NetworkRail

Network Rail Infrastructure Limited
Annual return 2015

Working for you

Contents

Section 1 – Executive summary

The Annual Return reports on our achievements, developments and challenges during 2014/15. It is the formal means by which we report progress in delivering the outputs established by the Office of Rail and Road (ORR) in the Periodic Review 2013.

Previous Annual Returns are available on the Network Rail website together with a summary of historical data. Financial information is reported in the Regulatory Financial Statements which are available on our website.

For most measures we have provided disaggregated information for England & Wales and Scotland together with the network total where appropriate. We have provided disaggregated data for the ten operating routes; Anglia, Kent, London North Eastern, London North Western, East Midlands, Scotland, Sussex, Wales, Wessex and Western, for measures where this is appropriate (and possible).

As this is the first year of Control Period 5 (CP5) a number of new measures are reported in this Annual Return for the first time. The Annual Return follows the format agreed with the ORR and is prepared in accordance with Condition 12 of our network licence.

A summary of our performance during 2014/15 is provided below. Later sections of this Annual Return provide more detailed information concerning our performance against all of our CP5 regulated outputs.

Safety

Safety is at the core of everything we do, from our group board to every employee in every depot, station, signal box and office. Our safety vision is that everyone goes home safe every day. We do not underestimate the challenge of achieving this. Our key measures of safety performance are: passenger safety, workforce safety and public safety.

We appraised our Health and Safety Management System against international standard and engaged DuPont to benchmark our arrangements against a wide variety of industries.

It should specifically be noted that a change in reporting legislation (Reporting of Injuries, Diseases and Dangerous Occurrences Regulation - RIDDOR) means that passenger and workforce safety statistics are not comparable with the figures recorded in the Annual Return 2014.

In terms of passenger safety, in 2014/15 there was a decrease in the passenger component of train accident risk for which we are the risk controller. We have identified actions to reduce train accident risk by 25 per cent over CP5 and, as well as implementing those, continue to seek further improvement to the underlying factors that create this risk. There was one passenger fatality at our managed stations in the year and four accidents classed as 'specified injuries'. Slips, trips and falls were the largest primary causes of accidents at managed stations. We continue to focus on activities at our managed stations to manage crowd flows and influence behaviour so that passenger injuries at our stations are reduced.

In terms of workforce safety, the Workforce Safety Lost Time Injury Frequency Rate (LTIFR) did not meet our 15 per cent reduction target for 2014/15. There were 185 injuries resulting in more than seven days of lost time this year compared to 210 in 2013/14.

There were no workforce fatalities on Network Rail managed infrastructure this year. However, three separate incidents on public roads resulted in five fatalities. An on-duty BAM Nuttall contractor was involved in a road traffic accident with a lorry whilst driving a tractor on the A7 and a Network Rail employee, also on duty, was involved in a road traffic accident whilst riding a motorcycle in central London. In addition, a road traffic accident on the M4 resulted in three contractor fatalities whilst off-duty.

There were 95 workforce accidents classified as 'specified injuries' this year compared with 101 equivalent injuries during 2013/14. Slips, trips and falls remain the most common cause of accidents to our workforce.

During 2014/15 we continued to implement a ten-point strategic plan to improve workforce safety. The plan provides a number of targeted interventions which will provide a sustainable step-change in the safety of the workforce and contribute towards our target of eliminating all workforce fatalities and major injuries. For example, the 'Safe Teams' project continues to engage employees in identifying and resolving site-specific slip, trip and fall risks.

The number of Close Calls reported in 2014/15 was 71,237 against a target of 40,000. 47 per cent of all Close Calls were closed within 28 days, three percentage points short of target. A Close Call is anything that has the potential to cause injury or damage and can be reported by any Network Rail employee or contractor at any time. An increase in the number of Close Call reports is a positive indicator of our safety culture.

In respect of our employee's health and wellbeing we are implementing a number of initiatives as part of our commitment to manage a healthy workplace, promote wellbeing, develop a supportive culture and provide relevant policy and guidance. We have defined our strategic approach to improving mental health and wellbeing across Network Rail and have publically committed to MIND's 'Time to Change' campaign.

In terms of public safety during the year, 21 adult fatalities occurred as a result of railway accidents (nine of which were at level crossings). One child fatality occurred at a level crossing.

We closed 118 level crossings in the year and continued to develop and deploy risk reduction measures to enable and encourage safe use. Improved tools for understanding patterns of use and narrative risk assessments are helping us to target action for greatest risk reduction. There were 311 near misses with pedestrians and road vehicles in 2014/15, a

reduction of 7.4 per cent compared to 2013/14. Our continued aim is to reduce level crossing safety risk by 25 per cent over the course of CP5, through a combination of further level crossing closures and other risk reduction measures.

There were 294 railway suicides. Almost five per cent of national suicides take place on the railway. During 2014/15 we launched a learning tool on Suicide Prevention and Support on the Railway which is being used by our employees, our industry partners and colleagues including the British Transport Police and the National Health Service. The tool contributed to a 50 per cent increase, over the last year, in 'lifesaving interventions' that have prevented the tragedy of a suicide.

Train performance

Operational performance in 2014/15 was very challenging. All regulatory targets for passenger train services and many train operator performance targets were missed. Material problems were experienced in managing the effects of passenger growth and major projects whilst driving efficiency improvements. There were also fleet and traincrew related issues.

In England & Wales 89.6 per cent of trains arrived on time, as measured by the Public Performance Measure (PPM), 1.4 percentage points short of our 91 per cent target. The Cancellations and Significant Lateness (CaSL) target of 2.4 per cent was missed by 0.5 percentage points. Performance in London and the South East was particularly poor. The PPM targets for Southern and Govia Thameslink Railway (GTR) were missed by 4.7 percentage points and 2.8 percentage points respectively, with CaSL targets being missed by 1.9 percentage points and 1.3 percentage points respectively. When taken together these two train operators represent approximately one third of the PPM shortfall and one half of the CaSL shortfall in England & Wales.

In Scotland PPM was 90.5 per cent, 1.5 percentage points short of target. The Commonwealth Games in the summer of 2014 resulted in some specific issues with operational delivery, contributing 0.6 percentage points to the PPM attrition. In addition, structured changes to the timetable did not have the planned effect and resulted in degradation to performance.

Freight performance, measured by the Freight Delivery Metric, was two percentage points better than target in 2014/15, with 94.5 per cent of freight trains arriving at their destination within 15 minutes of scheduled time against a target of 92.5 per cent. This improvement was largely driven by a better autumn / winter performance.

Network availability

Network Rail maintains, renews and enhances the network while at the same time providing an operational railway. This requires effective possession planning to reduce disruption to the network. We use the Possession Disruption Indices for passenger and freight (PDI-P and PDI-F) as the principal measures of the availability of the network to run trains.

PDI-P ended 2014/15 at 0.71, ten per cent better than target. PDI-F ended 2014/15 at 0.88, twelve per cent ahead of target. Both indices have 'benefitted' as a result of lower than planned renewals volumes in the first year of CP5. However, planned increases in volumes during years two to five of the control period are likely to result in upward pressure on the PDIs. We are seeking to mitigate this risk by developing an integrated plan that aligns access and resource availability.

Maintaining and renewing the network

At the end of 2014/15 there were a total of 226 Temporary Speed Restrictions (TSRs) across the network against our year-end target of 231.

Asset reliability, measured by the Composite Reliability Index (CRI), ended 2014/15 two percentage points better than target at 7.7 per cent (compared with a target of 5.7 per cent from the 2013/14 baseline). Points, buildings, earthworks, electrical power and structures all achieved better than the year-end targets.

The total number of service affecting failures was five per cent worse than target. If telecoms (and the impact of GSM-R) is excluded, overall reliability was two per cent better than target for the year.

Signal reliability in 2014/15 was 12 per cent worse than target (primarily due to LED light failures). LED light failures had a 0.017 per cent impact on PPM in 2014/15 with 1,262 trains failing PPM as a result of 527 LED failures. Investigations into these failures are ongoing.

An increase in level crossing failures (ten per cent worse than target) is partly due to the failures arising from recently installed obstacle detection equipment.

In 2014/15 telecoms failures were very high due to GSM-R issues and were 95 per cent worse than target. While the upgrade to the latest GSM-R handset versions, with their vastly improved reliability, is fairly well advanced, other significant issues remain. A GSM-R Performance Improvement Plan is underway.

The number of structures defects with a risk score of 12 or more has improved during the year and ended the year 32 per cent ahead of target.

The year-end position for the seven key volumes and overall renewals volumes has shown that we did not plan or implement our workbanks on time and in full during 2014/15 and overall performance was worse than target.

Digital railway

During 2014/15 we created a new Digital Railway function to provide industry leadership and momentum to develop an integrated strategy for the technological

transformation of the railway. Whilst still in its early stages, this industry-wide programme is designed to benefit the British economy by accelerating the digital-enablement of the railway thereby delivering more capacity, reliability, speed and safety at a lower cost and with a smaller environmental footprint.

Enhancing the network

In 2014/15, Network Rail delivered £3.4 billion of work on projects to upgrade the railway across England & Wales and Scotland. Substantial progress was made on major projects including Crossrail and Thameslink as well as many hundreds of smaller projects, all of which will make a difference to the people and businesses that rely on the railway every single day with more seats, faster journeys, or better connections. Highlights of 2014/15 include:

- completion of all key project outputs as part of the Reading station redevelopment, which delivered major improvements to the capacity and capability of this historic bottleneck, as well as driving better punctuality for passengers
- operational use of four new platforms at London Bridge and the completion of signalling works as part of the Thameslink Programme
- delivery of key project milestones on Crossrail including bringing the Stockley flyover into use
- a modernised station delivered at Edinburgh Haymarket
- completion of the Phase 2 electrification works of our North of England Programme.

We also responded to the landslip at Harbury, where over 350,000 tonnes of soil and rock were removed and repairs completed to allow the line between Leamington Spa and Banbury to re-open in less than six weeks.

Delivering a capital programme of this size and scale is an extremely significant undertaking. We agreed 84 milestones for 2014/15 with the ORR. Of these, we failed to meet the scheduled completion of 30, though these included some relatively minor delays which will have little overall impact on delivery of the relevant projects. The ORR is investigating whether Network Rail is doing everything reasonably practicable to meet its obligations in relation to its regulated outputs for CP5. Following an announcement by the Secretary of State for Transport on 25 June 2015, some of our enhancement projects will be paused while a full affordability review is carried out through the summer.

In addition, we remain acutely conscious of the impact on passengers when we do not get it right. Overruns at King's Cross and Paddington over Christmas were followed by disruption at London Bridge which, while not wholly caused by the continuing development at the station, was heightened in intensity as a result of the programme. We are working to minimise future disruption. The situation at London Bridge has improved, though it continues to be an issue of the highest focus for us. We successfully applied the lessons of Christmas to our work over Easter and the May Bank Holidays, when there were no significant hand-back issues and passengers were able to travel without disruption.

Data quality

The quality of Network Rail data, which is critical to the understanding of underlying problems on the network, was a key area of focus during 2014/15. Data quality in a number of areas including asset condition, volumes data and financial reporting needs to improve and Network Rail's Audit and Risk Committee is reviewing data quality across all these areas. We are seeking to tackle this issue as a matter of urgency.

Our new railway connecting Edinburgh Waverley station to Tweedbank in the Scottish Borders

Customer and passenger satisfaction

Customer satisfaction is an assessment of how well Network Rail engages with its key customers; principally passenger and freight operating companies. Customer satisfaction is measured through the 'Customer Satisfaction Survey' carried out by a third party which takes into account the customer satisfaction achieved in each of Network Rail's routes. In 2014/15 customer satisfaction was worse than target (3.00 against a target of 3.32). A reduction in satisfaction around delivery of enhancement projects, and a rate of satisfaction of 18 per cent for access planning were the primary reasons for the failure to meet the target.

This year, the Customer Service Maturity Model (CSMM) was implemented for the first time. This framework measures a number of components of satisfaction, allowing flexibility to deliver measures that are appropriate to route-

based needs, whilst retaining enough consistency to enable a national picture to be retained. The development of the framework was shaped by route teams in collaboration with a number of our customers. The approach allows direct comparison between route teams but the direction of travel of individual routes is the clearest measure of success. The CSMMs provide a range of aggregate scores from Scotland with a current score of 3.62 through to the Anglia score of 2.40. Delivery of commitments, performance, disruption and capacity allocation were highlighted as concerns.

Passenger satisfaction is measured through the 'National Passenger Survey' (NPS) commissioned by Passenger Focus which provides a network-wide picture of passengers' satisfaction with rail travel. Passenger Focus carries out passenger surveys twice a year. The result is the average of the two surveys. Passenger satisfaction in 2014/15 was 81.4 per cent against a target of 83.3 per cent. This compares with a rate of 82 per cent satisfaction in both 2012/13 and 2013/14. The principal driver for the drop in satisfaction was the decline in train performance.

Retail outlets in the redeveloped King's Cross station, London

Environmental impact

During 2014/15 our submission to the Business in the Community Corporate Responsibility Index was awarded four stars (out of five).

Our carbon dioxide emissions increased by four per cent and our energy use by five per cent in the last year. In part, this is because Bristol Temple Meads and Reading stations were transferred to the management of Network Rail on 1 April 2014 and there were additional electricity requirements due to network and performance improvement programmes.

As a result of the scale of enhancement works, the volume of waste produced increased during 2014/15 though we were able to increase rates of re-use and recycling, reducing the proportion of waste sent to landfill to 11.6 per cent from 13.4 per cent in 2013/14. In Scotland, we substantially increased the percentage of waste that is recycled in a year from 19 per cent in 2013/14 to 66 per cent in 2014/15.

Social impact

In 2014/15 our approach to volunteering was revised so that a wider range of charities can benefit from the five days of volunteer time that each of our employees can contribute each year. This year, over 40 per cent of volunteer time was spent on projects that enabled people to be a 'caring neighbour', such as volunteering at hospices and with charities for disabled and homeless people. Our volunteers also used their technical skills to support railway heritage and connected with communities through gardening, vegetation and wildlife projects.

The contribution that our employees make to our charity of choice, which this year is CLIC Sargent, continues to grow through payroll giving, charity fundraising and in-kind giving. This year it was over £1.8 million (compared with £1.25 million in 2013/14).

Diversity and inclusion

At the end of 2014/15, 14.8 per cent of our workforce was female and 6.1 per cent was from a Black, Asian or Minority Ethnic group. Our workforce is not representative of the diverse communities within which we operate.

The progress Network Rail made in 2014/15 towards becoming a more open, diverse and inclusive organisation was recognised by Business in the Community which awarded Network Rail Silver Benchmarks for Race and Gender. Network Rail was a finalist in the Inclusive Culture Excellence in Practice Awards. We were awarded the 'Positive about Disability' accreditation by the Department for Work and Pensions. We also achieved 'silver' standard in both the Opportunity for Now and Race for Opportunity benchmarks and received accreditation for the Positive About Disability Two Ticks Scheme.

In 2014/15 we published our first diversity and inclusion strategy, 'Everyone'. During the year we grew our network of diversity champions and equality representatives. Our six staff networks now have over 1,000 members. Over 2,000 of our leaders have been trained on inclusive leadership. We are also seeking to positively influence the career choices of the next generation and have signed up to the Barclays Life Skills work experience programme, the Your Life campaign and Women In Science and Engineering's Ten Step Plan.

To make our network more accessible, we have completed significant improvements to 150 stations since 2006, including installation of more than 1,000 lifts. Our Built Environment Accessibility Panel was consulted on the accessibility of designs for the redevelopment of many of our stations including Queen Street Glasgow, Leeds, Birmingham New Street, London Bridge and Gatwick airport. We continue to employ disabled consultants to train our station staff, so that they better understand and can reduce the challenges faced by disabled passengers. We contributed to 'Working Together', a rail industry guide to encourage better customer experience for rail passengers

using wheelchairs, and are collaborating with public and industry bodies on inclusive design initiatives.

Transparency

In March 2015 we became subject to the Freedom of Information (FOI) Act. We are now working to respond to requests in line with our statutory obligations. We see FOI as an opportunity to be more open and accountable, and understand that our reputation for being transparent relies to a significant extent on managing our response to FOI in a positive way. As the number of requests we receive increases, our understanding of what people want to know about us will improve. We will use this to inform our transparency work.

Our bi-annual transparency debates continue to attract interesting panel members, large audiences and a wide range of opinions. Our challenge panel, made up of experts from the private and public sectors, meets twice a year and has played a vital role in holding us to account in this area.

By making changes to our webpages and publishing more relevant, accessible and interesting information, we have increased the number of hits to our transparency datasets to over 60,000 a quarter. Our 'delays explained' series remains the most popular.

Assessing lineside vegetation in Birmingham

Reclassification

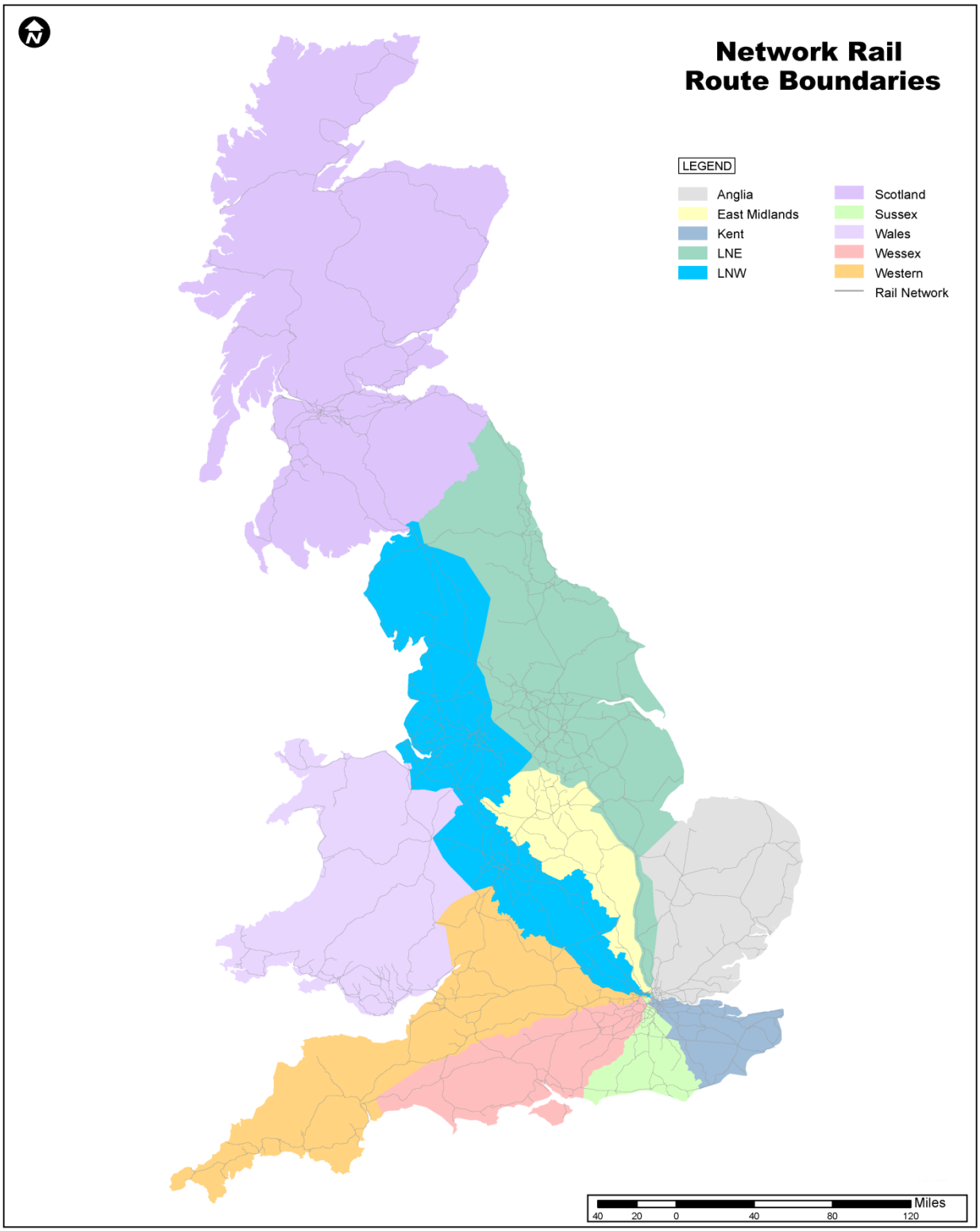
In September 2014, following a change in European statistical regulations, Network Rail became a central government body for national accounting purposes. Network Rail has worked closely with the Department for Transport (DfT) to adjust the accountability and financial management arrangements in keeping with the requirements incumbent on a company in the public sector. The focus throughout has been to do so in a way that preserves Network Rail's ability to manage its business with the commercial freedom required to deliver outstanding value for money for the taxpayer and customer.

Regulatory matters arising in 2014/15

In February 2015, the ORR concluded that Network Rail had breached its network licence following the identification of failings in the planning and delivery of engineering works at King's Cross and Paddington stations, which resulted in disruption to passengers over Christmas 2014. The ORR decided not to impose an enforcement order because Network Rail agreed to take, and was taking, all such steps as necessary for the purpose of securing compliance with its network licence. Network Rail accepted the recommendations made by the ORR to remedy this breach and these recommendations will be implemented in advance of the Christmas 2015 engineering works.

For the first two years of CP5 the ORR accepted that Network Rail could not achieve the regulated PPM and CaSL targets specified in the ORR's determination. The ORR therefore agreed to hold Network Rail to account for the delivery of the inputs specified in its performance plan and the targets agreed in the performance strategies agreed with train operators. Given the performance outturns achieved in Scotland (against its regulated performance targets) and for Southern and GTR (against their performance strategies), the ORR has commenced an investigation to establish whether Network Rail did or is doing everything reasonably practicable to meet its licence obligation in relation to achieving its regulated performance outputs in CP5. The ORR is also undertaking an investigation to establish whether Network Rail is doing everything reasonably practicable to meet its licence obligations in relation to the delivery of enhancement projects.

Section 2 – Route boundary map



Section 3 – Confidence grades

Data reporting

The Annual Return 2015 reports on Network Rail's stewardship of the rail network in 2014/15. Where possible, five years of historic data is provided so that trends in performance can be observed. A historical record of our stewardship of the rail network, which provides information dating back as far as 1997/98, is published on our website at the following address:

http://www.networkrail.co.uk/publications/annual-return/stewardship.xls

As this is the first year of a new control period (CP5), a number of new measures are reported in the Annual Return for the first time. New measures will be included in the historical record when this is updated in September 2015. Where possible disaggregated information by operating route is provided. A map of the routes is provided at the end of this section.

It should be noted that some of the previous year's figures were not final at the point of publication of the Annual Return 2014. As a result, some of the figures reported in previous years have been restated. 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 based on either regulatory targets as set out in the ORR's CP5 Final Determination or as provided in Network Rail's CP5 Delivery Plan (DP14) as published 31 March 2014. Any amendments to targets since this time will be updated and reported against in subsequent Annual Returns.

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

Independent Reporters and confidence reporting

Since October 2002, Network Rail together with the ORR has employed Independent Reporters. The role of the Independent Reporters is to provide independent technical audit services to the ORR and Network Rail. As part of their role Independent Reporters review the quality, accuracy and reliability of the data and related processes that we use for reporting on our performance and provide a confidence grade for each measure and area that has been reviewed. This confidence grade provides an indication of the accuracy and reliability of the measure.

