall and Greenock Central Stations due to adverse weather conditions in late 2010 and early 2011. These works were completed in February 2011. This did not adversely impact on the introduction of the Class 380 train;
- works at Ayr Townhead and Yoker depots were completed during the year. Yoker missed the milestone due to a scope increase from 4 CET points to 8 and also due to water / sewer connections to the Scottish Water network being delayed;
- OLE works at Cook Street near Glasgow Central was completed as planned in September 2010. A minor piece of OLE work (relocation of a booster transformer overlap) was delayed, but will be completed by March 2011. This does not impact current operation of the rolling stock;
- gauge correction works were completed in advance of introduction of the new train and gauge clearance certificates issued for all required routes in advance of train introduction; and
- a delivery plan variation has been proposed for addition of works at Corkerhill Depot to extend the existing headshunt to accommodate longer formations of Class 380 trains.

33.02 Waverley Steps.

Current Project Stage: Construction

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

- three banks of two side by side covered and lit escalators connecting with the existing internal station mezzanine link bridge;
- removal and reconstruction of seven varying flights of stone steps, which will be covered and properly lit;
- a new feature pedestrian entrance to Waverley Station on Princes Street which will be capable of being closed and secured during station closure hours;
- provision of two sixteen person lifts, located within the existing station footprint but adjacent to the Princes Mall Shopping Centre, which will connect with the internal station mezzanine link bridge via a new section of bridge; and
- level access to and from the lifts to Princes Street by means of a pedestrian walkway across the roof of the Princes Mall Shopping Centre. This will provide compliant DDA access from Princes Street to the station platforms.

Progress in 2010/11

- the scheme is subject to an Order under the Transport and Works (Scotland) which was granted in May 2010;
- the milestones for the construction works were agreed with Transport Scotland and a change control to that effect submitted to the ORR in June 2010;
- confirmation of deemed planning consent was received on the 30 July 2011;
- the implementation works was competitively tendered and the contract awarded in December 2010; and
- the Waverley Steps closed to the public and works commenced on site in February 2011.

Milestones for ID 33.02

Activity/Output	Date	Date Met/Expected
Granting of TAWS Order	May 2010	May 2010
Start on Site	February 2011	February 2011

**Edinburgh Gateway (formerly Gogar)
Intermodal Interchange. Programme ID 33.03.**

Current Project Stage: detailed design

This project forms part of the Edinburgh to Glasgow Improvements Programme (EGIP). This project will provide a new railway station on the Edinburgh to Fife line in the Gogar area (Edinburgh Gateway) that will integrate with the new Edinburgh Tram network to provide an onward connection to Edinburgh Airport. This will improve public transport access to the Airport and the surrounding business development area.

Progress in 2010/11

- planning consent granted for the Network Rail managed works;
- GRIP5 design works completed;
- track lowering works at adjacent A8 bridge to provide electrification clearances completed; and
- Scottish Power utility diversion works completed.

Milestones in the year:

Progress with this project has been delayed due to the ongoing Edinburgh Tram contractual dispute between City of Edinburgh Council and the contractor for the works Network Rail cannot complete the scope of works in the current project phase until this has been resolved. Network Rail is therefore proposing to place the project on the "Projects Outwith the Change Control Process" list at the next Delivery Plan update.

The completion date for the project also cannot be confirmed until this dispute is resolved.

**Haymarket North Lines Electrification.
Programme ID 33.04.**

Current Project Stage: Detailed design and implementation

This project forms part of the Edinburgh to Glasgow Improvements Programme (EGIP). It will electrify the northern two tracks (the North Lines) of the Edinburgh to Glasgow (E&G) route between Edinburgh Waverley and Haymarket Central Junction.

Progress in 2010/11

- access plans for the works agreed with affected operators;
- design and Implementation works tender issued; and
- substantial completion of the works.

Milestones in the year:

Works on the implementation of this project have been delayed due to additional works required following the discovery of voids behind the existing tunnel lining. A revised design which takes account of this issue has been successfully implemented. Final commissioning has been deferred until 14 May to allow Edinburgh signalling centre screen changes to be implemented, but this is in time for 22 May subsidiary timetable change, after which date electrified train services are scheduled to run via Haymarket North Lines.