From 2011/12 the confidence grading system was slightly modified. An explanation of the previous confidence grading system can be found in the Annual Return 2011. As confidence grades in this Annual Return also include confidence grades awarded by a previous Independent Reporter and those from reviews prior to 2011/12, some confidence grades will be based on the previous system. The modified confidence grading system is very similar to the previous one as the ORR developed it to enhance the previous system and minimise any confusion.

Table 3.1 and Table 3.2 provide an explanation of the data accuracy and system reliability grading systems.

Table 3.3 provides a summary of all confidence grades awarded by the Independent Reporter for all measures or information that have been reviewed. Some of these confidence grades are very old and may no longer be relevant as improvements have been made to those measures. The confidence grades awarded are therefore not necessarily indicative of the data accuracy and system reliability grading systems but we have included them for completeness as no further reviews have been done for those measures. There are also some measures that have not been reviewed and therefore do not have confidence grades. We have indicated where this is the case.

Table 3.1: Accuracy grading system

Accuracy band	Description
1*	Data used to calculate the measure is accurate to within 0.1 per cent
1	Data used to calculate the measure is accurate to within 1 per cent
2	Data used to calculate the measure is accurate to within 5 per cent
3	Data used to calculate the measure is accurate to within 10 per cent
4	Data used to calculate the measure is accurate to within 25 per cent
5	Data used to calculate the measure is accurate to within 50 per cent
6	Data used to calculate the measure is inaccurate by more than 50 per cent
X	Data accuracy cannot be measured

Notes: Accuracy is a measure of the closeness of the data used in the system to the true values. Accuracy is defined at the 95 per cent confidence level - i.e. the true value of 95 per cent of the data points will be in the accuracy bands defined above.

Table 3.2: System reliability grading system

System Reliability Band	Description
A	Appropriate, auditable, properly documented, well-defined and written records, reporting arrangements, procedures, investigations and analysis shall be maintained, and consistently applied across Network Rail. Where appropriate the systems used to collect and analyse the data will be automated. The system is regularly reviewed and updated by Network Rail's senior management so that it remains fit for purpose. This includes identifying potential risks that could materially affect the reliability of the system or the accuracy of the data and identifying ways that these risks can be mitigated. The system that is used is recognised as representing best practice and is an effective method of data collation and analysis. If necessary, it also uses appropriate algorithms. The system is resourced by appropriate numbers of effective people who have been appropriately trained. Appropriate contingency plans will also be in place to ensure that if the system fails there is an alternative way of sourcing and processing data to produce appropriate outputs. Appropriate internal verification of the data and the data processing system is carried out and appropriate control systems and governance arrangements are in place. The outputs and any analysis produced by the system are subject to management analysis and challenge. This includes being able to adequately explain variances between expected and actual results, time-series data, targets etc. There may be some negligible shortcomings in the system that would only have a negligible effect on the reliability of the system.
B	As A, but with minor shortcomings in the system. The minor shortcomings would only have a minor effect on the reliability of the system.
C	As A, but with some significant shortcomings in the system. The significant shortcomings would have a significant effect on the reliability of the system.
D	As A, but with some highly significant shortcomings in the system. The highly significant shortcomings would have a highly significant effect on the reliability of the system.

Notes: System reliability is a measure of the overall reliability, quality, robustness and integrity of the system that produces the data. Some examples of the potential shortcomings include old assessment, missing documentation, insufficient internal verification and undocumented reliance on third party data.

Table 3.3: Summary of confidence grades

Measure / Information	Confidence grade
Safety and sustainable development	
Workforce Safety	B2
Passenger Safety	B3
Safety improvement commentary	-
Percentage of at risk employees that have been screened for Noise Induced Hearing Loss (NIHL)	D6
No. of at risk employees screened for HAVS (Hand Arm Vibration Syndrome)	D6
No. of referrals to OH (Occupational Health) providers due to musculoskeletal condition	B2
No. of referrals to OH providers due to stress related absence	B2
Employers liability	-
System Safety	-
Infrastructure wrongside failures	A1
Category A SPADs	A1
Level Crossing Misuse	A3
Irregular Working	B3
Criminal Damage	B3
Public Safety	-
Sustainable Development (Environmental performance)	-
Operational performance and Stakeholder relationships	
Public Performance Measure (PPM)	A1
Delay minutes	-
Delays to passenger train services	A1
Delays to freight train services	A3
Freight delivery metric	-
Delay minutes by cause	-
Asset failures (Track / non-track delay minutes)	A1
Right time performance	C2
Cancellations & Significant Lateness (CaSL)	A2
Customer satisfaction	A1
Passenger satisfaction	-
Network capability and availability	
Linespeed capability	B2
Gauge capability	B2
Route availability value	B2
Electrified track capability	B2
Network change	-
Discrepancies between actual and published capability	-
Platform lengths	-
Network availability – Possession Disruption Index – Passenger	B2
Network availability – Possession Disruption Index – Freight	A1
Asset management	
Excellence in asset management	-
Rail age / type	-
Broken rails	A1
Rail defects	A2
Track Geometry – Good Track Geometry (M3)	B2
Track geometry quality – Poor Track Geometry (M3)	A1
Track geometry faults	A1
Track buckles	A2
TSRs (Temporary Speed restrictions)	B2

Measure / Information	Confidence grade
Track failures	-
Earthwork failures	A2
Earthwork condition	B2
Tunnel condition	-
Bridge condition	C3
Bridge examination	-
Bridge assessment of strength	-
Signalling failures	-
Signalling asset condition	B2
Points failures	-
Train detection failures	-
Telecoms condition	-
Telecoms failures	-
Alternating current traction power incidents causing train delays	B2
Direct current traction power incidents causing train delays	BX
Electrification condition – AC traction feeder stations and track sectioning points	XX
Electrification condition – DC traction substations	XX
Electrification condition – AC traction contact systems	C4
Electrification condition – DC traction contact systems	C4
Power incidents causing train delays of more than 300 minutes	-
Assets subject to additional inspection	-
Rail breaks and immediate action defects per 100 km	-
Station Stewardship Measure	B2
Light Maintenance Depot Stewardship Measure	C2
Activity volumes	
Track renewals (not separated by rail, sleepers, ballast and S&C as it was reviewed together and given one confidence grade)	B1
Signalling renewals	B1
Level crossing renewals	-
Telecoms renewals	C5
Civils renewals (not separated out as it was reviewed together and given one confidence grade)	B1
Drainage volumes renewals	-
Drainage expenditure	-
Electrification and plant renewals	C4
Operational property volumes	-
Enhancements programme	
Enhancement schemes information	-

Section 4 – Safety

Introduction

This section reports our principal measures of the safety of the rail network, as well as the health and wellbeing of Network Rail employees. The successes and challenges of initiatives to improve safety, health and wellbeing are set out alongside data for the following key aspects of safety, health and wellbeing:

System safety

- workforce safety
- passenger safety
- public safety
- Signals Passed At Danger (SPADs)
- Operational Close Calls (OCCs)
- level crossing safety
- Safety Management System.

Health and wellbeing

- strategic commitments to health and wellbeing
- occupational health and wellbeing strategic dashboard
- 2014/15 health and wellbeing achievements
- psychological and musculoskeletal occupational health referrals
- employee sickness
- exposure to asbestos and lead
- respirable crystalline silica
- noise and audiometry
- hand arm vibration
- employers' liability.

Where appropriate, these KPIs are averaged over 13 four-weekly periods to provide a Moving Annual Average (MAA) performance figure.

Percentages given may not always add to 100 per cent because of rounding.

In addition, there is a section on health and safety regulation.

System Safety

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

Workforce safety

Workforce safety is historically measured by the workforce fatalities and weighted injuries (FWI) measure. In addition, the Lost Time Injury Frequency Rate (LTIFR) has been recorded for 2014/15, which measures the number of personal injuries which have resulted in lost time. Both measures use data reported in the Safety Management Information System (SMIS) for all employees and contractors working on Network Rail's infrastructure. FWI is normalised per one million hours worked and LFTIR is normalised per one hundred thousand hours worked.

Table 4.1: Workforce safety

	2010/11	2011/12	2012/13	2013/14	2014/15
Employee on-duty fatalities	1	2	2	3	2
Major injuries	101	102	104	121	-
Specified injuries	-	-	-	-	95
Lost time injuries (RIDDOR Reportable 3+ days)	202	124	-	-	-
Lost time injuries (RIDDOR Reportable 7+ days)	-	-	209	210	185
FWI (MAA)	0.126	0.141	0.149	0.158	0.133
Lost Time Injury Frequency Rate	-	-	-	0.588	0.568

Notes: The updating of workforce accidents results in historic figures being amended once further information is supplied by our direct workforce and contractors. These figures continue to be subject to change each year, for example, FWI (MAA) scores have varied with the reallocation of events.

There have been no workforce fatalities on Network Rail managed infrastructure this year. However, an on-duty BAM Nuttall contractor was involved in a road traffic accident with a lorry whilst driving a tractor on the A7 and a Network Rail employee was involved in a road traffic accident whilst riding his motorcycle on duty in central London. These fatalities are shown in Table 4.1.

In addition, a road traffic accident on the M4 resulted in three contractor fatalities. These three fatalities are not included in Table 4.1 because they occurred whilst off-duty.

There has been a reduction in the Lost Time Injury Frequency Rate over the past year but our internal risk reduction target of 15 per cent has not been met.

The introduction of new Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) ceased recording of injuries against the category of ‘major’ and introduced the new category of ‘specified’ injuries. This change was adopted during 2014/15. The ‘specified’ injury category categorises different accidents to the ‘major’ category so these figures should not be compared.

In addition to the two employee fatalities in the year, there were a total of 95 specified injuries accidents in the year, compared with 121 major accidents (of which 101 would be classified as a specified injury under the new RIDDOR guidelines) in the previous year. Slips, trips and falls remain the most common causes of accidents to our staff and contractor workforce.

Network Rail continues to implement a ten-point strategic plan to improve workforce safety. The plan provides a number of targeted interventions which will provide a sustainable step-change in the safety of the workforce and contribute towards our target of eliminating all workforce fatalities and major injuries. The main components of the plan are:

- improved leadership and clarity on roles and responsibilities when working trackside
- investing in new technology to protect workers against trains
- how we implement learning from incidents
- planning and implementing safe worksites
- selecting contractors that will ensure our plan is embedded in all their work practices
- improved management of road risk.

Passenger safety

A legislative change in RIDDOR means that passenger safety cannot be directly compared with previous years.

Passenger safety is measured by the Passenger Safety Indicator (PSI), which incorporates train accident risk data and the weighted number of personal injuries to passengers.

The first element of the PSI, train accident risk data, is taken from the Precursor Indicator Model (PIM). Produced by the Rail Safety and Standards Board (RSSB) every period, the PIM provides a guide to the current train accident risk profile and the trends in this profile. It calculates this using precursor events data from nine main areas (infrastructure operations, signals passed at danger, objects on the line, track, earthworks, signalling, structures, level crossings and train operators and failure).

As measured by the PIM, the passenger component of train accident risk where Network Rail is the risk controller decreased to 1.866 Fatalities and Weighted Injuries (FWI) per year against a target of 2.158. We continue to deepen our understanding of the underlying factors of train accident risk and are acting to address these factors.

The second element of the PSI is the weighted number of personal injuries to passengers, at station level crossings and Network Rail managed stations, as reported in SMIS. This metric is normalised per billion passenger kilometres. The change in legislative RIDDOR reporting requirements has resulted in a significant reduction in the number of reportable injuries at stations, and it is therefore not appropriate to compare the performance with the previous year. There was one passenger non-RIDDOR reportable fatality and four specified injury accidents on Network Rail managed stations this year.

Slips, trips and falls are the largest primary causes of accidents at managed stations. Our focus continues to be on managing crowd flows and influencing behaviour so that passenger injuries on our managed stations are reduced. Improvements on passenger safety at stations throughout the year have focussed on Passenger Train Interface, development of strategy and collaborative working with RSSB and industry partners to improve guidance on wheelchair access and to ensure provision of training to managed station employees.

Public safety

During the year, there were 21 adult fatalities as a result of railway accidents, nine of which occurred at level crossings. There was one child fatality at a level crossing.

There were 294 suicides across the network. During 2014/15 we launched a learning tool on Suicide Prevention and Support on the Railway which is being used by our employees, our industry partners and colleagues including the British Transport Police and the National Health Service. The tool has contributed to an annual increase of almost 50 per cent in 'lifesaving interventions' that have prevented the tragedy of a suicide. We also continue to work closely with Samaritans to understand what more can be done to reduce suicide risk on the railway. We have also developed our community safety strategy and delivered a number of key initiatives including partnerships with local schools, youth groups, and football clubs.

Projects such as 'Engaging Young People in Safety Messaging' in collaboration with RSSB, Loughborough University research teams and internal stakeholders at community safety forums and the 'Rail Life' project, which has developed an anti-social behaviour film, will continue to educate and engage communities beyond this financial year to deliver maximum impact throughout the network.

Category A Signals Passed At Danger (SPADs)

A Category A SPAD is an instance where a signal has been passed despite equipment displaying correctly in sufficient time for the train to be stopped safely at the signal.

Four of the 31 instances resulted in derailment compared with three in the previous year. We continue to work with rail industry colleagues to reduce SPAD risk, providing leadership in the Modernisation of Safety Cooperation arrangements.

Table 4.2 shows that the number of Category A SPADs in 2014/15 was greater than in each of the previous four years. This is a risk that involves train and freight operators as well as Network Rail. RSSB (The Rail Safety Standards Board) has formed an industry group focusing on SPAD risk, examining underlying causes and further risk reduction options. Within Network Rail's train accident risk reduction programme there are a number of workstreams aimed at reducing SPAD risk such as resignalling to modern standards, railhead treatment, enhanced lineside vegetation removal programme and improving safety critical communications.

There were 303 Category A SPADs during 2014/15, compared to 292 in 2013/14. The MAA (normalised per thousand signals) is 0.66, which is 14.9 per cent worse than the year-end target of 0.57 and 4.5 per cent worse than last year. There were 31 instances where the train reached the fouling point (the point on a pair of converging tracks where two trains would collide if allowed to approach together). One of the 31 signals involved was fitted with Train Protection Warning System (TPWS). This is an increase in instances reached the fouling point on the previous year (when six of the 22 signals were fitted with TPWS).

Four of the 31 instances resulted in derailment compared with three in the previous year. We continue to work with rail industry colleagues to reduce SPAD risk, providing leadership in the Modernisation of Safety Cooperation arrangements.

Table 4.2: Signals Passed At Danger

	2010/11	2011/12	2012/13	2013/14	2014/15
England and Wales	272	247	234	274	277
Scotland	27	29	15	18	26
Network-wide	299	276	249	292	303
Network-wide (Ranked A to D - where the train reached the fouling point)	40	26	22	22	31

Notes: Previous years' figures have been updated to reflect the outcome of investigations and re-categorisation of incidents.

Close Calls

A Close Call is anything that had the potential to cause injury or damage, and can be reported by any Network Rail employee or contractor at any time. Unlike an Operational Close Call, a Close Call is not necessarily something which causes an immediate risk to the operational safety of the railway, and could occur in any location.

There were a total of 71,237 Close Calls reported during the year, beating our year-end target of 40,000 Close Calls reported. An increase in the number of Close Call reports is a positive indicator of our safety culture. Table 4.3 shows that 47 per cent of these were closed within 28 days, against a target of 50 per cent. Close Calls are reported in the Close Call System (CCS).

Table 4.3: Close Calls

	2014/15
Close Calls reported	71,237
2014/15 target	40,000
Close Calls closed within 28 days	47%
2014/15 close-out target	50%

Notes: Close-out is currently only recorded for non-Infrastructure Projects Close Calls.

Operational Close Calls (OCC)

Historically referred to as Irregular Working and not to be confused with Close Calls, an OCC is any unsafe behaviour or condition that poses an immediate threat to the safe operation of the railway. If left unresolved an OCC may directly affect the safe operation of the railway and lead to a safety incident, and therefore require immediate action. Incidents are reported through the Route Control Centres and are recorded in SMIS.

Based on an evaluation of their actual or potential consequence, the table shows the MAA for Operational Close Call incidents for 2014/15 compared to previous years. The MAA of potentially significant and potentially severe operational Close Call incidents is 33.85, which is 27.9 per cent higher than last year.

Table 4.4: OCCs

	2010/11	2011/12	2012/13	2013/14	2014/15
OCC MAA England and Wales	18.81	22.65	22.69	24.60	31.67
OCC MAA Scotland	0.50	0.81	0.69	1.86	2.18
OCC MAA network-wide	19.31	23.46	23.38	26.46	33.85
Potentially significant	197	244	206	231	305
Potentially severe	54	61	98	113	133

Notes: Due to data refreshing, figures are different to those reported in the 2014 Annual Return.

More detailed analysis of these events has been conducted and the trends are reported in the periodic Safety, Health and Environment Performance (SHEP) report. We are working on a number of initiatives, including continuing to embed an inclusive and mature safety culture by focussing on key behaviours across our organisation and refreshing our lifesaving rules.

We have achieved a significant increase in risk awareness and reporting, with more reports about unsafe behaviour and complex, systemic issues that require mitigation of risks related to strategy and process. While we focus on enabling senior leaders to learn about risks identified via close calls and safety conversations to inform corporate level decision making, we are also improving the close call process across the business to maintain and build its credibility.

Events categorised as potentially significant or potentially severe are attributed against one of the four Key Performance Indicators (KPIs) below. The KPI with the largest proportion of potentially significant and potentially severe events is Protection.

Table 4.5: Categories of OCCs

Category	Definition
Protection	An OCC involving the work group (e.g. Controller of Site Safety (COSS) or a lookout) which results in incorrect or inadequate implementation of a line blockage, working outside of the protection limits or removal of protection. This includes near misses with staff whilst red zone working, staff being slow to clear the line, or a failure to have a safe system of work in place.
Possession	An OCC involving implementation of a possession (i.e. Person In Charge of a Possession (PICOP), Engineering Supervisor, Nominated Person) which results in the incorrect placement of protection, inadequate or incorrect protection arranged, or irregularity in the removal of protection. Isolation placed incorrectly (i.e. outside of possession limits or prior to the possession being taken, trolleys placed outside of possession limits).
Operating	Any OCC as a result of an operator (e.g. a signaller or controller) giving permission for protection to be laid with a train not yet having passed the site of work; signalling a train into a possession / line blockage, vehicles or pedestrians trapped between gates at a level crossing or given permission to cross when the line is not clear; failure to caution trains; miscommunication when the signaller is in the lead; two trains in section; train routed into an isolated section, switching incident.
On Track Machine or Plant / Engineering Train / Equipment	Any OCC involving on track plant or engineering trains or involving incorrect use or placement of equipment or materials, for example unauthorised movements within possessions, machines or plant overturning, unsafe operation of machines or plant, equipment or materials fouling the running line, irregularities involving scaffolding on operational infrastructure.

Level crossing safety

Level crossing safety remains a priority area. The data in this report includes:

- incidents where a motorised vehicle is struck by, or strikes, a train
- incidents where a pedestrian or user of a non-motorised vehicle is struck and fatally injured by a train
- near misses with a motorised vehicle or non-motorised vehicle or pedestrian.

Over the past four years there has been a sustained reduction in the number of near misses with both vehicle and non-vehicle users. We closed 118 level crossings in the year and continued to develop and deploy risk reduction measures to enable and encourage safe use. Improved tools for understanding patterns of use and narrative risk assessments are helping us to target action for the greatest risk reduction. We believe this is linked to ongoing risk reduction initiatives in line with our key strategic safety themes: engineering, enforcement, education, and enabling improvements.

Our continued aim is to reduce level crossing safety risk by 25 per cent over the course of CP5. We engage users through our network of Level Crossing Managers and work with local communities to achieve closure where this is possible.

Whilst the number of collisions with road vehicles has reduced, the number of pedestrians struck by trains is the highest in the past five years. There were nine accidental adult fatalities and one child fatality in 2014/15. The cumulative benefits achieved from level crossing closure and implementation of risk reduction measures since the end of CP4 is 1.008 Fatalities and Weighted Injuries (FWI) per year as calculated by the All Level Crossing Risk Model (ALCRM).

Network-wide, the MAA of level-crossing misuse incidents was 25.08, a reduction from 27.00 at the end of 2013/14. The number of actual collisions with road vehicles was also lower than during the previous years, reflecting the reduction in near misses with road vehicles to 76, compared to 95 during 2013/14.

Table 4.6: Level crossing misuse

	2010/11	2011/12	2012/13	2013/14	2014/15
Level crossing misuse (MAA) England and Wales	27.92	29.07	27.00	25.31	24.23
Level crossing misuse (MAA) Scotland	1.46	1.85	1.31	1.69	0.85
Level crossing misuse (MAA) Network-wide	29.38	30.92	28.31	27.00	25.08
Collisions with road vehicles	5	10	10	10	7
Train striking pedestrian	4	2	4	5	7
Near miss with road vehicle	113	110	95	95	76
Near miss with non-vehicle users	260	279	259	241	235

Safety Management System

During 2014/15, the Health & Safety Management System (HSMS) has been reviewed and updated to reflect the creation of the Group Digital Railway and Group Safety, Technical and Engineering functions. We have reviewed and updated our safety validation standard and associated process for the management of organisational change in order to align with the updated requirements of the Common Safety Method for Risk Evaluation and Assessment (CSM REA 402/2013) and better identify the hazards associated with organisational change and the corresponding mitigations and controls. We have worked with the ORR to improve the arrangements for complying with the interoperability regulations as described in our HSMS specifically those associated with the Network Rail Assurance Panel (NRAP) process.

We have also reviewed and updated our assurance arrangements as described in the HSMS to align with transfer of corporate audit elements of our “three lines of defence” monitoring strategy.

We have reviewed the HSMS against the requirements of the international standard OHSAS 18001 to identify any opportunity for continual improvement. In addition, we have also started to embed the Business Critical Rules Programme products into our HSMS, which will further strengthen our Risk Control measures.

Health and Wellbeing

Network Rail’s occupational health (OH) and wellbeing strategy contains four strategic areas of focus identified to achieve the long-term aims and outcomes. Our strategic approach to improving mental health and wellbeing was formally recognised with a Highly Commended Award in the category of ‘Most Effective Mental Health and Resilience Strategy’ in the 2015 UK Employee Benefits Awards. Network Rail is proud to have won this award so early into our strategy and we believe that this is a positive reflection of the nature with which we are embedding health and wellbeing across the organisation.

Strategic commitments to health and wellbeing

Managing a healthy workplace

Efforts to improve the confidence and capability of senior leaders in supporting the mental wellbeing of their teams continue, including embedding content related to mental health and wellbeing within several internal leadership training programmes. These updated programmes went live in September 2014 with dedicated mental health content. The focus on awareness of personal health within senior leadership groups was developed in the knowledge that this will likely lead to greater awareness in the importance of health and wellbeing. As an example of this, the proportion of our senior leaders completing their two-yearly medical assessment continued to increase from 12 per cent in 2012/13 to 74 per cent this year.

Network Rail also recognises the wider role it has in influencing the health and wellbeing of individuals in its supply chain and, reflecting this, a dedicated section relating to occupational health and wellbeing has been included within a new Contingent Labour Code of Conduct. This provides guidance to organisations which supply Network Rail with contingent labour on the expectations it has for ways in which they should be supporting the health of their employees.

Our plan to reduce vibration and noise emissions from small plant, as detailed in the audiometry and vibrations sections of this document, is a key element of our commitment to managing a healthy workplace.

A desire to reduce the risk of acute fatal cardiac events within our buildings led to 266 automatic external defibrillators (AED) being installed into more than 251 of Network Rail’s largest buildings and stations. A new preferred supplier of AEDs has now been identified which will allow other Network Rail buildings to purchase and install these devices.

The formal retender of Network Rail's third-party occupational health and drugs and alcohol services has commenced and new plans for improving the overall service quality, as well as a more coordinated and joined-up model for all health services, were developed. The new services are expected to launch in November 2015.

Providing opportunities for promoting wellbeing

13 mobile health kiosks were moved across the business over a six month period, appearing in 75 of Network Rail's largest buildings. More than 11,000 (30 per cent) of Network Rail's employees used the kiosks to measure their Body Mass Index (BMI), body fat levels, blood pressure, heart rate, pulse and cardiovascular risk. The results highlighted that approximately 70 per cent of employees were overweight or obese. The average employee's blood pressure was within the pre-hypertensive range at 128/81mmHg and 89.5 per cent of employees were classified as having a low risk of an acute cardiovascular event, such as a heart attack or stroke, within the next ten years.

An online health and wellbeing portal was launched to provide employees and contractors with access to occupational health and wellbeing resources, guides and educational information. 2,000 individuals have accessed the portal each month with a total of over 60,000 unique sessions occurring. Plans are now being developed to continue the development of this resource and enhance its usage.

As part of our work on mental health and wellbeing across the organisation, a dedicated conference on mental health was held with over 80 attendees. Organisational psychologists assisted in developing a stress and mental wellbeing survey (ASSET) as a two-way Online Wellbeing Assessment, providing each respondent with a report on their health and wellbeing and enabling Network Rail to better understand the health and physical, mental and social wellbeing of its employees. More than 4,200 employees completed the assessment and a target of increasing this number to 11,000 for 2015/16 was agreed.

Through the data provided by the Online Wellbeing Assessment, Network Rail was able to assess levels of psychological wellbeing across the organisation compared to the previous year. Firstly, the proportion of employees who were assessed as not being excessively troubled by their workplace pressures increased from 58.2 per cent last year to 77.6 per cent this year. Secondly, the proportion of employees assessed as having a high level of psychological wellbeing increased from 62.8 per cent to 65.3 per cent. Although methodological variations may have reduced comparability of the figures, Network Rail believes that these results show the positive impact that health interventions and activities have had over the year. Based on analysis of self-reported productivity levels in relation to different levels of wellbeing, it is estimated that the increase in psychological wellbeing levels equates to an additional £15.8 million in health-related productivity per year across the organisation.

Throughout the year, Network Rail worked to improve the awareness of its employees of the varied health and wellbeing-related benefits available to them through regular communications and through its health and wellbeing portal. Dedicated sections on health-related benefits have been included within the rewards and benefits programme.

The numbers of onsite fitness facilities Network Rail employees have access to have increased from two to eight during the year. 1,835 employees used or signed-up to one of the facilities during 2014/15 with a total of 34,222 visits (18.6 per user), 1,647 event interactions at health fairs or workshops run by our fitness teams, and 359 employees having a 'Health MOT' completed by one of the fitness team over the 12 month period.

Developing a supportive culture of wellbeing

Network Rail is committed to mental health charity MIND's 'Time to Change' campaign to reinforce our view that discrimination related to mental health is not acceptable. Nationwide events to launch this commitment were held in February 2015 and a series of guides on issues relating to stress management, resilience and mental wellbeing were developed for employees and line managers.

The February event led to membership of Network Rail's employee disability champions group ('Can Do') doubling in one day. Similarly, immediately following the 'Time to Change' events, the proportion of employees who reported feeling strongly confident at being able to spot the signs and symptoms of mental health issues increased from 29.7 per cent to 39.7 per cent. 44.6 per cent of employees felt strongly comfortable discussing mental health with those at work, increasing from 27.4 per cent last year. The proportion of employees who agreed that Network Rail cared for their health and wellbeing increased from 56.5 per cent to 78.9 per cent.

Internal communication campaigns have utilised real-life stories of employees who have experienced mental health issues and training employees as 'mental health champions' was trialled, with the objective of ensuring champions are capable of holding basic discussions about mental health in order to sign-post employees to resources that can help and support them.

An online ‘pledge wall’ was also developed and launched on the health and wellbeing portal for employees to make their own personal pledge to challenge mental health discrimination, with 322 pledges made by the end of 2014/15.

Providing guidance, competencies, policies and processes

A key commitment for 2014/15 was the embedding of health-specific skills and knowledge across Network Rail’s routes so that local ownership of the health and wellbeing agenda could be achieved. In line with this commitment, each route recruited an occupational health and wellbeing manager to lead local improvement plans.

Following earlier improvement plans developed by routes, the need to provide a more structured approach to enabling the development of plans for health and wellbeing was acknowledged. A web-based improvement framework system was developed which enables routes and business functions to assess their maturity in relation to occupational health and wellbeing issues and develop local plans for improvement. All routes and many functions have now developed plans to improve management of mental wellbeing and risk of Hand Arm Vibration Syndrome.

During 2014/15, the first phase of development of a consolidated health data reporting system which will bring together the wide range of health and wellbeing measures began. Anonymous data gathered from the online wellbeing assessment was used to complete the first comprehensive review of employee psychological wellbeing, allowing for the development of hot spots and risk profiles across the business for a range of issues including work-related pressure, stress, mental health conditions, psychological resilience and mental wellbeing.

Finally, all major occupational health and wellbeing risks were reviewed using a bow-tie methodology, and the process of re-writing and updating a wide range of policies, controls and guidance documents for routes and business functions to implement has begun for launch later in 2015.

Our four strategic commitments are summarised by our occupational health and wellbeing strategic dashboard, which gives the 2014/15 scores for a number of key metrics, alongside our strategic target for the end of CP6 (2024). Where possible, data for previous years is also included. Definitions of each metric are included in Table 4.9 after the dashboard.

Table 4.7: Occupational health and wellbeing strategic dashboard

	2012/13	2013/14	2014/15	Strategic 2024 target
Safety critical workers assessed as 'fit for role' (%)	-	98	99	99
Compliance with health surveillance programmes (%)	24	36	64	100
Diagnoses of new and / or worsening occupational health conditions	73	526	172	Zero
Employees breaching identified safety thresholds for occupational health hazards	-	-	-	Zero
Proportion of employees not excessively troubled by workplace pressures (%)	-	58.2	77.6	>90
Proportion of employees meeting physical activity guidelines (%)	-	-	55	73% (10% better than 2014/15 General Working Population figure of 63%)
Proportion of employees reporting high levels of positive psychological wellbeing (%)	-	62.8	65.3	69.6% (10% better than 2014/15 General Working Population of 59%)
Proportion of employees identified as having low risk of cardiovascular disease (%)	-	-	89.5	100% (10% better than 2014/15 General Working Population)
Average days lost to employee absence	-	7.27	7.87	7.11 (10% better than 2013/14 CIPD average for public sector organisations of 7.9 days)

Notes: The 2012/13 'diagnosis of new and / or worsening OH conditions' figure is comprised of new and / or worsening hand arm vibration syndrome diagnoses only. The 2013/14 and 2014/15 figures are comprised of a) new and / or worsening hand arm vibration syndrome diagnoses and b) new and / or worsening diagnoses of HSE Category 2, 3 or 4 hearing impairment. HSE Categories do not allow for differentiation between age-related versus noise-induced hearing loss and it is therefore not currently possible to categorically assign hearing impairment identified to work related versus non-work related. Future work to refine classification of hearing impairment will allow for better refinement of diagnoses caused by working practises.

Table 4.8: Occupational health and wellbeing strategic dashboard by route

	Anglia	LNE	LNW	Scotland	South East (Kent and Sussex)	Wales	Wessex	Western	Other
Safety critical workers assessed as 'fit for role'	-	-	-	-	-	-	-	-	-
Compliance with health surveillance programmes (%)	64.9	56.4	59.5	61.2	55.1	51.8	100	75.5	92.4
Diagnoses of new and / or worsening occupational health conditions	6	50	44	16	9	6	17	12	12
Proportion of employees not excessively troubled by workplace pressures (%)	66.3	68.0	69.6	76.2	76.7	68.2	75.7	80.4	77.6
Proportion of employees meeting physical activity guidelines (%)	51.7	59.5	56.4	60.4	59.0	61.7	56.8	66.4	55.0
Proportion of employees reporting high levels of positive psychological wellbeing (%)	60.0	61.0	66.0	64.0	67.0	66.0	66.0	67.0	65.3
Proportion of employees identified as having low risk of cardiovascular disease (%)	87.0	91.0	88.0	86.0	73.0	88.0	89.0	87.0	91.7
Average days lost to employee absence	8.71	9.75	10.92	10.53	7.41	6.89	7.15	7.54	4.42

Note: The missing disaggregated data will be available next year as the process to measure those data sets is still under development.

Table 4.9: Definitions of the metrics used by the OH dashboard

Metric	Definition
Fitness for role	'Fitness to work' is assessed through competency specific medical assessments and health surveillance programmes to identify health conditions that may indicate an individual is unable to discharge their duties safely, sufficiently or that the specific task may exacerbate a health condition if continued. 'Fitness to work' includes those deemed 'fit to work with restrictions' but not employees deemed 'temporarily unfit' or 'unfit'. Data is sourced from our external occupational health service provider.
Compliance with health surveillance programmes	Health surveillance refers to a programme of health assessments (either questionnaire or face-to-face assessment) that are designed to identify the potential signs of an occupational-related health condition at an early stage. Compliance refers to the proportion of individuals who take part in the annual surveillance programme compared to the number identified as required to take part. Data for this is sourced from a combination of our external occupational health service provider and from our internal Human Resources Shared Services function.
New and / or worsening occupational health conditions	The number of work-related occupational health conditions (excluding work-related stress or acute musculoskeletal conditions) that are attributed to exposure to a workplace hazard. Data for this is sourced from our external occupational health service provider.
Employees breaching identified safety thresholds for occupational health hazards	The number of individuals exceeding an exposure limit for an identified occupational health hazard.
Employees not excessively troubled by workplace pressures	Workplace pressures are based on the Health and Safety Executive Management Standards approach to workplace stress but modified to align with Robertson Cooper Ltd.'s 'Six Essentials' approach. Employees are defined as not being troubled excessively if they score, on average, less than 3.0 out of a scale of one (not troubled at all) to six (extremely troubled) over the range of Six Essentials categories. Data is sourced using the Online Wellbeing Assessment developed with Robertson Cooper Ltd. 2013/14 figures are based on around 2,600 respondents from IP and LNE, 2014/15 figures are based on circa 4,200 respondents across Network Rail.
Employees meeting physical activity guidelines	The proportion of employees who report completing at least 150 minutes of moderate physical activity or 75 minutes of vigorous physical activity per week over the previous four weeks. Data is sourced using the Online Wellbeing Assessment developed with Robertson Cooper Ltd and compared to data from the Health Survey for England. The comparable baseline is the 2014/15 data from Health Survey for England, in which 63 per cent of individuals reporting meeting the recommended physical activity levels.
Proportion of employees reporting high levels of positive psychological wellbeing	High psychological wellbeing refers to those with a high sense of purpose and regular positive emotions at work, as defined by Robertson Cooper Ltd. Data is sourced using the Online Wellbeing Assessment. The comparable baseline is the 2014/15 data from Robertson Cooper Ltd, in which 59 per cent of respondents had a high level of psychological wellbeing.
Proportion of employees identified as having low risk of cardiovascular disease	Individuals who are assessed as having a cardiovascular risk of <ten per cent within the next ten years (i.e. <1/10 chance of experiencing a cardiovascular event in the next years). Data is sourced from the use of mobile health kiosks using the Q-RISK2 algorithm. The comparable baseline is the 2014/15 data, in which 91 per cent of the general working population had a low cardiovascular risk.
Average days lost to employee absence	The average number of days absence per employee. Data is sourced from Human Resources Shared Services. The comparable baseline is the average number of days absent per employee per year within public sector organisations 2013/14 CIPD absence report (7.9 days per employee per year).

Psychological and musculoskeletal occupational health referrals

Referrals to Occupational Health (OH) occur when a line manager makes a formal referral to our third-party OH provider, currently delivered by Bupa. Referral may lead to a telephone or face-to-face assessment by an occupational health advisor or physician who would determine the classification of the condition. Table 4.10 below shows referrals to OH, including categorisation by classification.

The strategic commitments to health and wellbeing highlight how Network Rail has worked to increase managers' understanding and appreciation of OH. The benefits of referral to our OH services have been emphasised, particularly the availability of advice and guidance related to health issues impacting on attendance or work. Key activities have included regular communications on our intranet relating to the benefits of early referrals, as well as the development and distribution of presentations and educational materials. In response to this work, there was a 60 per cent and 41 per cent increase in the number of OH sessions for musculoskeletal and psychological conditions respectively between 2011/12 and 2014/15.

Table 4.10: Referrals to OH

	2011/12	2012/13	2013/14	2014/15
Total management referrals to OH	-	4,045	4,938	5,503
Psychological referrals to OH	744	897 (22.2%)	874 (17.8%)	1,050 (19.1%)
Musculoskeletal referrals to OH	958	1,164 (28.8%)	1,810 (36.7%)	1,531 (27.8%)
Other referrals to OH	-	1,984 (49.1%)	2,254 (45.7%)	2,922 (53.1%)

Table 4.11 shows that this year a greater proportion of referrals for psychological health concerns were related to anxiety and depression (up 8.8 and 2.1 percentage points respectively) and fewer were related to stress (falling 4.2 percentage points) as compared to 2013/14. There was an increase in the proportion of musculoskeletal health concerns related to the back by 3.7 percentage points, but decreases in the proportion related to upper limb and lower limb (down 2.0 and 4.6 percentage points respectively). The increase in referrals related to depression and anxiety may be a reflection of a greater willingness to declare these conditions following the cultural initiatives listed in our strategic commitments to health and wellbeing.

Table 4.11: Psychological and musculoskeletal referrals

	2013/14	2014/15
Psychological Referrals	874 (100%)	1,050 (100%)
Stress	343 (39.2%)	377 (35.0%)
Anxiety	150 (17.2%)	280 (26.0%)
Depression	231 (26.4%)	307 (28.5%)
Other	150 (17.2%)	86 (10.5%)
Musculoskeletal Referrals	1,810 (100%)	1,531 (100%)
Back (including lumbago, sciatica and scoliosis of spine)	590 (33.3%)	566 (37.0%)
Upper Limb (including neck, shoulders and arms)	388 (21.9%)	305 (19.9%)
Lower Limb (including ankles, knees and hips)	583 (32.9%)	434 (28.3%)
Other	210 (11.9%)	226 (14.8%)

Data from our OH service provider shows that psychological referrals which appear to be caused or exacerbated by the workplace (deemed 'occupational' and 'occupational-element') accounted for less than 17 per cent of all psychological referrals in 2014/15. This figure shows an increase of three percentage points compared with 2013/14, but continues to be below the 2011/12 level.

Table 4.12: Relationship between the workplace and Occupational Health referral

	2011/12	2012/13	2013/14	2014/15
Psychological Referrals				
Psych. Referrals - Occupational in Nature	74 (9.9%)	82 (9.1%)	75 (8.5%)	91 (8.7%)
Psych. Referrals - Occupational Element	76 (10.2%)	54 (6.0%)	41 (4.7%)	79 (7.5%)
Psych. Referrals - Non-Occupational in Nature	588 (79.9%)	761 (84.9%)	754 (86.3%)	880 (83.8%)
Musculoskeletal Referrals				
MSK Referrals - Occupational in Nature	56 (4.0%)	105 (9.0%)	105 (6.2%)	144 (8.2%)
MSK Referrals - Occupational Element	39 (5.0%)	32 (2.8%)	151 (8.6%)	129 (9.6%)
MSK Referrals - Non-Occupational in Nature	863 (91.0%)	1,027 (88.2%)	1,487 (85.2%)	1,258 (82.0%)
Rate of Work-Related Psychological Conditions per 100,000				
Network Rail	439	398	339	497
UK (HSE Statistics)	1,330	1,420	1,560	-
Rate of Work-Related Musculoskeletal Conditions per 100,000				
Network Rail	278	401	749	802
UK (HSE Statistics)	1,690	1,460	1,690	-

Notes: Disaggregated figures for 2013/14 and earlier may not match totals given in other tables due to a number of management referrals being classified by occupational health service providers as 'unknown'. This is largely due to a further review of the case being required or a failure to record the classification of the referral by the attending clinician.

Network Rail determines whether a condition is work-related through assessment with a healthcare professional, whereas HSE base theirs on the results of the Labour Force Survey. Despite these differences in methodology, the approach gives some indication of comparison with the wider general public

The proportion of musculoskeletal referrals that were deemed to have been caused or exacerbated by the individual's occupation or work environment has increased by 8.8 percentage points between 2011/12 and 2014/15. Of those in 2014/15, referrals related to the hand or wrist (22.7 per cent), trauma (21.4 per cent) and synovial conditions (21.2 per cent) were most likely to be deemed related to the individual's occupation. In response to this increase, as well as in recognition of the financial burden of absence related to musculoskeletal conditions, a trial of proactive physiotherapy services took place in Anglia Route and reduced the average time individuals were absent from full duties by 48 per cent. A preferred supplier of physiotherapy has now been sourced with routes and functions now beginning to invest in these services.

The rate of work-related psychological conditions per 100,000 in Network Rail (occupational or occupational element) is significantly lower than within the general UK working population over the last four years (although it is accepted that methodological issues prevent an exact comparison). Whilst the rate per 100,000 employees decreased year-on-year between 2011/12 and 2013/14, there was a rise in 2014/15. A lack of availability of Health and Safety Executive (HSE) statistics for 2014/15 prevents a comparison with the national average for the latest year.

Similarly, the rate of work-related musculoskeletal conditions per 100,000 employees is lower within Network Rail than the general working population. However, whilst the rate has remained relatively stable within the general working population since 2011/12, it increased in Network Rail within the same period.

In September 2014, Network Rail's Employee Assistance Programme, which provides free and confidential advice on a range of issues, was launched with a new service provider. This continued to promote the benefits of early advice and guidance to employees and line managers. In the first six months of the service, 671 different employees used the service, equating to a 4.1 per cent annualised usage rate, with the majority (54 per cent) of services being related to counselling. Network Rail believes that a higher usage rate will be beneficial to our employees and aims to increase the usage rate for 2015/16.

A formal retender of our full occupational health services has been underway since December 2014 and, as part of the planned future services, a more efficient and integrated delivery model is planned to improve awareness and use of the services by managers and employees.

Employee sickness

An average of 1.25 per cent of all employees were absent through long-term sickness during 2014/15. LNW had the highest number of sick days per employee, with 'other' employees taking the least sick days, followed by Wales and Wessex. Employees in LNW and Scotland suffered rates of long term sickness greater than two per cent, whereas other employees had the lowest rates followed by those in the Wessex and South East routes. These figures will be monitored for trends during the course of CP5.

Table 4.13: Employee sickness and absence trends by route

	Sick days per employee per year	Sick days per employee per period (MAA)	% Male employees long-term sick (MAA)	% Female employees long-term sick (MAA)	% All employees long-term sick (MAA)
Anglia	8.71	0.67	1.58%	1.50%	1.58%
LNE / East Midlands	9.75	0.75	1.97%	1.91%	1.96%
LNW	10.92	0.84	2.35%	2.04%	2.33%
Scotland	10.53	0.81	2.24%	2.13%	2.23%
South East (Kent and Sussex)	7.41	0.57	1.15%	1.44%	1.18%
Wales	6.89	0.53	1.37%	0.48%	1.30%
Wessex	7.15	0.55	1.18%	0.57%	1.12%
Western	7.54	0.58	1.37%	1.32%	1.37%
Other	4.42	0.34	0.74%	0.93%	0.79%
Network wide	7.93	0.61	1.52%	1.57%	1.25%

Notes: Sick days per employee per year is calculated by multiplying the MAA by 13. These two measures include short and long-term sickness.

'Other' refers to any employee not belonging to a route (e.g. supporting functions) as well as Infrastructure Projects employees**.**

Exposure to asbestos and lead

Table 4.14 shows that no employees are licensed to work with asbestos or under medical surveillance for Notifiable Non-Licensed Work because Network Rail does not undertake work which is classified as licensable under the 2012 Control of Asbestos at Work Regulations. Despite this, during 2014/15 there were a total of eight workers who reported accidental or incidental exposure to asbestos and attended a follow-up medical assessment with our OH service provider. This figure is significantly lower than the figure in the previous year when 21 cases were reported.

As with 2013/14, and reflecting the fact that our employees do not routinely work with lead, there were no individuals subject to biological monitoring for lead levels.

Table 4.14: Exposure to asbestos and lead

	2013/14	2014/15
Number of workers who have reported accidental / incidental exposure to asbestos	21	8
Total number of workers subject to biological monitoring for lead exposures under Control of Lead at Work Regulations (CLAW)	0	0
Number of workers whose blood levels have exceeded the Action Level under CLAW	0	0
Number of workers whose blood levels have exceeded the Suspension Level under CLAW	0	0

Respirable crystalline silica

Work has continued during 2014/15 to refine the criteria through which employees are monitored for respirable crystalline silica (RCS). This has included monitoring through an updated Control of Substances Hazardous to Health (COSHH) risk assessment and updates to our COSHH risk assessment system, Sypol. A product for this type of health surveillance was set up with our occupational health provider in order to be able to report on compliance for this specific type of health surveillance. In addition, a guidance document for employees attending health surveillance appointments was developed to ensure employees are informed of the importance of the appointment and what to expect when attending it. A plan is now being developed to embed this new health surveillance within the organisation over the coming year, including the development of a health hazard matrix and associated health surveillance programme by September 2015 before full embedding of new processes by April 2016.

During 2013/14, Network Rail worked with cross-industry representatives to establish the Ballast Dust Working Group (BDWG) with the objective of producing guidance to help provide a more consistent approach to protecting employees from being exposed to RCS in ballast dust. The BDWG has now made progress in raising awareness of the potential health risk posed by ballast dust and the group is now in the process of reviewing its membership to ensure it is able to deliver strategic improvements for our employees and industry partners. The BDWG will include representatives from the Track Safety Alliance and Rail Plant Association as well as various Network Rail functions, and they will act as the link to the Principal Contractor and On-Track Plant communities.

Noise and audiometry

Table 4.16 shows that a total of 6,235 noise and hearing loss assessments were completed relating to pre-placement assessments, competency specific medical assessments and health surveillance assessments during 2014/15.

Outcome data from the audiometry assessments indicate that the vast majority of individuals assessed had acceptable hearing capability and that this level has remained relatively stable over the past three years. Despite this, the proportions of individuals deemed to have mild hearing impairment or rapid hearing loss increased slightly in 2014/15 compared to previous years.

There were a total of 798 individuals identified as having some level of hearing impairment this year, though overall there were significantly fewer new diagnoses of hearing loss compared to last year (from 7.9 per cent to 1.2 per cent of those assessed). The large number of individuals identified in 2013/14 may be due to a greater number of individuals having an audiometry assessment for the first time. The number of individuals newly diagnosed with rapid hearing loss increased from 0.1 per cent to 0.2 per cent of those assessed. Network Rail is working to address noise as a potential workplace hazard in the future and the consideration for noise exposure has been embedded within our engineering plans for reducing small plant-based hazards.