Milestones for ID 33.03		
Activity/Output	Date	Date Met/Expected
Receive planning consent	May 2010	May 2010
Completion of GRIP 5 design work	June 2010	June 2010
Substantial completion of track lowering works	June 2010	June 2010
Completion of utility diversion works	December 2010	TBA

Milestones for ID 33.04		
Activity/Output	Date	Date Met/Expected
Award contract for GRIP 5 to 8	July 2010	July 2010
Approved for construction design documents	September 2010	February 2011
Tunnel lining repairs within Haymarket North Tunnel to provide necessary electrification clearances	December 2010	March 2011
Electrification between Haymarket Central Junction and Haymarket Station (including Platform 0)	December 2010	March 2011
Electrification through Haymarket North Tunnel into Princes Street Gardens	March 2011	May 2011

Milestones for ID 33.05		
<i>Activity/Output</i>	<i>Date</i>	<i>Date Met/Expected</i>
Award tenders for GRIP 4 development works, all work packages	July 2010	July 2010

Milestones for ID 33.06		
<i>Activity/Output</i>	<i>Date</i>	<i>Date Met/Expected</i>
Award tender for route clearance package	March 2010	March 2010
Award tender for electrification, power & distribution and S&T immunisation package	March 2010	March 2010
Approval of Form A's for route clearance works	September 2010	January 2011
Approval of Form EA's for electrification and power & distribution works and bonding designs for S&T immunisation works	October 2010	January 2011
Produce GRIP 4 implementation strategy	December 2010	February 2011
Produce GRIP 4 estimates	December 2010	February 2011
Produce GRIP 4 safety strategy	January 2011	February 2011
Completion of GRIP 4	February 2011	February 2011

***EGIP Infrastructure Projects.
Programme ID 33.05.***

Current Project Stage: Single Option development

These projects form part of the Edinburgh to Glasgow Improvements Programme (EGIP). The Programme vision is to increase service levels via all Edinburgh to Glasgow routes to 13 services per hour with a fastest journey time of around 35 minutes. The 13 works packages described below represent infrastructure enhancements that will contribute to that vision. The output from this phase of the Project will be individual GRIP 4 single option development reports for these projects and a consolidated report that covers all of the projects.

Project specification

The following 13 projects are to be progressed to the end of GRIP 4:

- Glasgow Queen Street High Level Station infrastructure capacity;
- Croy Station turnback;
- Greenhill Upper Junction enhancement;
- Winchburgh Junction enhancement;
- Winchburgh Junction to Dalmeny Junction upgrade;
- Dalmeny Chord;
- Haymarket to Inverkeithing signalling headways;
- Edinburgh Waverley Station infrastructure capacity;
- Stirling area stabling and cleaning facilities;
- North Electric turnback;

- Bellgrove re-modelling;
- Garngad Chord; and
- Rutherglen to Newton capacity enhancement.

Progress in 2010/11

- determination of optimum GRIP4 scope;
- optimised delivery proposals developed to integrate with proposed electrification works; and
- initial identification of anticipated land requirements to inform consultation with affected parties.

Milestones in the year:

The current project phase has a completion date of June 2011 and the project is currently on target to meet that date. This project has an overall completion date of December 2016 and the project is currently on target to meet that date.

***Edinburgh to Glasgow Electrification.
Programme ID 33.06.***

Current Project Stage: Single Option development

This project forms part of the Edinburgh to Glasgow Improvements Programme (EGIP). The objective is to electrify the Edinburgh to Glasgow via Falkirk High route (plus linked diversionary routes) and the routes north from the Carmuir area to Dunblane and Alloa. This will deliver journey time reductions and contribute towards the achievement of the Scottish Government's sustainability targets.

Progress in 2010/11

- single option development consultancy contracts awarded for all works;
- refined implementation strategy produced;
- interfaces and synergies with England and Wales electrification programme have been identified and continue to be optimised; and
- completion of GRIP 4.

Milestones in the year:

Some delays were encountered with this project due to difficulties in obtaining access to third party land and the adverse weather conditions experienced during December. Both of these issues affected the completion of the required site investigation works at a number of locations. Notwithstanding this, the project has met the completion date for this project phase. This project has an overall completion date of December 2016 and the project is currently on target to meet that date.

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