Table 4.15 outlines the proportion of potentially ‘at risk’ employees who were assessed as part of the noise-induced hearing loss health surveillance programme across the organisation. The average compliance rate was 66.17%, indicating that future improvements can be made in the compliance culture relating to this particular health hazard.

Table 4.15: Compliance rate by route

	Anglia	LNE	LNW	Scotland	South East (Kent and Sussex)	Wales	Wessex	Western	Other
Compliance rate for noise health surveillance programme	54.87%	62.68%	70.11%	58.22%	52.11%	51.38%	100%	75.45%	50.75%

Audiometry data for Wessex is collated from a different source using different criteria to the other routes. We recognise that this approach is not ideal and work will begin to improve the means by which we gather the data. Efforts will be made to align reporting in Wessex during 2015/16. Wessex has been included in the 2014/15 and 2013/14 results but cannot be included in the data for 2012/13 in Table 4.16.

Table 4.16: Audiometry assessments and outcomes

	2012/13	2013/14	2014/15
Number of Individuals Assessed for Hearing Loss	3,236	5,890	6,235
Audiometry Outcomes			
HSE Category 1 (acceptable hearing ability)	2,875 (88.8%)	5,268 (90.6%)	5,437 (87.2%)
HSE Category 2 (mild hearing impairment)	255 (7.9%)	452 (7.9%)	602 (9.7%)
HSE Category 3 (poor hearing)	104 (3.2%)	164 (2.9%)	184 (3.0%)
HSE Category 4 (rapid hearing loss)	2 (0.1%)	6 (0.1%)	12 (0.2%)
Number of Individuals newly diagnosed with hearing loss	-	465 (7.9%)	77 (1.2%)
HSE Category 2	-	337 (5.7%)	46 (0.8%)
HSE Category 3	-	122 (2.1%)	20 (0.3%)
HSE Category 4	-	6 (0.1%)	11 (0.2%)

Notes: The 2013/14 HSE Category 1 figure has been updated based on data provided to Network Rail by its third-party occupational health service provider.

Table 4.17 below gives the route breakdown of audiometry results. Excluding cases not assigned to a route, the highest number of employees with hearing loss was identified in LNE / East Midlands, with the majority being Category 2 Stable cases. LNW followed, with two fewer cases identified overall, but nine Category 4 examples identified, more than any other route. In contrast, Wales and Anglia had the fewest cases identified. Anglia also identified the lowest number of new cases of hearing loss (three), compared to 22 in LNW, more than any other route.

Table 4.17: Audiometry by route

		Anglia	LNE/East Midlands	LNW	Scotland	South East (Kent and Sussex)	Wales	Wessex*	Western	Other
HSE Category 2	New	3	7	10	8	3	1	1	5	8
	Worse	0	2	3	0	0	0	1	0	1
	Stable	16	121	130	42	26	14	11	33	140
	No historic data to compare	-	-	-	-	-	-	16	-	-
HSE Category 3	New	0	4	4	2	1	3	1	2	3
	Worse	1	3	1	0	1	0	3	2	0
	Stable	7	49	27	9	11	3	3	6	36
	No historic data to compare	-	-	-	-	-	-	2	-	-
HSE Category 4	New	0	0	8	0	1	1	1	0	0
	Worse	0	0	1	0	0	0	0	0	0
	Stable	0	0	0	0	0	0	0	0	0
Total		**27**	**186**	**184**	**61**	**43**	**22**	**39**	**48**	**188**

Notes: 'Other' refers to any employee not belonging to a route (e.g. supporting functions)

* Audiometry data for Wessex is collated from a different source using different criteria to the other routes. A lack of historic data meant that some cases could not be attributed to 'new.' 'worse' or 'stable'.

Hand arm vibration

Hand Arm Vibration Syndrome (HAVS) can occur through use of hand-held power tools. At the start of 2014/15, 6,277 individuals were identified as potentially at risk of HAVS based on their roles, and therefore requiring a mandatory Tier 2 or Tier 3 assessment. A further 1,115 individuals entered into roles potentially exposed to vibrations and therefore required a Tier 1 assessment meaning that a total of 7,392 individuals were identified as being required to take part.

Of these, 821 were subsequently identified as no longer being required to undergo assessment and 4,233 individuals completed the required assessment. Based on this, the annual compliance rate for the HAVS health surveillance programme was 64 per cent, which was a significant increase compared to previous years. Network Rail believes the compliance rate has increased as a result of improvements in its organisational culture through a series of educational initiatives, which have included the dissemination of short videos that have been developed, embedding HAVS presentations within safety briefings and awareness campaigns within our front-line magazine, 'Network'.

Table 4.18: HAVs diagnoses

	2013/14	2014/15
New	52	61
Worsened	5	15
Stable	44	58
Pre-Network Rail	-	11
Health Surveillance Compliance Rate	36%	64%
Diagnoses by Stage		
Stage 0	3,537 (97.3%)	4,088 (96.6%)
Stage 1	52 (1.4%)	82 (1.9%)
Stage 2 early	27 (0.7%)	31 (0.7%)
Stage 2 late	13 (0.4%)	12 (0.3%)
Stage 3	8 (0.2%)	20 (0.5%)
Stage 4	0 (0.0%)	0 (0.0%)
Diagnoses by Stage and New, Worsening or Stable		
Stage 1 New	25	36
Stage 1 Stable	27	40
Stage 2 Early New	14	13
Stage 2 Early Worsening	3	6
Stage 2 Early Stable	10	12
Stage 2 Late New	7	4
Stage 2 Late Worsening	2	4
Stage 2 Late Stable	4	4
Stage 3 New	6	9
Stage 3 Worsening	0	5
Stage 3 Stable	2	2
Stage 4 New	0	0
Stage 4 Worsening	0	0
Stage 4 Stable	0	0

Over the past 12 months, reporting processes relating to HAVS have been refined, which has allowed us to improve our classification of diagnosed cases. Table 4.18 shows that we identified 61 new cases, 15 worsened cases, 11 cases identified as having been previously diagnosed in a prior employer ('pre-Network Rail') and 58 cases where the condition has remained stable relative to previous investigations during 2014/15. Overall, the proportion of individuals confirmed as not having any form of HAVS (i.e. Stage 0) has reduced slightly from 97.3 per cent in 2013/14 to 96.6 per cent in 2014/15. It was expected that the level of confirmed diagnoses would increase as compliance with our health surveillance programme improved.

The majority of newly diagnosed cases have been related to early stages of the condition (i.e. Stage 1 and Stage 2 early). However, there have been 22 cases of new or worsening HAVS confirmed at later stages of the condition (Stage 2 late or Stage 3). 15 individuals have worsened in their condition since a previous assessment, so efforts will be focused on embedding processes to prevent further worsening of any employee with HAVS. This includes a plan to update our small plant purchasing and hiring policy so that at least 80 per cent of small plant has a vibration emission level of less than 2.5ms^{-2} within five years. In addition, our small plant data has been updated to provide better information on vibration and noise exposure and we have proactively fitted anti-vibration handles onto a range of small plant that were identified as having high exposure emission levels.

Of the 4,233 individuals assessed for HAVS during 2014/15, 4,194 (99.1 per cent) were assessed as being fit to work with vibrating tools (either permanently or with certain restrictions), whilst 39 (0.9 per cent) were assessed as not being fit to work with vibrating tools (either temporarily or permanently).

Table 4.19: Fitness to work of employees working with vibrating tools

	Fit to work	Fit with restrictions	Unfit permanently	Unfit temporarily	Totals
Stage 0	4,088 (96.6%)	-	-	-	4,088 (96.6%)
Stage 1	68 (1.6%)	12 (0.3%)	1 (<0.0%)	1 (<0.0%)	82 (1.9%)
Stage 2 Early	20 (0.5%)	6 (0.1%)	-	5 (0.1%)	31 (0.7%)
Stage 2 Late	-	-	9 (0.2%)	3 (0.1%)	12 (0.3%)
Stage 3	-	-	20 (0.5%)	-	20 (0.5%)
Stage 4	-	-	-	-	0 (0.0%)
Total	**4,176 (98.7%)**	**18 (0.4%)**	**30 (0.7%)**	**9 (0.2%)**	**4,233 (100%)**

LNE / East Midlands have the highest number of cases of HAVS of all routes, with 53 more cases than LNW. In contrast, Anglia has two cases, both of which were identified during 2014/15. LNE / East Midlands also has the highest rate of pre-Network Rail cases of HAVS, with five routes having no pre-Network Rail cases.

Table 4.20: HAVS by route

	New Cases	Worsened Cases	Stable Cases	Pre-Network Rail Cases	Total
Anglia	2	-	-	-	
LNE / East Midlands	26	8	38	9	81
LNW	12	5	10	1	28
Scotland	6	-	6	1	13
South East (Kent and Sussex)	3	-	-	-	3
Wales	1	-	4	-	5
Wessex	8	2	-	-	10
Western	3	-	-	-	3

Network Rail's Business Critical Rules programme has produced updated and enhanced guidance processes and documents outlining working practises that will reduce the risk of developing HAVS. This includes the development of Health Management Action Plans, which outline specific activities for each individual to prevent a worsening of the condition, and a range of educational materials to improve awareness and understanding of the condition and the hazard.

Employers' liability

Network Rail purchases employers' liability insurance as required by statute. The insurance provides cover for death, bodily injury, or disease sustained by employees during the course of their employment in circumstances where Network Rail is legally liable.

Table 4.21 provides the status of claims at 31 March 2015. The number of open claims reported is a snapshot of those which remain open for consideration at the end of 2014/15. This includes claims opened prior to 2014/15 and some which have been open for a number of years whether or not any compensation has or will be paid. Table 4.21 also includes the number of claims opened during 2014/15 and closed during the same period.

Table 4.21: Status of employers' liability claims

	2010/11	2011/12	2012/13	2013/14	2014/15
Open	417	471	461	374	355
Opened (during each year)	328	-	215	226	180
Closed (during each year)	154	244	232	304	197

Network Rail took over the liability for open and potential claims predating the company's existence. An open claim does not guarantee compensation has or will be paid. A claim will be rejected in circumstances where Network Rail has no liability, but it may be open prior to that and remain open for a subsequent period. Similarly claims closed within 2014/15 are those which have reached a stage where no further work is required and so can be closed. 'Closed' is not an indication of whether a claim has been accepted or rejected.

Health and Safety Regulation

15 health and safety enforcement notices were issued during the year. One was subsequently withdrawn making a total of 14 notices for the year; of which one was a prohibition notice and 13 were improvement notices. The prohibition notice concerned manual lifting of C143 concrete troughing. The notice requires Network Rail employees and contractors to stop lifting and carrying of C143 troughing units throughout the network. Network Rail is required to carry out a suitable and sufficient risk assessment for the movement and installation of the units, including designing or engineering out the risk and finding other non-manual handling means to lift, carry and replace the units. This may include some redesign to assist with lifting and final positioning.

There were no prosecutions of Network Rail for safety offences during the year.

Section 5 – Sustainable Development Strategy

Introduction

In our CP5 Delivery Plan, Network Rail committed to developing a suite of Sustainable Development Key Performance Indicators (KPIs) to report against in CP5. These were to include nine specifically referenced KPIs. In 2014/15, we have defined KPIs, consulted upon them internally and with key external stakeholders, and begun implementation. This section reports on our performance against the KPIs that have now been implemented, including the measures explicitly set out in the Delivery Plan.

Performance against scope 1 & 2 non-traction carbon dioxide emissions forecast

Scope 1 emissions are carbon emissions from known sources under Network Rail's operational control and cover use of natural gas, road vehicle fuel, gas oil, Calor Gas and sulphur hexafluoride gas. Scope 2 emissions are carbon emissions generated from electricity use under Network Rail's operational control.

Network Rail's target is to reduce CO_2 emissions during CP5 by 11 per cent against forecast CP4 exit figures. Table 5.1 sets out the network-wide targets and actual performance for CP4 exit and 2014/15. The network-wide target was to decrease CO_2 emissions by 4.4 per cent over 2014/15 but network-wide emissions increased by 9.2 per cent this year. Approximately half of this increase is due to a significant increase in the carbon intensity of UK grid electricity in the past year. In England and Wales, shown in Table 5.2, the remaining increase is in part due to Bristol Temple Meads and Reading stations being brought into the Network Rail managed station portfolio and additional electricity supplies as a result of network and performance improvement programmes. In Scotland, which is shown in Table 5.3, a significant number of additional supplies have been brought into Scotland's portfolio with the progress of large-scale projects, creating additional emissions that were not part of our CP4 exit or CP5 baseline. Whilst energy and carbon reduction initiatives have begun and are programmed to deliver in future years of CP5, the expansion of Network Rail's managed station portfolio, our programme of rail electrification and further enhancements to the network planned through CP5, make achievement of our carbon targets particularly challenging.

Following an external review of our methodology for calculating carbon emissions and footprint, Network Rail is reviewing its data for the last two years. In our CP5 Delivery Plan it was necessary to forecast our CP4 exit carbon footprint. This turned out to be a significant underestimation which caused the difference between Delivery Plan and Actual CP4 exit figures. As we continue to improve our understanding of our carbon footprint, this exit figure may change further due to data revisions and we anticipate publishing re-baselined figures during 2015/16. We will continue to report percentage change against CP4 exit to provide a transparent view of our performance in delivering carbon efficiency.

Network Rail is installing automatic meter reading technology on signal boxes, rail crossings, stations and depots to improve data and processes, minimise consumption and improve billing estimates. This has resolved many cases of historical billing inaccuracies, improved data and reduced the resources necessary to manage utility queries.

Table 5.1: CO_2 emissions – network-wide

CO_2 emissions (tonnes)	CP4 exit	2014/15	% change
Network Rail Scope 1 & 2 CO_2 emissions – CP5 Delivery Plan target	258,247	246,840	4.4% reduction
Network Rail Scope 1 & 2 CO_2 emissions – Actual	298,450	326,044	9.2% increase

Table 5.2: CO_2 emissions – England & Wales

CO_2 emissions (tonnes)	CP4 exit	2014/15	% change
Network Rail Scope 1 & 2 CO_2 emissions – CP5 Delivery Plan target	227,534	217,621	4.4% reduction
Network Rail Scope 1 & 2 CO_2 emissions – Actual	266,294	292,265	9.8% increase

Table 5.3: CO_2 emissions – Scotland

CO_2 emissions (tonnes)	CP4 exit	2014/15	% change
Network Rail Scope 1 & 2 CO_2 emissions – CP5 Delivery Plan target	30,714	29,220	-4.9
Network Rail Scope 1 & 2 CO_2 emissions – Actual	32,156	33,780	+5.0

Notes: Energy use is translated into carbon emissions through the use of standardised emissions factors. Emissions factors used to compile this data are the most recent (2014) Government conversion factors for company reporting http://www.ukconversionfactorscarbonsmart.co.uk/ .

Other carbon KPIs

Network Rail is committed to reducing its carbon footprint and to keeping up with global best practice in carbon management. Key to this commitment was the change, in October 2014, of our traction electricity contract, meaning that 100 per cent of traction electricity used is from nuclear power, which is a low-carbon source. This is in line with the criteria laid down by the World Resources Institute (WRI) for 'market-based' calculations in its new guidance on reporting emissions and has contributed to the annual average carbon emissions factor for traction electricity that we supply to TOCs (market-based) falling to 0.21 tonnes CO_2/kWh in 2014/15 (from 0.45 tonnes CO_2/kWh in 2013/14).

Table 5.4: Carbon Reduction Commitment footprint (t $CO2_e$ is metric tonnes of CO2 emissions)

Metric	Definition	Units	2013/14	2014/15
Carbon Footprint – Influence	Network Rail's selected scope 3 carbon emissions*	t CO_2e	22,110	25,095
Carbon reduction commitment (CRC) footprint	The total carbon emissions from Network Rail-managed properties that come under the CRC Regulation	t CO_2e	176,120	Available by end July 2015
Infrastructure Contractor Emissions	The total amount of carbon dioxide produced in the course of undertaking infrastructure projects, normalised to amount of spend	t CO_2e / £100,000	2.53	2.13
Electricity from renewable self-generation	Total amount of energy generated from renewable technologies	kWh	1,297,125	**744,565
Carbon intensity of electricity, traction and non-traction	The annual average carbon emissions factor for our non-traction electricity (market and location based)	t CO_2e / kWh	0.45	0.49
	The annual average carbon emissions factor for traction electricity we supply to train operating companies (market-based)	t CO_2e / kWh	0.45	0.21
	The annual average carbon emissions factor for traction electricity we supply to train operating companies (location-based)	t CO_2e / kWh	0.45	0.49

Notes: *Scope 3 carbon emissions are an optional reporting category that allows for the treatment of all other indirect emissions. They are a consequence of our activities, but not from sources under Network Rail's operational control. The scope emissions under 'carbon reduction – influence' are:

- transmission and distribution losses in the grid for the energy we use
- business travel by rail, by air and by London taxi
- aviation fuel used for our helicopter services

** Our data for renewable self-generation in 2014/15 does not currently include the data from our largest renewable project, Blackfriars solar bridge in London (from September 2014 onwards). This data is currently being obtained and will be added to this table and restated in the 2016 Annual Return.

Embodied carbon

Embodied carbon refers to carbon dioxide emitted during the manufacture, transport and construction of building materials, together with end of life emissions. The RSSB (Rail Safety and Standards Board) leads an industry-wide approach to calculate and report embodied carbon, of which we are a part. We piloted the use of the RSSB's embodied carbon tool on several projects, including alternative embankment stabilisation and footbridge construction methods. 23 projects were identified for phase two testing of the RSSB's embodied carbon tool. These have a total value £1.5bn, out of Network Rail's total number of projects of value £5bn. The percentage is therefore around 30%. We calculate the percentage based on spend because embodied carbon assessments are more efficient if applied to larger projects which require large quantities of materials. Phase two testing is now underway. We are drafting an Embodied Carbon standard to embed the use of the tool across our business.

Natural Resources Performance

Waste

Due to increased volumes of renewals and enhancements to the network, the volume of waste produced has increased as shown in Table 5.5. Network Rail's waste management performance has improved in 2014/15 and rates of re-use and recycling increased this year, with the percentage of total waste sent to landfill decreasing to 11.6 per cent (from 13.4 per cent in 2013/14). However our data around infrastructure waste production is not comprehensive and we are working to increase the number of contractors that report on this data.

Network Rail is developing a waste strategy that integrates the key activities of design, engineering, environmental management, procurement and supply chain management to integrate the principles of designing out waste, materials, resource efficiency and waste hierarchy. This may achieve both environmental benefits and cost savings.

We are improving our waste data reporting and using a reporting tool linked to our Credit360 system. Credit 360 is a software tool that Network Rail uses to collect, compile and analyse sustainable development data from across our business.

Table 5.5: Waste Management

Metric	Definition	Units	2013/14	2014/15
Waste Management	The amount of waste Network Rail and its infrastructure contractors produce and manage	tonnes	3,231,691	4,145,090
	*Proportion of waste reused**	%	*86.6*	*11.0*
	Proportion of waste recycled	%		*76.8*
	Proportion of waste recovered	%		*0.6*
	Total proportion of waste diverted from landfill	%	86.6	88.4
	Proportion of waste sent to landfill	%	*13.4*	*11.6*
Infrastructure Waste Production	The total amount of waste produced in the course of undertaking infrastructure projects, normalised to amount of spend	tonnes/ £100,000	49.5	75.6

Notes: *Methodologies used to report waste reused differ across Network Rail. Initiatives are in place to standardise this reporting. These numbers include National Supply Chain data from Period 1 and Infrastructure Projects data from Period 11, when the breakdown according to the waste hierarchy started to be reported. Network Operations and Property do not report waste reused data.

Timber

Network Rail has historically encountered challenges in collecting data, particularly from our supply chain, associated with the purchase of sustainably sourced timber and the chain of custody related to it. We are implementing a Responsibly Sourced Timber standard to further improve assurance. We report our performance around responsible timber sourcing in calendar years, to align with Worldwide Fund for Nature (WWF) Global Forest & Trade Network (GFTN) reporting requirements. The figures stated in Table 5.6, therefore, relate to calendar rather than financial years. The most comprehensive volumetric reporting currently relates to timber sleeper and bearer suppliers, and timber merchants with whom we have framework agreements.

The verification of supplier certification claims has yet to be completed, so the stated 2014 certification percentage, in Table 5.6, is only provisional. The 2014 figures exclude data related to timber fencing materials, furniture and stationery products as these suppliers have not yet started to report reliably. There is an element of construction timber reporting from infrastructure projects included in the 2014 figures. However, this should be treated with caution as it only represents a small proportion (approximately two per cent by weight) of the timber used on our infrastructure projects. Improving reporting rates is a priority for the coming year.

Network Rail is developing a standard to formalise business requirements for procuring responsibly sourced timber. We will continue to work with our new and existing supply chain partners to improve timber consignment reporting and the proportion of timber that can demonstrate certification and unbroken chain of custody. We are working to integrate sustainability into our procurement and supply chain management activities more effectively, and updating and expanding the scope of our environmental contracts' requirements.

Table 5.6: Responsible Timber Sourcing

Metric	Definition	Unit	2013/14	2014/15
Responsible Timber Sourcing	The volume of timber procured by Network Rail and its infrastructure contractors	m^3	17,840	14,124
	The % by volume of timber that is sourced responsibly through checked & certified schemes, with chains of custody	%	44.2	67.6

Environmental Incidents

In 2014/15 Network Rail changed its categorisation of environmental incidents in line with the Environment Agency's Common Incident Guidance System (CIGS). The scope of incidents that are included within CIGS is greater than the scope of incidents reported in 2013/14. We are not, therefore, re-reporting 2013/14 data this year as it is not directly comparable with 2014/15 performance.

Network Rail has improved its 'Close Call' system, which enables its employees and contractors to report anything that has the potential to cause injury or damage. The vast majority of Close Calls relate to safety; 3.5 per cent relate to environmental issues. We are now investigating and closing off 66 per cent of environmental Close Calls within a month, compared to just 25 per cent in 2013/14, as shown in Table 5.7.

Table 5.7: Environmental Incidents and Environmental Close Calls

Metric	Definition	2013/14	2014/15
Environmental Incidents	Environmental incidents caused by activity of Network Rail or its infrastructure contractors	-	677
	Category 1 (major impact) environmental incidents	-	4
	Category 2 (significant) environmental incidents	-	40
	Category 3 (minor) environmental incidents	-	417
	Category 4 (negligible) environmental incidents	-	216
Environmental Close Calls	Environmental events without environmental impact	3,600	2,530
	Percentage of Close Calls closed out in within one month of logging	25	66

Sites of Special Scientific Interest (SSSIs)

Site Management Statements for all SSSIs in England have been assented by Natural England. This enables Network Rail to undertake certain routine activities without the need to inform the regulator, and enables essential maintenance of the railway to continue whilst meeting legal obligations. In CP4 we reported only on the condition of a certain number of SSSIs in England. In CP5 we are initially reporting on all SSSIs in England and Scotland. Network Rail aims to report on the SSSIs in Wales in future years.

Table 5.8 sets out the reporting requirements relating to SSSIs. The regulatory requirements for reporting the condition of SSSIs is different in England and Scotland. The number of impactable features within SSSI sites that we manage in Scotland is determined by Scottish National Heritage (SNH) and has increased this year as SNH has identified more

features. We have internally reviewed the condition of features within our SSSIs in Scotland and assess over 93 per cent as being in a favourable or recovering condition. Favourable status is determined following an objective assessment during which it is established that special habitats and features are in a healthy state and are being conserved for the future by appropriate management.

Recovering status is determined following an objective assessment during which it is established that all necessary management measures are in place to address the reasons for unfavourable condition, and that if these measures are sustained, the site will recover over time. This data is due to be assessed by SNH in summer 2015.

Table 5.8: Sites of Special Scientific Interest (SSSI)

Metric	Definition	2013/14	2014/15
Sites of Special Scientific Interest	The % of sites in England in favourable or recovering condition	79.2	78.7
	The number of impactable features within SSSI sites in Scotland that Network Rail manages	41	54
	The % of impactable features within SSSIs in Scotland that Network Rail manages in favourable or recovering condition	82.0	*93.0

Notes: *93 per cent is an internal assessment data point and is due to be assessed by SNH in summer 2015.

Diversity and Inclusion

At the end of 2014/15, 14.8 per cent of our workforce was female and 6.1 per cent were from a Black, Asian or Minority Ethnic Group. As such our workforce is not representative of the diverse communities within which we operate.

The progress Network Rail has made towards becoming a more open, diverse and inclusive organisation was recognised by Business in the Community who awarded us Silver Benchmarks for Race and Gender and a finalist position in the Inclusive Culture Excellence in Practice Awards. We were also awarded the Positive About Disability accreditation from the Department for Work and Pensions.

In October 2014, Network Rail published its first diversity and inclusion strategy, ‘Everyone’, which sets out further plans in this area. In the last year we grew our network of diversity champions, equality representatives, sponsors, local programme work stream leads and our six employee networks, which now have over 1,000 members. Over 2,000 Network Rail leaders have now been trained on inclusive leadership.

Network Rail is seeking to positively influence the career choices of the next generation. We have signed up to the Barclays Life Skills work experience programme, the Your Life campaign and Women In Science and Engineering’s Ten Step Plan to get more women into engineering. We joined Transport for London and other industry partners to launch the 100 Years of Women in Transport programme.

To make the network more accessible, Network Rail has now completed significant improvements to 150 stations since 2006, including installation of more than 1,000 lifts. Our Built Environment Accessibility Panel (BEAP) was consulted this year on the accessibility of designs for the redevelopment of many of our stations including Queens Street Glasgow, Leeds, Birmingham, London Bridge and Gatwick Airport. We also continue to employ disabled consultants to train our station staff, so that they better understand, and can reduce, the challenges faced by of disabled passengers. We contributed to Working Together, a rail industry guide to encourage better customer experience for rail passengers using wheelchairs, and are collaborating with public and industry bodies on inclusive design initiatives.

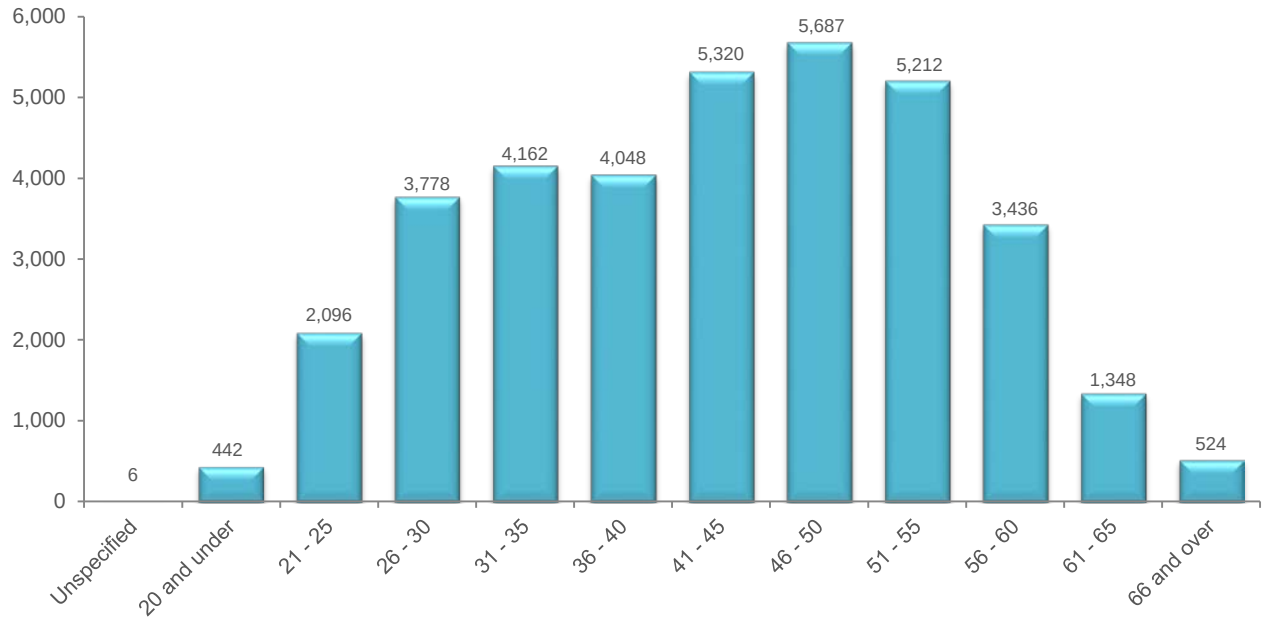
Table 5.9: Diversity & Inclusion

Metric	Definition	2013/14	2014/15
Diversity & Inclusion	Total employees working for Network Rail	34,401	36,059
	% of workforce that is female	14.0	14.8
	% of workforce that is Black, Asian and Minority Ethnic	5.9	6.1
	% of workforce completing question about disability	-	29.0
	% of workforce that is disabled (of employees who completed the question)	3.9	3.0
	% of workforce completing question about sexual orientation	-	16.0
	% of workforce that is lesbian, gay or bisexual (of employees who completed the question)	0.7	4.0

Age profile of our workforce

The age profile of our workforce generally reflects the UK population. Network Rail needs to plan ahead for the skills gaps that an ageing population will produce, especially in engineering and design. Network Rail Is involved in the education and training of young people through our involvement with a growing number of UTCs (University Technical Colleges) in the UK to enable us to develop a future generation of engineers with the skills and knowledge we need to deliver our plans. We have taken on lead employer partner status for a new UTC in Westminster that will open in September 2017. It will have a particular emphasis on transport engineering and construction.

Figure 5.1: Workforce age profile



Social impact performance – Including Charity of Choice fundraising and volunteer leave KPIs

Network Rail has reviewed its social impact; that is how its operations, activities and decisions impact our employees and suppliers, rail passengers, communities and other stakeholder groups, and has identified ten key 'focus areas' through which we are now driving positive impact.

Social impact performance is consistent or improving across all performance indicators, as shown in Table 5.10 to Table 5.13. With improved data systems and a revised social impact strategy in 2015/16 we look forward to continuing to drive improved performance and positive impact across Network Rail's key social impact focus areas.

Network Rail's partnership with Samaritans works to keep communities safe. Almost five per cent of suicides take place on the railway. We have launched a learning tool on Suicide Prevention and Support on the Railway (https://nspsglearningtool.co.uk) which is being used by our employees, our industry partners and colleagues including the British Transport Police and in the National Health Service. The tool has contributed to an annual increase of almost 50 per cent in 'lifesaving interventions' made by our employees and our industry partners; that is, direct actions that have prevented the tragedy of a suicide.

When young people get onto our track, there is danger to them and disruption to us – and there were over 1,000 such incidents in 2013/14. Our Rail Life team explains how to stay safe around our network to young people and schools. We have partnered with the Football League Trust and ten football clubs, including Leeds United and Portsmouth FC, to explain railway safety to young people through sports and educational activities.

Network Rail works with students aged 11 to 18 on careers guidance and science, technology, engineering and maths projects lasting between a few hours and eight weeks. Programmes ran this year in areas including Leicestershire, Glasgow and London.

Network Rail has revised its approach to volunteering so that a wider range of charities can benefit from the five days of volunteer time that each of our employees can contribute each year. The number of employees participating in volunteering and the hours of volunteer leave donated in 2014/15 both increased from 2013/14, as shown in Table 5.10.

This year, over 40 per cent of volunteer time was spend on projects that enabled people to be a 'caring neighbour', such as volunteering at hospices and with charities for disabled and homeless people. Our volunteers also used their technical skills to support railway heritage and connected with communities through gardening, vegetation and wildlife projects.

Table 5.10: Volunteer Leave

Metric	Definition	2013/14	2014/15
Volunteer Leave	Total number of employees participating in volunteering	752	815
	Hours volunteer leave donated by Network Rail employees	7,518	10,997
	Monetised value of leave donated by Network Rail employees (£s)	110,139	161,106

The contribution that our employees make to our Charity of Choice, which this year is CLIC Sargent, continues to grow through payroll giving, charity fundraising and in-kind giving. This year the contribution was over £1.8 million. In September, we raised the awareness of almost three million people to the charity's Childhood Cancer Awareness month by installing a large gold ribbon at King's Cross station in London. Other charities raised over £780,000 through collections at our managed stations. Network Rail became founding members of the Fundraising Standards Board's Railway Industry Charity Cash Collection Forum which shares knowledge and drives a consistent approach to managing charity collections at stations across the country.

Table 5.11: Charitable Investment

Metric	Definition	2013/14	2014/15
Charitable Investment	Sum of the monetised investment in Charity of Choice (2013/14 Action for Children, 2014/15 CLIC Sargent) through donations, fundraising, volunteering time, value of gifts in kind and leverage such as payroll giving (£s)	1,251,110	1,838,909
	Total charitable donations made by travelling public, at Network Rail managed stations (£s) *	390,153	784,237

Notes: *Figure based on reported collections for 2014/15 received by 28 May 2015. Additional data is anticipated and this reported number is subject to change and will be restated in the Annual Return 2016.

Following reclassification to the public sector, Network Rail understands how stakeholders expect us to deliver social value. We currently directly employ 591 apprentices, as shown in Table 5.12, and we estimate that there are several thousand more apprentices and trainees involved throughout our supply chain, for example on our Birmingham New Street and London Bridge station redevelopments, on Crossrail and at Railway Engineering Academies at Coleg y Cymoedd in south Wales and Newcastle College Gateshead.

Table 5.12: Apprentices

Metric	Definition	2013/14	2014/15
Network Rail Apprentices	Number of new Network Rail Apprentices	207	204
	Total number of Network Rail Apprentices	603	591

Table 5.13: Complaints and Compliments

Metric	Definition	2013/14	2014/15
Complaints and Compliments	Number of contacts about Network Rail's management of environmental issues, including nuisance such as noise	-	21,429
	The number of contacts about Network Rail's management of environmental issues that are complaints (N.B. data collected since 22/9/14)	-	2,297
	The number of contacts about Network Rail's management of environmental issues that are compliments (N.B. data collected since 22/9/14)	-	11

Section 6 – Operational performance

Overview of 2014/15 performance

Operational performance in 2014/15 was very challenging. All regulatory targets for passenger train services and many train operator performance strategy targets were missed. Material problems were experienced in managing the effects of passenger growth and major projects which resulted in levels of PPM loss greater than the plan allowed for.

Input-based performance monitoring approach

Network Rail entered 2014/15 at much lower levels of performance than anticipated in the ORR's CP5 Final Determination. As a result it was clear before the start of CP5 that a number of regulated performance outputs would not be met during the first two years of CP5. Network Rail and the ORR therefore agreed to take an input-based approach to monitoring national PPM and CaSL during the first two years of CP5. The ORR decided to monitor regulated outputs at operator level and for Scotland, but monitor delivery of input plans for England and Wales. The ORR bases this input-based approach on monitoring the delivery of the CP5 Performance Plan, which details the key activities Network Rail will deliver to return performance to the regulated target.

190 activity milestones in the CP5 Performance Plan were completed in England & Wales at the end of 2014/15. 161 of these were completed on time and 29 were completed late. Of the 171 milestones yet to be delivered in England & Wales, 149 are forecast to be delivered on schedule and 22 are forecast to be completed late. Two milestones are on hold and 51 have been de-scoped, either because of plan changes or because a scheme has been replaced by an alternative opportunity.

The ORR monitors outputs for Scotland, not the inputs in the CP5 Performance Plan. Notwithstanding this, in Scotland 17 activity milestones in the CP5 Performance Plan were completed at the end of 2014/15. Five of these were completed on time and 12 were completed late. Of the 15 milestones yet to be delivered in Scotland, 11 are forecast to be delivered on schedule and four are forecast to be completed late. Two milestones are on hold due to plan changes.

England & Wales

England & Wales PPM MAA at the end of the year was 89.6 per cent, 1.4 percentage points worse than target. CaSL MAA was 2.9 per cent, 0.5 percentage points worse than target. The biggest contributor to this shortfall was performance in the London & South East (LSE) sector where, amongst other issues, the challenges of the Thameslink Programme caused particular problems with Southern service delivery along the Brighton Main Line and elsewhere on the South East Route. PPM for LSE ended two percentage points short of target at 89.0 per cent. Delivery in the other three market sectors was more balanced with improvements for some operators, most notably on the East Coast Main Line where delivered improvements resulted in better than target performance.

Delays experienced by train operators may be attributable to Network Rail or to the operators themselves, and delay minutes are assigned to different categories within these 'delay groups'. Performance worsened in more delay groups than in previous years across the network; this was seen in both Network Rail and operator-caused delay groups. The worst performing Network Rail caused delay groups were operations, possession problems and signalling systems. Traincrew and station related delays were the largest operator causes of delay deterioration compared to target.

Further examination of delay attributable to Network Rail reveals material deterioration in the routine delivery of the operational plan and reactionary delay. Analysis into this deterioration highlights the chief causes being difficulty in managing the impact of passenger growth beyond forecast; the performance effects of major projects being greater than forecast (including the effects of reducing network capability to enable project work whilst seeking to continue to run as full a service as possible to provide for growth) and the challenges encountered in continuing to deliver an effective service whilst driving efficiency improvements. Improvements seen from reductions in asset failures were offset by these rising reactionary delays.

Performance delivery in autumn 2014 was better than recent years, with lower adhesion delays and fewer safety incidents. This was partly due to relatively benign weather conditions (with the exception of storms in late October) – however PPM outputs were poor reflecting underlying performance challenges. More generally, weather caused delay throughout 2014/15 was the lowest since 1999/2000. This can be attributed to both benign conditions in autumn and winter, and to improvements in network resilience to poor weather conditions delivered in the last few years.

England & Wales right time performance fell by 1.3 percentage points in 2014/15 to 65.9 per cent from 67.2 per cent in 2013/14. By sector, LSE right time delivery fell 1.8 percentage points to 64.7 per cent. Long Distance sector right time worsened from 51.7 per cent in 2013/14 to 49.6 per cent in 2014/15, while Regional sector right time was steady at 73.1 per cent.

Scotland

Scotland PPM MAA at the end of the year was 90.5 per cent, 1.5 percentage points worse than the regulatory target. Overall delay was worse than target as with England & Wales. However performance was comparatively worse in the latter part of the year due to worse weather conditions in Scotland, particularly the major storms encountered in Period 11.

Performance was impacted by some specific factors. Capacity challenges during the Commonwealth Games caused a 0.6 percentage point loss to PPM, primarily caused by an increase in station delays due to overcrowding. A new structured timetable was introduced in December 2014 leading to familiarisation issues being encountered by signallers and drivers.

Scotland right time delivery was relatively stable, falling 0.2 percentage points to 57.8 per cent, against a worsening PPM trend which fell 0.9 percentage points to 90.5 per cent.

Freight

Network Rail ended 2014/15 having outperformed its regulatory target by delivering 94.5 per cent FDM against the target of 92.5 per cent. This is a 1.2 percentage point improvement on the year-end position for 2013/14 and was largely driven by improvements in performance during the autumn and winter periods.

Definitions of each regulated operational performance output are provided at the end of this section.

Public Performance Measure (PPM) – national

The below Table 6.1 shows PPM for England & Wales and Scotland. England & Wales fell short of its PPM target of 91.0 per cent by 1.4 percentage points, and Scotland fell short of its PPM target of 92.0 per cent by 1.5 percentage points. The CP5 exit target for PPM is 92.5 per cent for both England & Wales and Scotland.

Table 6.1: PPM (%) – England & Wales and Scotland

	2010/11	2011/12	2012/13	2013/14	2014/15
England & Wales					
Actual	90.9	91.8	90.7	89.8	89.6
Target	91.5	92.0	92.3	92.6	91.0
Scotland					
Actual	90.1	90.7	93.0	91.4	90.5
Target	91.3	91.7	91.9	92.0	92.0

Table 6.2 below shows that PPM has decreased in the London & South East and Scotland sectors by 0.6 and 0.9 percentage points respectively since 2013/14, but has improved in the Regional and Long distance sectors by 0.6 and 0.5 percentage points respectively in the same period.

Table 6.2: PPM (%) – sector

Sector	2010/11	2011/12	2012/13	2013/14	2014/15
London & South East	91.1	91.9	91.1	89.6	89.0
Regional	91.5	92.5	91.1	91.0	91.6
Long distance	87.7	89.1	87.0	86.9	87.4
Scotland	90.1	90.7	93.0	91.4	90.5

Franchised operator overviews

Each franchised operator has a regulated target for PPM and CaSL (except First ScotRail which has no CaSL target). Where performance for a TOC falls more than two percentage points below its agreed end of year PPM output or more than 0.2 percentage points above its agreed end of year CaSL output the ORR has stated that it may investigate the reasons for this. PPM for three franchised TOCs was worse than target by more than the threshold, as was CaSL for eight TOCs. Table 6.3 below summarises the position by franchised TOC of year end PPM and CaSL compared to target. Targets for non-franchised operators are indicators, and do not appear in the table below.

Table 6.3: PPM and CaSL – 2014/15 regulatory targets by operator

Operator	PPM target	PPM (variance to regulated target, pp)	CaSL target	CaSL (variance to regulated target, pp)
Abellio Greater Anglia	92.3%	-1.2	1.6%	+0.9
Arriva Trains Wales	93.5%	-0.5	2.5%	+0.1
c2c	97.0%	-0.1	1.1%	+0.2
Chiltern Railways	94.9%	+0.1	1.4%	+0.2
CrossCountry	89.0%	-0.2	4.5%	+0.0
East Midlands Trains	93.0%	-0.9	2.2%	-0.2
First Great Western	90.3%	-1.4	2.5%	+0.5
First ScotRail	92.0%	-1.5	2.4%	N/A
First TransPennine Express	91.0%	-2.4	3.5%	+0.8
Govia Thameslink Railway	88.0%	-2.8	3.0%	+1.3
London Midland	87.0%	+1.0	2.7%	+0.1
London Overground	97.0%	-1.9	2.0%	-0.1
Merseyrail	96.0%	-0.4	2.0%	-0.1
Northern	91.4%	-0.5	1.9%	-0.1
South West Trains	92.0%	-1.9	2.1%	+0.6
Southeastern	90.5%	-1.2	2.5%	+0.3
Southern	87.8%	-4.7	2.9%	+1.9
Virgin Trains East Coast	86.0%	+2.6	5.4%	-1.7
Virgin Trains West Coast	85.5%	-0.7	4.0%	+1.0

Abellio Greater Anglia (AGA)

AGA's PPM MAA was 1.2 percentage points worse than target, standing at 91.1 per cent against a target of 92.3 per cent. CaSL MAA stood at 2.5 per cent, 0.9 percentage points worse than the target of 1.6 per cent at the end of the year.

Performance delivery was particularly difficult during the first part of the year, and improved in the second half of the year. The main challenges were infrastructure related, with some rise in external incidents later in the year. There was an increase in PPM attrition due to specification and reactionary impacts which was in line with many of the larger LSE market sector TOCs. For AGA this created more CaSL impact relative to PPM. The major focus at the end of the year was on planning for the remapping of West Anglia Inner services from AGA to LOROL, and Great Eastern Inner services from AGA to TfL Rail.

Arriva Trains Wales (ATW)

ATW's performance was poor early in the year with improving performance later in the year. This was reflected in both PPM and CaSL, which ended the year at 93.0 per cent (half a percentage point worse than target) and 2.6 per cent (0.1 percentage point worse than target) respectively.

Focus in the early part of the year was on improving major project related problems, including the Cardiff Area Signalling Renewal, where specific further improvements were identified in works delivery and new product reliability. Fleet reliability deteriorated through the year but the worsening trend started to flatten off during quarter four. A key focus is to reduce reactionary delays through service recovery improvements on the Cardiff Valley lines network.

c2c

c2c performance was broadly stable in 2014/15. The PPM MAA stood at 96.9 per cent and the CaSL MAA stood at 1.3 per cent. The PPM target was missed by 0.1 percentage point and the CaSL target was missed by 0.2 percentage points. Delays attributed to infrastructure management were the largest contributors to this under-delivery.

Chiltern

Chiltern performance was broadly stable in 2014/15. PPM MAA ended the year at 95.0 per cent against a target of 94.9 per cent.

An increase in CaSL occurred in period 3 due to a fire in the tunnels just outside Marylebone. However, this was mostly recovered by the end of the year. Similarly the major landslip at Harbury was positively managed through the provision of an alternative service, with positive passenger response. The effects of these two incidents were reflected in the CaSL MAA which finished the year at 1.4 per cent, 0.2 percentage points worse than target.

CrossCountry

CrossCountry PPM MAA finished the year at 88.8 per cent, falling short of target by 0.2 percentage points. CaSL MAA stood at 4.5 per cent, meeting the target figure.

Traincrew problems were experienced early in the year but were resolved in the summer and Network Rail delivery was mostly stable. The focus for improvements continues to be on externally caused incidents (some of these also affecting fleet and traincrew availability), and on improving journey consistency for CrossCountry trains which is expected to increase both CrossCountry punctuality and wider network reliability. The disruption at Harbury due to a landslip was positively managed, with a low impact on PPM attributable in part to the split between Birmingham and South East services.

Virgin Trains East Coast (VTEC)

VTEC performance beat the PPM target by 2.6 percentage points, delivering an end-of-year PPM MAA of 86.0 per cent. CaSL also performed well, with the MAA standing at 5.4 per cent (1.7 percentage points better than target).

This is particularly attributable to the improved reliability of the East Coast Main Line and train running improvements introduced in the May 2014 timetable. Improvements were seen across all PPM attrition groups and nearly all delay groups, with record levels of performance being seen at the end of the year when East Coast services were handed over to VTEC.

East Midlands Trains (EMT)

EMT's PPM MAA was 92.1 per cent against a target of 93.0 per cent. The CaSL MAA for 2014/15 was 2.0 per cent, ending 0.2 percentage points better than target.

The main issues were attributable to infrastructure faults, with underlying temporary speed restrictions (TSRs) arising from late running line speed improvement works reducing the infrastructure capability, and some issues arising from the effects of major project work and fatalities.

First Great Western (FGW)

FGW's PPM MAA was worse than target by 1.4 percentage points and stood at 88.9 per cent at the end of the year. CaSL MAA, at 3.0 per cent, was worse than target at the end of the year by 0.5 percentage points.

The main issues were attributable to Network Rail delivery, particularly the reliability of infrastructure. Managing the impact of major projects on performance proved a challenge as network availability was reduced to deliver the major works while as normal a service as possible was operated; this was compounded by the poor reliability of new equipment.

Further improvement plans were introduced to respond to these issues, and further attention was paid to longer term planning given the major project locus on western routes in the next few years. Other areas which caused the under-delivery were fleet reliability and a significant rise in freight caused delay. At the end of the year infrastructure enhancements at Reading were beginning to provide benefits in reducing reactionary delay.

First ScotRail (FSR)

FSR PPM MAA was 90.5 per cent, 1.5 percentage points worse than the regulatory output target of 92.0 per cent at the end of the year. There is no regulated CaSL target for ScotRail, however the internal target of 2.4 per cent was met.

A major challenge was encountered in managing the requirements from crowding during the Commonwealth Games, and planned improvements through timetable change were slow to materialise. Further attention is to be given to timetable planning through cross-industry engagement in a long running programme of planned change. Asset management was also a problem area with more incidents and delays than planned. Performance was not substantially affected by weather conditions with the exception of Period 11, when major storms caused poor results.

First TransPennine Express (FTPE)

The PPM MAA was 88.6 per cent, 2.4 percentage points short of the regulated target of 91.0 per cent. CaSL MAA was 4.3 per cent, 0.8 percentage points short of the target of 3.5 per cent.

The main challenge was the effect of the introduction of a fifth service on the North TransPennine route. This was materially exacerbated by wider changes to fleet and traincrew, making the overall effect significantly higher than forecast. A major performance recovery plan was created jointly between FTPE and Network Rail. Immediate improvements were achieved through better service recovery focus (including better scope to part cancel services short of destination to speed up right time running), with more significant focus on fleet reliability, traincrew resourcing and diagramming, and infrastructure reliability that required longer term action including specific change in the December 2014 and May 2015 timetables.

Govia Thameslink Railway (GTR)

The PPM MAA was 85.2 per cent, 2.8 percentage points short of the target of 88.0 per cent. CaSL MAA was 4.3 per cent, under-delivering against the target by 1.3 percentage points.

Great Northern services improved in line with the other East Coast Main Line operators, but these improvements were offset by issues with Thameslink services. There was a substantial number of delay causes, the main issues were asset reliability, managing the impact of the Thameslink programme and other major project works, some problems with traincrew and the challenge of effective operation of the Brighton Main Line where demand continues to grow.

Particular issues were seen in early 2015 with the major changes to the network and train services arising from the latest phased output from Thameslink in early January around London Bridge. Deeper analysis indicated that passenger growth in excess of forecasts was also beginning to cause disproportionate increase in station dwell beyond planned times and reactionary effects through the day. Performance was also affected by a number of specific incidents including the major impact from a burst water main above the Thameslink tunnels in Clerkenwell.

With GTR taking over Southern services in 2015/16, GTR led the creation of a Brighton Main Line Recovery Plan with Network Rail. This plan includes the delivery of a wide range of major improvements which will produce material change to timetables including some reductions in planned services to enable better flow of trains.

London Midland (LM)

LM's performance improved during 2014/15, particularly the services in the West Midlands conurbation; PPM MAA at the end of the year was better than target at 88.0 per cent, outperforming the target by one percentage point. CaSL MAA stood at 2.8 per cent, 0.1 percentage point worse than target.

These improvements were across a broad range of PPM attrition groups, and nearly all of them showed improvement. Some challenges remained in effective service delivery on the West Coast Main Line (LSE services for LM) with further improvement for LM integrated into the wider West Coast South programme (see Virgin Trains West Coast commentary).

London Overground (LOROL)

LOROL's performance was relatively poor and included a noticeable decline from higher levels of performance that had been achieved in earlier years in conjunction with strong passenger and service growth. PPM MAA stood at 95.1 per cent, 1.9 percentage points short of target. CaSL MAA ended the year at 1.9 per cent, 0.1 percentage point ahead of target.

The main challenge was the management of East London Line services where improvement plans do not appear to have delivered the planned benefits. The wider problems on the Brighton Main Line in early 2015 increased LOROL's levels of reactionary delay. LOROL continues to deliver a major growth programme including the introduction of fifth cars and are targeting improved fleet reliability. LOROL will also be taking over the West Anglia Inner services in 2015/16. The nature of LOROL's concession is expected to bring greater focus on improved service performance on these routes but the remapping of these services from AGA will increase the number of operators on the network out of Liverpool Street which may make effective service management during disruption more difficult.

Merseyrail

Merseyrail's performance was steady but slightly worse than plan, with a PPM MAA of 95.6 per cent, 0.4 percentage points worse than target. CaSL MAA ended the year 1.9 per cent however, 0.1 percentage point better than target.

Delays caused by infrastructure and network management were the most substantial contributors to this under-delivery.

Northern

Northern's performance was steady but slightly worse than plan. The PPM target was not achieved, and ended 2014/15 at 90.9 per cent against a target of 91.4 per cent. However the MAA for CaSL ended the year at 1.8 per cent, 0.1 per cent better than target.

Issues were attributable across delay causes but were particularly notable in infrastructure management, traincrew and TOC-on-TOC categories (where an operator causes delay to another operator). The introduction of a fifth FTPE path on the North TransPennine route was the main source of TOC-on-TOC delay and proved a particular challenge, causing PPM attrition from the worsened reactionary delays encountered. Issues with traincrew encountered early in the year were resolved in late 2014.

South West Trains (SWT)

SWT's PPM MAA was worse than target, with the end-of-year MAA stood at 90.1 per cent, 1.9 percentage points short of the target of 92.0 per cent. The CaSL MAA was worse 0.6 percentage points worse than the target of 2.1 per cent at the end of the year.

Particular issues were encountered in asset reliability and in managing the impact of subthreshold delay. The latter was effectively caused by difficulties managing a full network, evident by the increasing level of proactive interventions in service management (trains skipping stops or terminating short of timetabled destination etc.) that are applied even during relatively minor disruption and which contributed to driving delay to levels worse than plan in most PPM attrition groups.

In terms of PPM attrition, specification and reactionary effects were similar to, but at a lesser level than, many LSE operators. Performance was also affected by a number of one-off incidents including fatalities and weather caused incidents (e.g. lightning strikes). Positive improvements were delivered by SWT from increased full crew working (driver and guards on the same trains). Overall PPM improved at the end of the year, driven both by more benign weather conditions and as a result of the improvement initiatives.

Southeastern

Southeastern's PPM MAA ended the year at 89.3 per cent, an under-delivery of 1.2 percentage points against the target level of 90.5 per cent. CaSL MAA finished the year at 2.8 per cent, 0.6 percentage points worse than target, and lower than the ORR regulatory floor.

The main issues were asset reliability and managing the impact of the Thameslink programme and other major projects. Southeastern's PPM attrition for specification and reactionary was in line with many LSE operators, demonstrative of the wider challenge of managing continued passenger growth in excess of forecast and service delivery on a full network.

Whilst the major changes to network and train services in early 2015 in the vicinity of London Bridge arising from the latest phased output from Thameslink created issues, the effective segregation of services that this change made (removing Thameslink trains crossing Southeastern services) enabled a better service to be maintained for Southeastern than for Southern and GTR. Southeastern was granted a franchise extension towards the end of 2014/15 and plans for improvement were drawn from this to integrate with wider improvements planned in delivery of the Thameslink and other major project work.

Southern

Southern PPM and CaSL MAAs were worse than target at the end of the year by more than the thresholds identified by the ORR and performance materially worsened throughout most of the year. The end-of-year MAA for PPM was 83.1 per cent and the end of year MAA for CaSL stood at 4.8 per cent; this was a substantial under-delivery against the 87.8 per cent target for PPM and the 2.9 per cent target for CaSL.

Performance issues were mainly caused by poor asset reliability, managing the impact of the Thameslink programme and other major project works, problems with traincrew and the challenge of operation of the Brighton Main Line where demand continues to grow. Particular issues were seen in early 2015 with the major changes to the network and train services arising from the latest phased output from Thameslink in early January around London Bridge. Through the PPM attrition tools, particular issues were visible in both specification (delivery of the operational plan) and reactionary effects. Deeper analysis indicated that passenger growth in excess of forecasts was beginning to cause disproportionate increase in station dwell beyond planned times and reactionary effects through the day.

A cross-industry Brighton Main Line Recovery Plan (effectively integrating services across current operators (GTR will take over Southern services in 2015/16)) was created in early 2015, bringing focus on a wide range of major improvements, with material change to timetables including some reductions in planned services to enable a better flow of trains.

Virgin Trains West Coast (VTWC)

VTWC's PPM MAA was worse than target, finishing the year at 84.8 per cent, 0.7 percentage points short of the target of 85.5 per cent. CaSL MAA was also worse than target and stood at 5.0 per cent at the end of the year, one percentage point worse than target.

The main issue was asset reliability, which resulted in PPM attrition problems in primary and reactionary effects and led to Network Rail establishing a specific West Coast South improvement programme in the summer of 2014 to drive stronger, longer term change in this area. In part, and despite specific major investment, service delivery continues to be affected by major incidents caused both by infrastructure problems (including a major problem in the Watford Tunnels) and by wider problems including the number of suicides on the railway. These brought specific attention to the requirements for CaSL and the challenge of integrating performance requirements into the best service for passengers.

Public Performance Measure (PPM) – operators

Table 6.4 below shows variable performance in delivering PPM for franchised TOCs since last year. Detailed commentary on each operator, including performance against target, can be found in the franchised operator overview. PPM delivery for franchised operators is a regulated output. As set out in the table below, each franchised operator has a CP5 PPM exit target to be met in addition to the overall national target of 92.5 per cent PPM.

Table 6.4: PPM (%) – franchised operators

Operator	2010/11	2011/12	2012/13	2013/14	2014/15	CP5 exit target (minimum)
Franchised operators						
Abellio Greater Anglia	90.2	90.9	92.3	91.7	91.1	90.0
Arriva Trains Wales	93.9	94.2	93.3	93.1	93.0	90.0
c2c	94.8	96.8	97.5	96.7	96.9	90.0
Chiltern Railways	94.0	93.0	94.9	94.9	95.0	90.0
CrossCountry	87.9	89.6	86.8	86.7	88.8	90.0
East Midlands Trains	92.1	93.5	92.5	91.3	92.1	90.0
First Great Western	90.3	90.6	89.1	87.9	88.9	90.0
FGW High Speed Services	83.7	85.4	82.8	81.8	83.6	88.0
First ScotRail	90.1	90.7	93.0	91.4	90.5	92.5
First TransPennine Express	91.1	93.3	91.7	90.4	88.6	90.0
Govia Thameslink Railway	89.4	90.0	88.3	86.1	85.2	90.0
London Midland	89.7	90.5	86.0	85.9	88.0	90.0
London Overground	94.8	96.6	96.6	96.1	95.1	90.0
Merseyrail	94.9	95.2	95.4	95.8	95.6	90.0
Northern	90.8	91.8	90.7	91.0	90.9	90.0
South West Trains	93.6	92.3	91.4	89.7	90.1	90.0
Southeastern	88.9	91.7	91.1	89.0	89.3	90.0
Southern	89.6	90.0	88.0	85.8	83.1	90.0
Virgin Trains East Coast	83.3	86.6	83.9	84.2	88.6	88.0
Virgin Trains West Coast	86.6	85.9	83.6	85.8	84.8	88.0

The below Table 6.5 shows that PPM delivery for First Hull Trains and Grand Central substantially increased in 2014/15 over the previous four years of data, increasing over the 2013/14 PPM MAAs by 6.3 and 7.5 percentage points respectively. The PPM MAA for Heathrow Express decreased by 1.2 percentage points over last year's figure to 92.6 per cent. PPM delivery for open access operators is an indicator measure and not a regulated output.

Table 6.5: PPM (%) – open access operators

Operator	2010/11	2011/12	2012/13	2013/14	2014/15
First Hull Trains	82.2	81.7	81.7	82.0	88.3
Grand Central	82.7	84.1	81.4	80.7	88.2
Heathrow Express	94.9	95.3	93.3	93.8	92.6

Table 6.6 below shows the PPM MAA broken down to a sub-operator level. Commentary, where relevant, can be found in individual franchised operator overviews.

Table 6.6: PPM (%) – sub-operator

Sub-operator	2010/11	2011/12	2012/13	2013/14	2014/15
Abellio Greater Anglia					
GE Outer	88.2	90.0	91.9	90.9	88.8
Intercity	85.3	86.4	88.3	88.4	84.3
Rural	91.5	91.7	92.1	89.0	90.1
Southend and metro	89.5	92.0	92.6	92.4	90.4
Stansted Express	87.3	86.2	89.6	90.6	91.1
WA inner and GE inner	92.6	92.8	93.9	93.8	93.3
WA outer excluding Stansted Express	87.7	87.4	90.2	91.3	91.7
Arriva Trains Wales					
Regional and inter-urban	90.8	91.3	90.7	90.4	90.5
Valley lines	96.4	96.5	95.4	95.3	95.0
c2c					
Whole TOC	94.8	96.8	97.6	96.7	96.9
Chiltern Railways					
Met and Wycombe	94.4	94.5	95.2	95.7	95.8
London - Birmingham/Oxford and branches	93.8	92.5	94.9	94.6	94.7
CrossCountry					
South West - North/East Scotland, Manchester - Bournemouth, Newcastle - Reading and Manchester - Bristol	84.5	86.4	82.6	82.4	85.0
Nottingham - Cardiff and Birmingham - Stansted airport	91.7	93.1	91.3	91.5	93.2
East Midlands Trains					
Long Distance (including Liverpool - Norwich)	93.0	94.2	92.6	90.8	91.1
Regional	91.3	92.9	92.3	91.6	92.9
First Great Western					
High speed	83.7	85.4	82.8	81.8	83.6
London and Thames Valley	92.1	91.2	89.6	88.6	88.8
West	90.1	91.8	91.0	89.2	91.0
First ScotRail					
Strathclyde	90.8	91.1	93.7	91.8	90.9
East coast suburban	89.3	91.3	93.2	93.2	93.0
Express	86.0	88.7	89.4	88.8	87.8
Rural	88.2	88.8	90.2	88.1	85.4
First TransPennine Express					
North TransPennine	89.4	91.9	89.9	89.6	86.5
South TransPennine	91.6	95.1	92.6	91.2	92.6
North West TransPennine	92.8	94.3	93.6	91.1	90.1
Govia Thameslink					
Great Northern	90.3	90.2	88.7	85.3	89.1
Thameslink	88.4	89.8	88.1	86.7	82.2
London Midland					
LSE	89.5	87.6	83.1	84.0	83.7
Regional	89.7	91.3	86.9	86.5	89.4
London Overground					
East London Railways (including West Croydon services)	95.7	98.0	97.3	96.6	93.9
North London Railways (including London – Watford)	94.0	95.4	96.0	95.6	96.4
Merseyrail					
Northern line	94.9	95.8	95.7	96.2	95.6
Wirral line	95.0	94.3	95.0	95.1	95.7

Sub-operator	2010/11	2011/12	2012/13	2013/14	2014/15
Northern					
Lancashire and Cumbria	88.8	90.4	87.6	87.3	88.3
Manchester and Liverpool	91.8	91.8	90.4	90.5	89.2
South and East Yorkshire	89.4	90.8	90.3	89.7	92.1
Tyne, Tees and Wear	91.1	92.7	91.3	92.6	92.8
West and North Yorkshire	91.0	92.5	91.9	92.9	92.7
South West Trains					
Mainline	92.5	91.1	90.3	88.1	88.6
Other rural	94.4	95.7	94.7	90.4	95.1
Suburban (including Waterloo – Basingstoke terminators, Farnham/Alton services)	93.8	92.3	91.4	90.0	90.0
Southeastern					
Mainline and high speed	86.2	90.4	90.0	87.6	89.0
Metro (including other rural)	89.9	92.4	91.6	89.9	89.5
Southern					
Gatwick Express	88.7	87.5	83.5	82.7	82.4
South London metro	90.9	91.6	90.0	86.3	82.0
Sussex coast (including Rugby - Brighton and other rural)	88.5	89.0	86.9	85.7	84.2
Virgin Trains East Coast					
Anglo - Scottish services	81.2	85.5	82.2	83.1	87.2
London - Leeds and north East (including Lincoln)	85.3	87.6	85.6	85.3	90.1
Virgin Trains West Coast					
Anglo – Scottish services	81.2	80.5	78.9	81.3	78.5
London – North West	88.0	87.1	84.6	87.1	86.4
London – West Midlands	88.2	87.7	85.5	86.9	87.0

Cancellations and Significant Lateness (CaSL)

Table 6.7 below shows that the CaSL MAA for 2014/15 stood at 2.9 per cent in England & Wales, missing target by 0.5 percentage points. CaSL is not a regulated output for Scotland.

Table 6.7: CaSL (%) – England & Wales

	2010/11	2011/12	2012/13	2013/14	2014/15
England & Wales					
Actual	2.8	2.3	2.7	3.0	2.9
Target	2.6	2.5	2.4	2.3	2.4

Table 6.8 below shows the CaSL MAA by sector. CaSL improved in the Regional and Long Distance sectors. Scotland CaSL worsened by 0.3 percentage points and London & South East's CaSL remained static. Network-wide CaSL improved by 0.1 percentage point to 2.8 per cent in 2014/15.

Table 6.8: CaSL (%) – sector

Sector	2010/11	2011/12	2012/13	2013/14	2014/15
London & South East	2.6	2.2	2.5	3.1	3.1
Regional	2.4	2.0	2.5	2.3	2.1
Long distance	5.0	4.0	4.9	4.9	4.4
Scotland	2.7	2.7	1.5	2.1	2.4
Network-wide	**2.8**	**2.3**	**2.6**	**2.9**	**2.8**

Table 6.9 below shows CaSL delivery for franchised operators. As with PPM delivery has been variable across operators; detailed commentary and individual comparisons to targets are given in the franchised operator overviews above. Exit targets for CaSL in CP5 have not been set on an operator basis with the exception of Virgin Trains East Coast with an exit target of 4.2 per cent and Virgin Trains West Coast with an exit target of 2.9 per cent.

Table 6.9: CaSL (%) – franchised operators

Operator	2010/11	2011/12	2012/13	2013/14	2014/15
Franchised operators					
Abellio Greater Anglia	2.5	2.5	2.1	2.3	2.5
Arriva Trains Wales	2.5	2.1	2.6	2.6	2.6
c2c	2.2	1.3	0.9	1.5	1.3
Chiltern Railways	1.8	1.7	1.4	1.6	1.6
CrossCountry	5.5	4.2	5.5	5.2	4.5
East Midlands Trains	2.4	2.0	2.4	2.6	2.0
First Great Western	2.8	2.3	3.1	3.4	3.0
First ScotRail	2.7	2.7	1.5	2.1	2.4
First TransPennine Express	4.2	2.7	3.5	4.6	4.3
Govia Thameslink Railway	4.0	3.5	3.6	4.0	4.3
London Midland	2.9	2.4	4.1	3.5	2.8
London Overground	2.6	1.8	1.6	1.9	1.9
Merseyrail	2.3	2.1	2.2	1.8	1.9
Northern	2.2	1.7	2.0	1.8	1.8
South West Trains	1.6	2.0	2.3	2.8	2.7
Southeastern	3.3	2.4	2.4	3.3	2.8
Southern	2.9	2.8	3.3	4.6	4.8
Virgin Trains East Coast	7.0	5.5	6.7	5.8	3.7
Virgin Trains West Coast	4.9	4.5	5.0	4.9	5.0

Table 6.10 shows CaSL for open-access operators. CaSL for First Hull Trains and Grand Central improved substantially in 2014/15, standing at 4.7 per cent and 4.0 per cent from 2013/14's figures of 7.2 per cent and 7.5 per cent. Heathrow Express CaSL remains the lowest of the open access operators; however it deteriorated from 1.2 per cent in 2013/14 to 1.6 per cent in 2014/15.

Table 6.10: CaSL (%) – open access operators

Operator	2010/11	2011/12	2012/13	2013/14	2014/15
First Hull Trains	8.5	7.2	8.0	7.2	4.7
Grand Central	9.2	7.2	7.7	7.5	4.0
Heathrow Express	1.3	0.9	1.7	1.2	1.6

Table 6.11 below shows the position of CaSL by sub operator. Where relevant, commentary is given in the franchised operator overviews above.

Table 6.11: CaSL (%) – sub-operator

Sub-operator	2010/11	2011/12	2012/13	2013/14	2014/15
Abellio Greater Anglia					
GE Outer	2.3	2.2	1.9	2.0	2.5
Intercity	5.0	4.5	3.9	3.8	4.8
Rural	1.4	1.6	1.6	2.2	2.1
Southend and metro	2.0	2.0	1.6	1.7	2.1
Stansted Express	3.5	3.8	2.8	2.8	2.7
WA inner and GE inner	2.3	2.6	2.0	2.1	2.3
WA outer excluding Stansted Express	3.5	3.7	2.9	3.0	3.2
Arriva Trains Wales					
Regional and inter-urban	3.1	2.4	2.9	2.9	2.3
Valley lines	2.1	1.8	2.4	2.5	2.9
c2c					
Whole TOC	2.2	1.3	0.9	1.5	1.3
Chiltern Railways					
Met and Wycombe	1.1	0.9	0.9	1.2	1.1
London - Birmingham/Oxford and branches	2.1	1.9	1.6	1.7	1.7
CrossCountry					
South West - North/East Scotland, Manchester - Bournemouth, Newcastle - Reading and Manchester - Bristol	7.4	5.5	7.7	7.3	6.2
Nottingham - Cardiff and Birmingham - Stansted airport	3.5	2.8	3.4	2.9	2.5
East Midlands Trains					
Long Distance (including Liverpool - Norwich)	2.8	2.4	2.9	3.4	2.7
Regional	2.1	1.7	2.0	1.9	1.5
First Great Western					
High speed	6.0	4.7	6.4	6.3	5.9
London and Thames Valley	2.0	1.7	2.5	2.7	2.6
West	2.9	2.3	2.7	3.4	2.3
First ScotRail					
Strathclyde	2.4	2.6	1.3	2.0	2.3
East coast suburban	4.2	3.2	2.0	2.1	2.3
Express	3.4	2.6	1.8	2.1	2.5
Rural	3.4	2.7	2.1	2.5	3.5
First TransPennine Express					
North TransPennine	4.7	3.2	4.1	4.6	4.7
South TransPennine	4.8	2.1	4.0	5.3	3.4
North West TransPennine	3.4	2.4	2.8	4.5	4.0
Govia Thameslink Railway					
Great Northern	3.4	2.8	2.8	4.0	2.6
Thameslink	4.7	4.0	4.1	4.0	5.5
London Midland					
LSE	2.9	3.3	4.7	4.2	3.8
Regional	2.9	2.2	4.0	3.2	2.5

Sub-operator	2010/11	2011/12	2012/13	2013/14	2014/15
London Overground					
East London Railways (including West Croydon services)	2.7	1.2	1.5	1.6	2.0
North London Railways (including London – Watford)	2.5	2.3	1.7	2.2	1.6
Merseyrail					
Northern line	2.2	1.7	2.0	1.4	1.8
Wirral line	2.5	2.8	2.6	2.5	2.2
Northern					
Lancashire and Cumbria	2.7	2.1	2.8	2.7	2.5
Manchester and Liverpool	1.9	1.7	2.1	1.8	2.0
South and East Yorkshire	2.7	1.9	2.0	2.1	1.6
Tyne, Tees and Wear	2.8	2.4	2.5	2.1	2.2
West and North Yorkshire	2.2	1.5	1.6	1.2	1.2
South West Trains					
Mainline	1.9	2.4	2.6	3.2	2.8
Other rural	1.3	1.3	2.4	5.8	1.5
Suburban (including Waterloo – Basingstoke terminators, Farnham/Alton services)	1.6	2.0	2.2	2.8	2.9
Southeastern					
Mainline and high speed	3.9	2.4	2.5	3.6	2.4
Metro (including other rural)	3.5	2.5	2.4	3.1	3.0
Southern					
Gatwick Express	2.1	2.5	3.0	3.3	2.7
South London metro	2.7	2.5	2.9	4.7	5.4
Sussex coast (including Rugby - Brighton and other rural)	3.4	3.2	3.8	4.7	4.4
Virgin Trains East Coast					
Anglo - Scottish services	8.4	6.3	7.6	6.2	4.4
London - Leeds and north East (including Lincoln)	5.8	4.9	5.9	5.5	3.1
Virgin Trains West Coast					
Anglo – Scottish services	7.4	6.8	7.5	7.0	8.6
London – North West	4.2	3.9	4.5	4.4	4.0
London – West Midlands	4.2	3.9	4.1	4.2	4.0

CaSL by the number of trains cancelled or significantly late is also shown at a disaggregated sub-operator level in Table 6.12 below.

Table 6.12: CaSL – sub-operator (total number of trains)

Sub-operator	2010/11	2011/12	2012/13	2013/14	2014/15
Abellio Greater Anglia					
GE Outer	112	249	133	146	142
Intercity	56	62	64	83	101
Rural	55	132	138	274	138
Southend and metro	47	45	77	55	179
Stansted Express	118	63	102	96	187
WA inner and GE inner	368	517	323	443	433
WA outer excluding Stansted Express	172	200	187	102	155
Arriva Trains Wales					
Regional and inter-urban	281	195	326	227	213
Valley lines	371	195	247	471	280
c2c					
Whole TOC	110	107	114	109	73
Chiltern Railways					
Met and Wycombe	18	10	15	8	65
London - Birmingham/Oxford and branches	247	89	57	78	143
CrossCountry					
South West - North/East Scotland, Manchester - Bournemouth, Newcastle - Reading and Manchester - Bristol	260	171	232	256	269
Nottingham - Cardiff and Birmingham - Stansted airport	82	46	77	91	263
East Midlands Trains					
Long Distance (including Liverpool - Norwich)	85	110	114	111	124
Regional	78	76	117	79	85
First Great Western					
High speed	196	181	215	216	163
London and Thames Valley	264	277	502	368	308
West	254	202	229	466	265
First ScotRail					
Strathclyde	601	668	729	561	1,187
East coast suburban	147	88	115	116	113
Express	132	60	131	111	174
Rural	65	46	104	63	118
First TransPennine Express					
North TransPennine	109	85	186	104	136
South TransPennine	29	11	99	15	55
North West TransPennine	43	46	121	99	89
Govia Thameslink Railway					
Great Northern	139	229	436	400	352
Thameslink	453	566	630	740	998
London Midland					
LSE	300	182	540	209	370
Regional	976	588	1,022	921	751
London Overground					
East London Railways (including West Croydon services)	67	79	232	192	420
North London Railways (including London – Watford)	210	448	203	322	200
Merseyrail					
Northern line	207	155	150	176	162
Wirral line	119	102	93	147	106

Sub-operator	2010/11	2011/12	2012/13	2013/14	2014/15
Northern					
Lancashire and Cumbria	103	113	201	145	67
Manchester and Liverpool	311	406	377	446	421
South and East Yorkshire	175	96	142	103	146
Tyne, Tees and Wear	139	58	121	53	84
West and North Yorkshire	273	206	372	174	140
South West Trains					
Mainline	343	284	568	329	335
Other rural	23	16	167	78	56
Suburban (including Waterloo – Basingstoke terminators, Farnham/Alton services)	384	479	609	602	563
Southeastern					
Mainline and high speed	348	353	588	667	447
Metro (including other rural)	544	559	694	1,081	777
Southern					
Gatwick Express	58	41	200	95	193
South London metro	363	527	551	1,232	1,958
Sussex coast (including Rugby - Brighton and other rural)	582	701	1,698	1,172	1,886
Virgin Trains East Coast					
Anglo - Scottish services	146	73	138	127	80
London - Leeds and north East (including Lincoln)	85	60	103	94	58
Virgin Trains West Coast					
Anglo – Scottish services	48	50	143	92	132
London – North West	80	97	221	189	175
London – West Midlands	85	37	140	51	92

Delay Minutes (DM)

Network Rail caused 7,204,000 delay minutes across England & Wales in 2014/15. This is an under-delivery against the target of 6,740,000 minutes.

28 per cent of delay minutes were 'TOC on Self' (delays to a passenger train operating company's services caused by that company) and 13 per cent were 'TOC on TOC' (delays to a passenger train operator's services caused by another train company).

In Scotland Network Rail caused 479,000 delay minutes in 2014/15, of a total of 882,000. This represents a 6.7 per cent increase on the total of 449,000 Network Rail caused delay minutes in 2013/14.

Year-end delay minutes figures can remain subject to change for several years due to delay minutes which stay unattributed pending a decision on which party caused the delay. Attribution figures for each year are thus estimated using historic data and these data updated as decisions are reached.

Table 6.13 below shows the delay minutes incurred on franchised and non-franchised operators in England & Wales by attribution.

Table 6.13: Delay minutes – delays to franchised and non-franchised operators, England & Wales

Attribution	2010/11	2011/12	2012/13	2013/14	2014/15
Network Rail-on-TOC	6,885,000	6,536,000	7,083,000	7,667,000	7,204,000
TOC-on-self	3,344,000	3,049,000	3,136,000	3,039,000	3,290,000
TOC-on-TOC	1,247,000	1,229,000	1,305,000	1,461,000	1,572,000
England & Wales	11,476,000	10,815,000	11,524,000	12,168,000	12,065,000

Notes: includes all delay to E&W-funded franchised operators, plus Hull Trains, Grand Central and Heathrow Express. Wrexham and Shropshire ran for most of 2010/11 and is included in the figures from that year.

Table 6.14 below shows the delay minutes incurred on franchised and non-franchised operators in Scotland by attribution.

Table 6.14: Delay minutes – delays to franchised and non-franchised operators, Scotland

Attribution	2010/11	2011/12	2012/13	2013/14	2014/15
Network Rail-on-TOC	531,000	483,000	382,000	449,000	479,000
TOC-on-self	365,000	289,000	254,000	280,000	317,000
TOC-on-TOC	71,000	69,000	68,000	81,000	86,000
Scotland	967,000	840,000	705,000	810,000	882,000

Notes: includes all delay to Scotland-funded franchised operators.

Table 6.15 below aggregates the above data into network-wide delay minutes incurred on franchised and non-franchised operators by attribution.

Table 6.15: Delay minutes – delays to franchised and non-franchised operators, network-wide

Attribution	2010/11	2011/12	2012/13	2013/14	2014/15
Network Rail-on-TOC	7,417,000	7,019,000	7,465,000	8,116,000	7,683,000
TOC-on-self	3,709,000	3,338,000	3,390,000	3,319,000	3,607,000
TOC-on-TOC	1,318,000	1,298,000	1,373,000	1,542,000	1,658,000
Network-wide	12,443,000	11,655,000	12,228,000	12,978,000	12,948,000

Notes: includes all delay to franchised operators, plus Hull Trains, Grand Central and Heathrow Express. Wrexham and Shropshire ran for most of 2010/11 and is included in the figures from that year.

Table 6.16 below shows all delay minutes incurred on franchised and non-franchised operators by sector.

Table 6.16: Delay minutes – delays to franchised and non-franchised operators by sector

Attribution	2010/11	2011/12	2012/13	2013/14	2014/15
London & South East	2,875,000	2,790,000	2,954,000	3,445,000	3,400,000
Regional	1,937,000	1,739,000	1,996,000	2,046,000	1,810,000
Long distance	2,087,000	2,007,000	2,133,000	2,176,000	1,994,000
Scotland	531,000	483,000	382,000	449,000	479,000

Notes: includes all delay to franchised operators, plus Hull Trains, Grand Central and Heathrow Express. Wrexham and Shropshire ran for most of 2010/11 and is included in the figures from that year.

Table 6.14 below shows the number of delay minutes caused by Network Rail to franchised and non-franchised operators by route.

Table 6.17: Delay minutes – Network Rail caused delays to franchised and non-franchised operators by route

Route	2010/11	2011/12	2012/13	2013/14	2014/15
Anglia	739,000	748,000	549,000	598,000	638,000
East Midlands	286,000	246,000	286,000	331,000	330,000
Kent	656,000	517,000	629,000	753,000	802,000
London North Eastern	1,279,000	1,126,000	1,235,000	1,267,000	1,018,000
London North Western	1,632,000	1,610,000	1,880,000	1,836,000	1,728,000
Scotland	592,000	529,000	417,000	468,000	517,000
Sussex	665,000	638,000	698,000	827,000	853,000
Wales	325,000	284,000	301,000	305,000	276,000
Wessex	531,000	660,000	680,000	852,000	782,000
Western	765,000	699,000	831,000	917,000	777,000
Total	**7,470,000**	**7,057,000**	**7,506,000**	**8,155,000**	**7,720,000**

Notes: includes all Network Rail caused delay to passenger operators including smaller operators such as Nexus, North Yorkshire Moors Railway and London Underground.

Table 6.18 below shows the number of Network Rail caused delay minutes to operators.

Table 6.18: Network Rail caused delay minutes – operators

Operator	2010/11	2011/12	2012/13	2013/14	2014/15
Franchised operators					
Abellio Greater Anglia	589,000	585,000	442,000	467,000	526,000
Arriva Trains Wales	306,000	287,000	322,000	332,000	289,000
c2c	52,000	38,000	24,000	36,000	33,000
Chiltern Railways	82,000	114,000	97,000	86,000	81,000
CrossCountry	495,000	464,000	532,000	534,000	414,000
East Midlands Trains	258,000	234,000	263,000	297,000	261,000
First Great Western	701,000	661,000	734,000	850,000	739,000
First ScotRail	531,000	483,000	382,000	449,000	479,000
First TransPennine Express	274,000	238,000	280,000	278,000	318,000
Govia Thameslink Railway	304,000	317,000	344,000	412,000	398,000
London Midland	423,000	396,000	512,000	520,000	429,000
London Overground	87,000	93,000	72,000	81,000	96,000
Merseyrail	52,000	51,000	54,000	51,000	61,000
Northern	857,000	736,000	824,000	799,000	727,000
South West Trains	439,000	543,000	566,000	679,000	631,000
Southeastern	584,000	417,000	533,000	632,000	582,000
Southern	668,000	644,000	689,000	834,000	933,000
Virgin Trains East Coast	237,000	236,000	252,000	248,000	180,000
Virgin Trains West Coast	403,000	416,000	470,000	451,000	438,000
Open-access operators					
First Hull Trains	21,000	18,000	18,000	22,000	15,000
Grand Central	30,000	28,000	32,000	35,000	27,000
Heathrow Express	20,000	21,000	23,000	24,000	26,000
Wrexham and Shropshire	13,000	-	-	-	-

Right time performance

Overall, right time performance deteriorated across sectors and network-wide as shown in Table 6.19 below, with the exception of the Regional sector which remained static at 73.1 per cent. Network-wide right time performance fell from 66.3 per cent in 2013/14 to 65.1 per cent in 2014/15.

Table 6.19: Right time performance (%) – sector

Sector	2010/11	2011/12	2012/13	2013/14	2014/15
London & South East	69.8	70.4	68.4	66.5	64.7
Regional	76.4	76.7	74.4	73.1	73.1
Long distance	61.1	59.7	54.8	51.7	49.6
England & Wales (total)	71.0	71.4	69.1	67.2	65.9
Scotland	56.8	55.6	60.0	58.0	57.8
Network-wide	**69.6**	**69.8**	**68.2**	**66.3**	**65.1**

Right time performance by operator is shown in Table 6.20 below and largely reflects delivery by sector above, with some exceptions. Improvements were seen in 2014/15 compared to 2013/14 for c2c, CrossCountry, First Great Western, London Midland, South West Trains, Virgin Trains East Coast, First Hull Trains and Grand Central. Delivery of right time performance deteriorated substantially for First TransPennine Express. Reasons for this are outlined in the TOC by TOC commentary above.

Table 6.20: Right time performance (%) – operators

Sub-operator	2010/11	2011/12	2012/13	2013/14	2014/15
Franchised operators					
Abellio Greater Anglia	70.9	71.5	71.3	70.6	68.2
Arriva Trains Wales	87.5	87.2	85.5	84.4	83.8
c2c	80.2	83.8	84.6	83.4	84.5
Chiltern Railways	84.3	80.7	86.3	85.9	85.8
CrossCountry	54.7	52.2	46.2	41.7	41.8
East Midlands Trains	74.7	77.4	75.0	69.7	69.5
First Great Western	72.0	71.1	69.6	66.8	67.4
First ScotRail	56.8	55.6	60.0	58.0	57.8
First TransPennine Express	67.6	68.4	64.1	60.2	50.3
Govia Thameslink Railway	74.6	74.0	69.1	64.3	62.9
London Midland	69.8	69.6	62.7	60.9	63.3
London Overground	85.1	89.2	86.9	84.2	79.8
Merseyrail	74.2	71.5	74.7	72.0	70.3
Northern	75.2	75.1	72.4	72.5	71.2
South West Trains	74.1	70.7	67.8	65.7	65.9
Southeastern	61.6	65.7	64.6	61.6	60.9
Southern	58.5	59.2	55.6	54.2	50.1
Virgin Trains East Coast	60.6	67.0	61.1	54.9	60.6
Virgin Trains West Coast	62.7	55.4	49.4	52.0	50.5
Non-franchised operators					
First Hull Trains	59.1	50.0	50.9	48.8	58.3
Grand Central	55.2	52.8	47.3	40.4	48.0
Heathrow Express	77.4	77.4	73.9	72.4	70.2

Average lateness

Average lateness remained at two minutes 28 seconds network-wide, the same as in 2013/14 as shown in Table 6.21 below. There was a slight improvement in the England & Wales total: two minutes 29 seconds in 2014/15 from two minutes 31 seconds in the previous year; however this improvement was balanced by deterioration in average lateness in Scotland from one minute 56 seconds in 2013/14 to two minutes three seconds in 2014/15.

Table 6.21: Average lateness – sector (minutes:seconds)

Sector	2010/11	2011/12	2012/13	2013/14	2014/15
London & South East	1:47	1:46	1:56	2:07	2:14
Regional	2:07	1:53	2:08	2:11	2:02
Long distance	4:46	4:13	4:58	5:02	4:44
England & Wales (total)	2:13	2:06	2:22	2:31	2:29
Scotland	2:23	2:14	1:38	1:56	2:03
Network-wide	2:14	2:07	2:19	2:28	2:28

Table 6.22 below shows the average lateness by operator. Two open access operators, Grand Central and First Hull Trains, showed substantial improvements in average lateness. Performance deterioration was observed for nine of the 21 operators, most markedly for Abellio Greater Anglia and First TransPennine Express.

Table 6.22: Average lateness – operators (minutes:seconds)

Operator	2010/11	2011/12	2012/13	2013/14	2014/15
Franchised operators					
Abellio Greater Anglia	2:07	2:03	1:43	1:46	2:06
Arriva Trains Wales	2:24	2:17	2:33	2:40	2:18
c2c	1:11	0:44	0:35	0:44	0:43
Chiltern Railways	1:51	2:02	1:43	1:44	1:41
CrossCountry	4:55	4:05	5:14	5:10	4:29
East Midlands Trains	2:32	2:10	2:34	3:10	3:01
First Great Western	3:28	3:07	3:49	4:12	3:52
First ScotRail	2:23	2:14	1:38	1:56	2:03
First TransPennine Express	2:56	2:21	2:56	3:20	3:49
Govia Thameslink Railway	2:20	2:11	2:28	2:50	2:46
London Midland	2:26	2:20	3:17	3:05	2:52
London Overground	0:59	0:56	0:57	1:04	1:07
Merseyrail	0:52	0:55	0:55	0:50	0:52
Northern	1:56	1:42	1:55	1:49	1:52
South West Trains	1:20	1:44	1:50	1:53	1:56
Southeastern	1:58	1:26	1:37	1:56	2:12
Southern	2:13	2:09	2:29	2:58	3:19
Virgin Trains East Coast	7:40	6:34	7:21	6:30	4:58
Virgin Trains West Coast	4:35	4:52	5:27	5:04	5:02
Non-franchised operators					
First Hull Trains	7:52	7:17	7:32	7:08	5:04
Grand Central	6:11	6:35	7:19	7:31	4:44

Journey time

This is the first time this measure has been published. The journey time measure shows only marginal changes from one year to the next, even at sub-operator level, because there is a large degree of stability in the timetable structure. Over the network as a whole, average speed increased very slightly from 39.18 mph to 39.28 mph between the 2013/14 timetable and the 2014/15 timetable but the disaggregated data reveals slight changes both positive and negative. These data are expected to become more useful as a longer time trend emerges over the course of CP5.

Table 6.23 below shows journey time disaggregated to the sector level.

Table 6.23: Journey time (mph) – sector

Sector	2013/14	2014/15
London & South East	34.27	34.33
Regional	32.15	32.15
Long Distance	63.26	63.37
England & Wales	39.43	39.57
Scotland	36.83	36.59
Network-wide	**39.18**	**39.28**

Table 6.24 below shows journey time disaggregated to the operator level.

Table 6.24: Journey time (mph) – operator

Operator	2013/14	2014/15
Franchised Operators		
Abellio Greater Anglia	38.60	38.37
Arriva Trains Wales	33.53	33.45
c2c	35.23	35.24
Chiltern	45.93	46.27
CrossCountry	55.67	55.79
Virgin Trains East Coast	80.32	80.39
East Midlands Trains	50.56	50.55
First Great Western	43.09	43.15
First ScotRail	36.83	36.59
First TransPennine Express	47.05	49.29
Govia Thameslink Railway	39.64	38.67
London Midland	37.47	37.46
London Overground	17.57	17.65
Merseyrail	22.73	22.72
Northern	31.71	31.75
Southeastern	32.54	32.79
Southern	32.11	32.40
South West Trains	34.32	34.22
Virgin Trains West Coast	79.99	79.67
Non-Franchised Operators		
Hull Trains	78.12	78.81
Grand Central	68.81	69.54

Table 6.25 below shows journey time disaggregated to the sub-operator level.

Table 6.25: Journey time (mph) – sub-operator

Sub-operator	2013/14	2014/15
Abellio Greater Anglia		
GE Outer	41.61	41.63
Intercity	59.53	59.51
Rural	41.77	39.19
Southend and metro	39.35	39.33
Stansted Express	45.57	45.37
WA inner and GE inner	25.69	25.67
WA outer excluding Stansted Express	38.72	38.86
Arriva Trains Wales		
Regional and inter-urban	39.79	39.58
Valley lines	20.51	20.48
c2c		
Whole TOC	35.23	35.24
Chiltern		
Met and Wycombe	37.10	37.07
London - Birmingham/Oxford and branches	48.00	48.55
CrossCountry		
South West - North/East Scotland, Manchester - Bournemouth, Newcastle - Reading and Manchester - Bristol	58.65	58.80
Nottingham - Cardiff and Birmingham - Stansted airport	48.07	48.05
East Midlands Trains		
Long Distance (including Liverpool - Norwich)	61.40	61.37
Regional	34.88	35.09

Sub-operator	2013/14	2014/15
First Great Western		
High speed	58.90	59.12
London and Thames Valley	36.75	36.88
West	34.14	34.07
First TransPennine Express		
North TransPennine	46.73	49.81
South TransPennine	40.23	39.92
North West TransPennine	51.19	52.93
Govia Thameslink Railway		
Great Northern	43.37	43.11
Thameslink	36.32	35.30
London Midland		
LSE	49.24	49.35
Regional	27.68	27.54
London Overground		
East London Railways (including West Croydon services)	16.50	16.50
North London Railways (including London - Watford)	18.52	18.65
Merseyrail		
Northern line	24.57	24.56
Wirral line	20.84	20.84
Northern		
Lancashire and Cumbria	31.45	31.04
Manchester and Liverpool	28.78	28.99
South and East Yorkshire	35.51	35.66
Tyne, Tees and Wear	33.56	33.19
West and North Yorkshire	32.15	32.33
First ScotRail		
Caledonian Sleepers	50.13	49.40
Strathclyde	31.25	31.10
East coast suburban	33.66	34.37
Express	51.90	51.76
Rural	42.27	41.25
Southeastern		
Mainline and high speed	41.40	41.38
Metro (including other rural)	23.39	23.11
Southern		
Gatwick Express	50.94	50.48
South London metro	23.12	23.05
Sussex coast (including Rugby - Brighton and other rural)	36.33	36.47
South West Trains		
Mainline	43.93	43.87
Other rural	31.51	31.28
Suburban (including Waterloo - Basingstoke terminators, Farnham/Alton services)	26.53	26.42
Virgin Trains East Coast		
Anglo - Scottish services	80.74	80.79
London - Leeds and north East (including Lincoln)	79.54	79.64
Virgin Trains West Coast		
Anglo - Scottish services	78.85	78.89
London - North West	82.69	82.44
London - West Midlands	74.48	73.15

Overview of 2014/15 freight performance

Network Rail ended 2014/15 having outperformed its regulatory target by delivering 94.5 per cent FDM against the target of 92.5 per cent. This is a 1.2 percentage point improvement on the year-end position for 2013/14 and was largely driven by improvements in performance during the autumn and winter periods. As a result of these improvements the FDM MAA is currently showing an improving trend which is attributable to the benign weather, day to day operations and service recovery management by the National Freight Team and Route Teams, interventions by the FSDMs (Freight Service Delivery Managers), improved Short Term Planning (STP) validation rates and the impact of the CP4 Freight Reform Programme. The 2014/15 performance year experienced an overall 2.8 per cent reduction in freight train kilometres, with increases in intermodal, construction and biomass traffic offset by a reduction in coal for energy supply being hauled.

Freight Delivery Metric (FDM)

Table 6.26 shows an increase in FDM of 1.2 percentage points to 94.5 per cent, continuing the trend seen so far in CP5 of outperforming the 92.5 per cent target for this metric.

Table 6.26: FDM (%) – network-wide

	2013/14	2014/15
Network-wide (actual)	93.3	94.5
Network-wide (target)	92.5	92.5

Table 6.27 sets out FDM by SFC (Strategic Freight Corridor). The lowest performing corridor was SFC902 (Southampton to Yorkshire) with an FDM of 89.0 per cent, and the highest performing corridor was SFC01 (Scotland) with an FDM of 97.2 per cent. Data was not collected on FDM by SFC in 2013/14.

Table 6.27: FDM (%) – strategic freight corridor

Strategic Freight Corridor	2013/14	2014/15
SFC01 - Scotland	-	97.2
SFC02 - Scotland to North West/Daventry/West Mids	-	92.3
SFC03 - Scotland to Tyne/Tees/Yorks/East Mids	-	93.4
SFC04 - Felixstowe/Thameside to Mids/N.West/Scot	-	90.3
SFC05 – Felixstowe/Thameside to Yorks	-	90.5
SFC06 - Immingham/Tyne to Yorks/Mids	-	95.7
SFC07 - Southampton to West Mids/North West	-	89.9
SFC08 - South Wales to London	-	91.8
SFC09 - South Wales to West Mids/North West	-	93.2
SFC10 - Somerset to London / South East	-	92.2
SFC11 - East Mids/Peak Forest to London/South East	-	91.0
SFC12 - Ch Tunnel to Daventry/W. Mids/Wembley	-	92.6
SFC901 - Yorks local	-	96.8
SFC902 - Southampton to Yorks	-	89.0
SFC903 - South Wales to North East	-	94.7
SFC904 - South Wales and West Locals	-	96.5
SFC905 - North West and Cross Pennines	-	96.1
SFC906 - South East Local	-	94.4
SFC907 - Mids Local	-	95.9
SFC908 - Mail Traffic	-	95.1

Freight delay minutes per 100 train kilometres

Table 6.28 below shows that Freight Delay Minutes per 100 train kilometres has decreased by 12.9 per cent since 2013/14, decreasing from 3.79 in 2013/14 to 3.30 in 2014/15.

Table 6.28: Freight delay minutes per 100 train kilometres – network-wide

	2013/14	2014/15
Network-wide	3.79	3.30

Freight arrivals to 15 minutes (A2F)

Table 6.29 below shows that A2F increased from 80.1 per cent in 2013/14 to 83.2 per cent in 2014/15, an increase of 3.1 percentage points.

Table 6.29: A2F (%) – network-wide

	2013/14	2014/15
Network-wide	80.1	83.2

Anglo-Scottish cross border service availability

The High Level Output Specification (HLOS) submitted by the Scottish Government sets a requirement that where maintenance, renewal or enhancement activity is required on cross-border routes, at least one of those routes should be made available to timetabled services for the passage of scheduled sleeper, passenger, and freight services between Edinburgh or Glasgow and London without the need for change. Network Rail has committed to this in the Strategic Business Plan (SBP) for Scotland, noting that on certain dates (particularly English bank holidays) the volume of work may make it difficult to keep at least one cross-border route available to timetabled services. It has committed to advise such instances to Transport Scotland.

Table 6.30 below shows the availability of cross border routes between England and Scotland in 2014/15 – the West Coast Main Line (WCML) and East Coast Main Line (ECML). The WCML is categorised as 'clear' when planned journey time between Euston and Glasgow does not exceed four hours and 30 minutes; the ECML is likewise categorised when planned journey time between King's Cross and Edinburgh does not exceed five hours. Both of these definitions are derived from the HLOS.

The two weekends where journey time delays on both routes exceeded 90 minutes or involved a bus replacement service were the Easter bank holiday weekend (19/20 April 2014) and the Early May bank holiday weekend (4/5 May 2014). On both of these weekends both routes were clear on Saturday, with engineering work closing them both all day on Sunday as noted in the SBP. Both instances were advised to Transport Scotland as set out in the SBP.

Table 6.30: Anglo-Scottish Cross Border Availability

Status for weekends in 2014/15			
	ECML clear all weekend	ECML clear from noon Sunday and / or journey time exceeded less than an additional 90 minutes	ECML journey time exceeded additional 90 minutes or involved bus replacement service
WCML clear all weekend	27 (52%)	6 (12%)	10 (19%)
WCML clear from noon Sunday and / or journey time exceeded less than an additional 90 minutes	0 (0%)	0 (0%)	0 (0%)
WCML journey time exceeded additional 90 minutes or involved bus replacement service	7 (13%)	0 (0%)	2 (4%)

Definitions and context

Regulated outputs

PPM (Public Performance Measure) is a measure of the overall punctuality of train services delivered to passengers and is defined as the percentage of passenger trains (both franchised and open access) which arrive at their final destination within five minutes (ten minutes for Long Distance sector services) of the time shown in the public timetable. PPM measures are quoted as moving annual averages (MAAs). PPM is a regulated output in both Scotland and England & Wales, and for individual TOCs a variance of two percentage points or more worse than target is a trigger for ORR intervention.

CaSL (Cancellations and Significant Lateness) measures major disruption to train services delivered to passengers and is defined as the percentage of passenger trains (both franchised and open access) 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. CaSL measures are quoted as moving annual averages (MAAs). National CaSL is displayed in Table 6.7 and disaggregated in the tables following it. CaSL is a regulated output in England & Wales, and for individual TOCs a variance of 0.2 percentage points or more worse than target is a trigger for ORR intervention.

Freight Delivery Metric (FDM) is a measure of the percentage of freight trains that have successfully arrived at destination within 15 minutes of scheduled time. It only covers delay caused by Network Rail. The ORR has set us a target to maintain performance at 92.5 per cent moving annual average (MAA) throughout CP5.

FDM by Strategic Freight Corridor (SFC) began to be reported from period 3 of 2014/15. Prior to this cancellation and service variation data was not captured at SFC level and therefore there is no data in Table 6.27 for 2013/14.

A simple methodology has been employed to forecast FDM MAA by SFC for the end of the current year. However due to the reasons above only 11 periods of data are available for 2014/15. A lack of historical data means there is no forecast for FDM at SFC level for the remainder of CP5. A network-wide FDM forecast for CP5 has been made and is captured within Table 6.26.

Train operating company (TOC): For the purposes of the regulatory measurement, Network Rail's Delivery Plan and the Annual Return, measurement is limited to the franchised operators (including operators operating under concessions) and three specified open access operators: Grand Central, First Hull Trains and Heathrow Express, unless where specifically stated to the contrary. Year by year PPM and CaSL targets agreed with franchised TOCs, included in performance strategies and recorded in the CP5 Delivery Plan are formally customer reasonable requirements and so are subject to enforcement by the ORR.

England & Wales: England & Wales services means services operated by franchised and open access TOCs other than First ScotRail.

Scotland: Scotland services, for 2014/15, means services operated by First ScotRail.

Indicators

Delay minutes: these underpin PPM and CaSL and are a key diagnostic indicator of the prime causes of disruption. Delays experienced are broken down into two 'responsibility groups', Network Rail attributed delays and operator attributed delays. Delays attributed to Network Rail typically relate to the performance of railway infrastructure (e.g. track or signalling faults), timetabling and operation of the network. This group also includes events with external causes which affect the operation of the railway such as cable theft or poor weather. Delays attributed to operators typically relate to matters such as train and station operations, fleet reliability or train crew resourcing. Delay minutes are shown in Table 6.13 and the tables following it.

The nature of the process used to attribute delays provide for resolution of disagreements about prime cause, with delay minutes records subject to change ('refresh') as these disagreements are resolved. The process provides that delays subject to disagreements typically rest with operators until resolution which in turn means that later data refreshes may show a small movement of delay from operator causes to Network Rail causes. The numbers presented in the Annual Return (except for data relating to sectors) use an adjusted delay series that provides for later resolution of disagreements in accordance with historic trends and therefore shows forecasts of the final position. Delay minutes measures are quoted as the total delay attributed to the responsibility group, operator etc. in the year.

Sectors: these are subsets of England & Wales services broadly indicative of key markets for the railway. PPM and CaSL outputs by sector were regulated outputs in CP4, with the term 'market sectors' often used to distinguish their revised status in CP5, when they are no longer regulated outputs. Data is still collated by sector in CP5 to allow comparison with historic data. There are three market sectors:

- **Long Distance**: trains providing inter-urban journeys for passengers, normally travelling long distances between start and end destination
- **London & South East**: trains providing services into and radial to London within normal commuting distance of London
- **Regional:** trains providing services outside London & South East and excluding Long Distance services, typical including services to other metropolitan areas and rural areas of the country.

Right time performance: This indicator measures the percentage of trains arriving early or within 59 seconds of schedule. Right time performance by sector is displayed in Table 6.19 and by operator in Table 6.20.

Average lateness: This measures the average number of minutes trains are late at destination and key intermediate points along their route, including an allowance for cancellations. It is shown by sector in Table 6.19 and by operator in Table 6.20.

Journey time: This measure calculates the average speed (in miles per hour) of passenger trains scheduled to operate on a sample Wednesday, and is presented by sector (Table 6.23), operator (Table 6.24) and sub-operator (Table 6.25). The calculation aggregates the distance the trains are planned to run, and the end-to-end advertised journey times of the trains including any intermediate station stops. The schedules used to calculate the measure are those which would have applied on the sample day if there had been no planned alterations, e.g. for engineering work. The measure is therefore indicative of the average speed of services in the base timetable for the sample day.

The effect of planned alterations is measured in the Possessions Disruption Index – Passenger (PDI-P), and the effect of unplanned alterations on the day is represented through the Public Performance Measure (PPM) and Cancellations & Significant Lateness (CaSL). Transit times and performance of freight trains are represented within the Freight Delivery Metric, and the effect of planned alterations measured in the Possessions Disruption Index – Freight (PDI-F).

Freight delay minutes per 100km: In CP5 this is an indicator and is not a regulated output. It is shown in Table 6.28.

Arrival to fifteen minutes (A2F) is a measure of the percentage of freight trains that have successfully arrived at destination within 15 minutes of scheduled time. Unlike FDM it covers all forms of delay. It is shown in Table 6.29.

Attrition: Lost PPM is attributed to one of six underlying categories; these attrition data provide a diagnostic toolkit which measures different types of impact on PPM. The six underlying categories, their principles and measures are shown below.

Attrition	Principle	Measure
Specification	Good day performance – the level of PPM attrition resulting from routine operational delivery or underlying issues with the timetable	Performance on the best five per cent of weekdays
Primary	Incidents and primary delay at the scene	Attributed primary delay
Reactionary	Consequence of incidents and primary delay: disruption across the network	Attributed reactionary delay
Extreme	Days of major disruption to a part of the network with no semblance of normal service. These events tend to be one off and difficult to forecast	PPM lost on days more than 3 standard deviations worse than normal
Weather	Days when we have severe weather but the railway is still fully operational	Weather affected days not causing extreme PPM loss
Season	General impact of Autumn and Winter on performance: Low adhesion / long nights / colder weather	Measured drop in PPM in periods 8-13 compared to base of periods 1-7

Franchise changes during 2014/15: In 2014/15 two franchise changes occurred. First Capital Connect became Govia Thameslink on 14 September 2014, and East Coast became Virgin Trains East Coast on 1 March 2015 (with Virgin services on the West Coast Main Line being renamed Virgin Trains West Coast at the same time). Performance for the entire year is reported using the new names.

Section 7 – Customer and Passenger Satisfaction

Customer satisfaction is an assessment of how well Network Rail engages with its customers; principally passenger and freight operating companies. Until 2014/15, satisfaction was solely measured through the Annual Customer Satisfaction Survey (ACSS), which provides feedback from senior management of train and freight operating companies at a fixed point each year.

Identifying the need to provide a more regular route-based measure of customer satisfaction alongside the annual survey, Network Rail has additionally implemented the Customer Service Maturity Measure (CSMM) during 2014/15.

These two measures, the former providing an annual snapshot which provides detailed feedback directly from customers, and the latter measuring a suite of route and customer specific attributes each quarter, creates an approach to customer satisfaction that can be tracked throughout the year.

Alongside these measures, the bi-annual National Rail Passenger Survey (NRPS) allows Network Rail to understand levels of satisfaction amongst the travelling public.

Annual Customer Satisfaction Survey (ACSS)

Each year Network Rail procures an independent market research company to survey the opinions of senior managers and directors from both train and freight operators. In 2014/15 this was undertaken by GfK, with the survey open to customers for six weeks during September and October 2014. The 2014/15 survey therefore represents a snapshot in time during autumn 2014.

The survey includes a range of questions from overall satisfaction to more specific questions about Network Rail activities or behaviours. For each question respondents are asked to score Network Rail on a one to five range, where one is very dissatisfied and five is very satisfied.

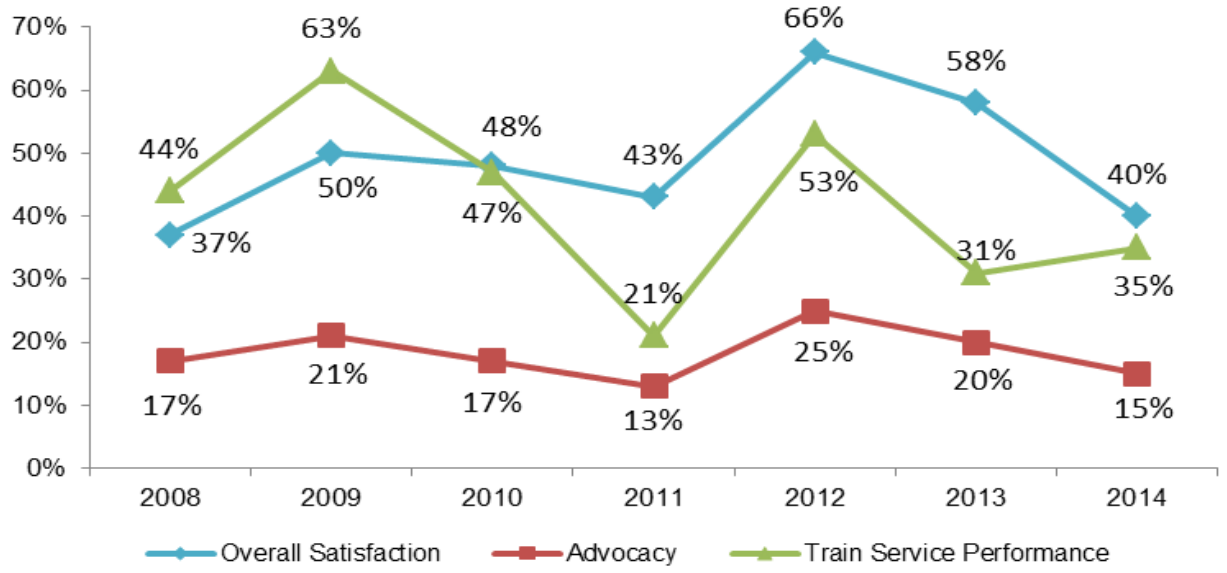
Table 7.1: Annual Customer Satisfaction Survey results

	2010/11	2011/12	2012/13	2013/14	2014/15
Satisfied / very satisfied (%)	48	43	66	58	40
Dissatisfied / very dissatisfied (%)	29	30	19	23	41
Neither (%)	23	27	15	19	19
Mean	3.15	3.12	3.55	3.41	3.00

The results above present the percentage of those surveyed who are satisfied or dissatisfied with Network Rail and provides a comparison to previous years. Also presented is the ‘grand mean’ score, which is the average score of all respondents between one (highly dissatisfied) and five (highly satisfied).

Satisfaction levels in 2014/15 were disappointing, and overall satisfaction continued to decline from the all-time high of 66 per cent in 2012/13, falling to 58 per cent in 2013/14, and down to 40 per cent this year. For the first time those dissatisfied with Network Rail (41 per cent) were higher than those who were satisfied (40 per cent), while those stating they were neither satisfied nor dissatisfied remained constant at 19 per cent.

Figure 7.1: Breakdown of Annual Customer Satisfaction Survey



Satisfaction with train performance was one of a small number of attributes that improved amongst those surveyed, and increased from 31 per cent to 35 per cent satisfied. Whilst this figure is lower than that for overall satisfaction, and is in itself disappointing, the fact that it increased slightly whilst overall satisfaction decreased significantly indicates that factors other than train performance are driving the decline.

An area of activity where customer satisfaction declined was 'delivery of enhancement projects', with 28 per cent satisfied, down nine percentage points down from 2013/14. The lowest scoring activity was 'access planning', with satisfaction levels of 18 per cent. More positively, safety remained the highest scoring attribute, where 75 per cent of customers were satisfied with Network Rail.

The response rate, at 70 per cent, was eight percentage points down from 2013/14 but remains high against comparable business-to-business surveys. A high response rate is one of the indicators used to gauge customer engagement, and maintaining high response rates remains a priority.

Customer Service Maturity Measure (CSMM)

The annual customer satisfaction survey provides feedback directly from customers but does not enable us to understand changes in satisfaction levels throughout the year. Action plans are developed at route level in response to the annual results, but we believe that a more structured and tangible approach is required to understand how satisfaction levels are evolving nationally and at a route level.

Each route team has created a suite of measures that are particular to that route and its customers and which capture the most important customer service attributes. Ranking each of these attributes using a predefined scale between one and five allows improvement or deterioration of the factors driving customer satisfaction to become apparent.

Ensuring the CSMMs are appropriate to each route and its customers means that certain factors are included in the maturity score for some routes but not others. This allows the framework to measure several components of satisfaction, giving flexibility to include measures that are appropriate to route-based needs, whilst keeping enough consistency to enable a national picture to be retained. This direct comparison can be useful, but the differences between routes means that improvements against the benchmark position are more significant for monitoring the relative maturity of customer service.

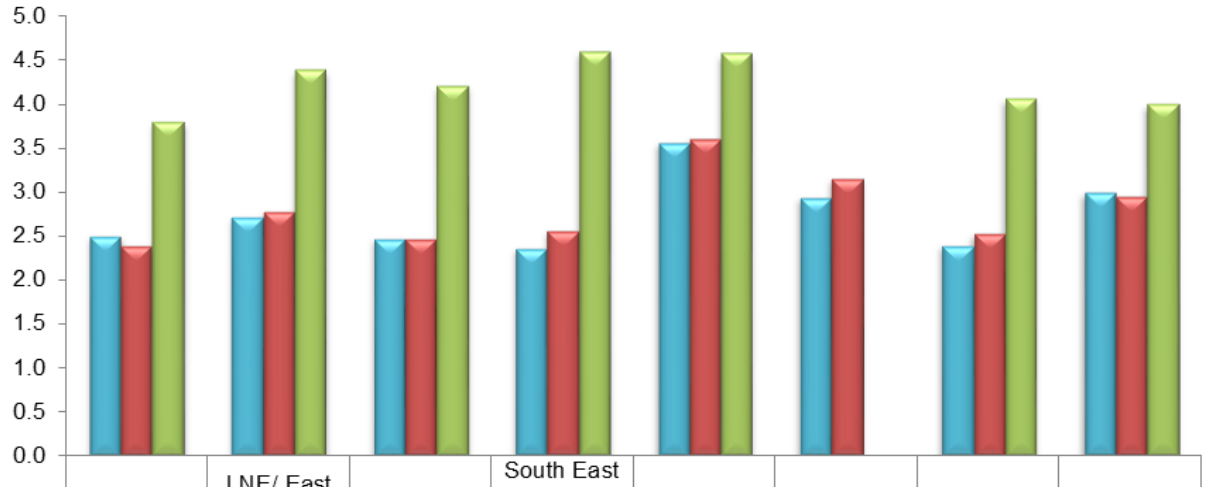
It is expected that as customer requirements change throughout the lifecycle of a franchise, or through new franchises, individual attributes may also evolve. Below is an excerpt of some attributes graded in current CSMMs:

- safety
- infrastructure reliability
- delay attribution
- Public Performance Measure (PPM)
- delay minutes
- passenger and customer satisfaction
- project delivery
- late possession changes
- effective communication
- capability to learn as an organisation
- customer driven
- passenger information during disruption.

Each route CSMM, and each of the attributes contained within them, have been benchmarked for 2014/15 by assessing performance at the end of the 2014 calendar year against a blend of existing measures and an assessment of actual customer delivery. A trajectory has also been identified in collaboration with individual routes and customers, which is intended to be realistically achievable within CP5. A slightly different approach has been adopted in Wales for which the target is to have no more than two individual attributes with a score of less than 2.0 at the end of CP5 (2019).

The CSMMs are updated quarterly using a mixture of existing data sources, surveys or pulse check responses and progress against route targets.

Figure 7.2: Benchmarks, current scores and trajectories by route



	Anglia	LNE/ East Mids.	LNW	South East (Kent and Sussex)	Scotland	Wales	Wessex	Western
Benchmark	2.50	2.72	2.48	2.36	3.57	2.95	2.40	3.00
Current Score	2.40	2.78	2.48	2.56	3.62	3.16	2.53	2.96
Trajectory	3.80	4.39	4.20	4.60	4.57		4.07	4.00

Route teams have developed action plans to improve the individual attributes that drive customer satisfaction locally. The action plans are informed by the detailed verbatim feedback from the annual customer satisfaction survey and discussion with customers.

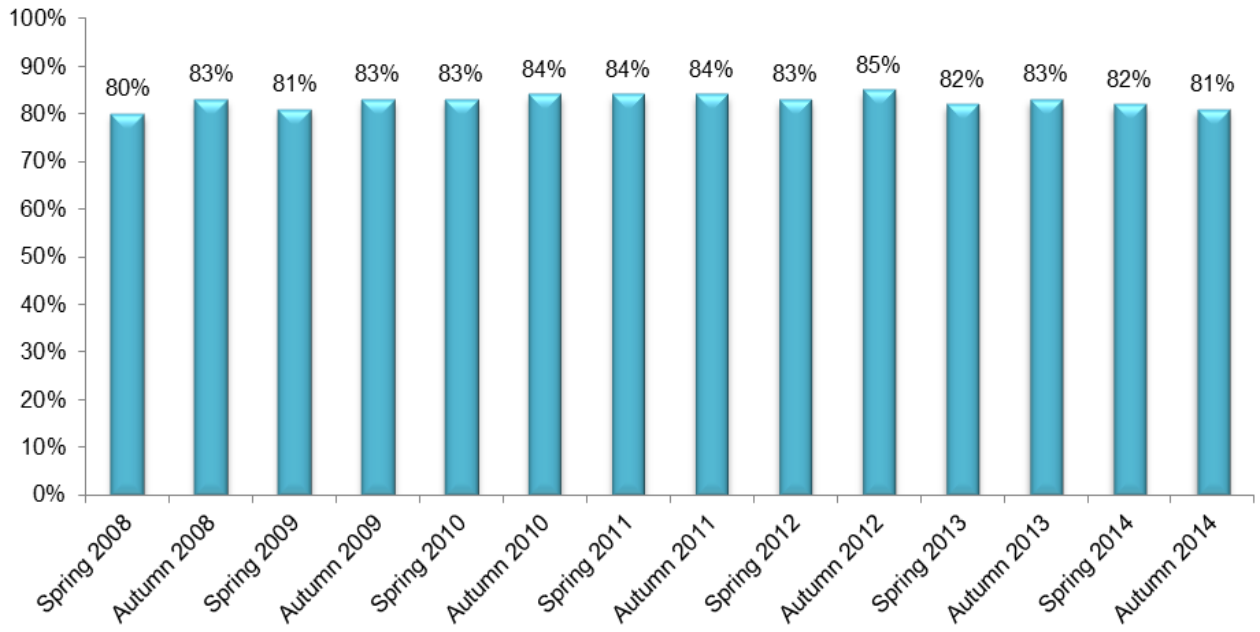
National Rail Passenger Survey (NRPS)

The NRPS is commissioned by Passenger Focus, with two surveys each year in spring and autumn. The latest results reflect the autumn 2014 survey, which took place between September and November 2014. Data was gathered from nearly 30,000 respondents at stations all over the network. The full result of the Passenger Focus autumn 2014 survey can be downloaded at the following address:

http://www.transportfocus.org.uk/research/national-passenger-survey-introduction

Nationally, the percentage of passengers satisfied with their overall journey was 81.4 per cent against our target of 83.3 per cent. This is one percentage point lower than spring 2014 and two percentage points lower than autumn 2013. Network Rail believes this marginal reduction in satisfaction is linked to train performance levels.

Figure 7.3: Overall passenger journey satisfaction



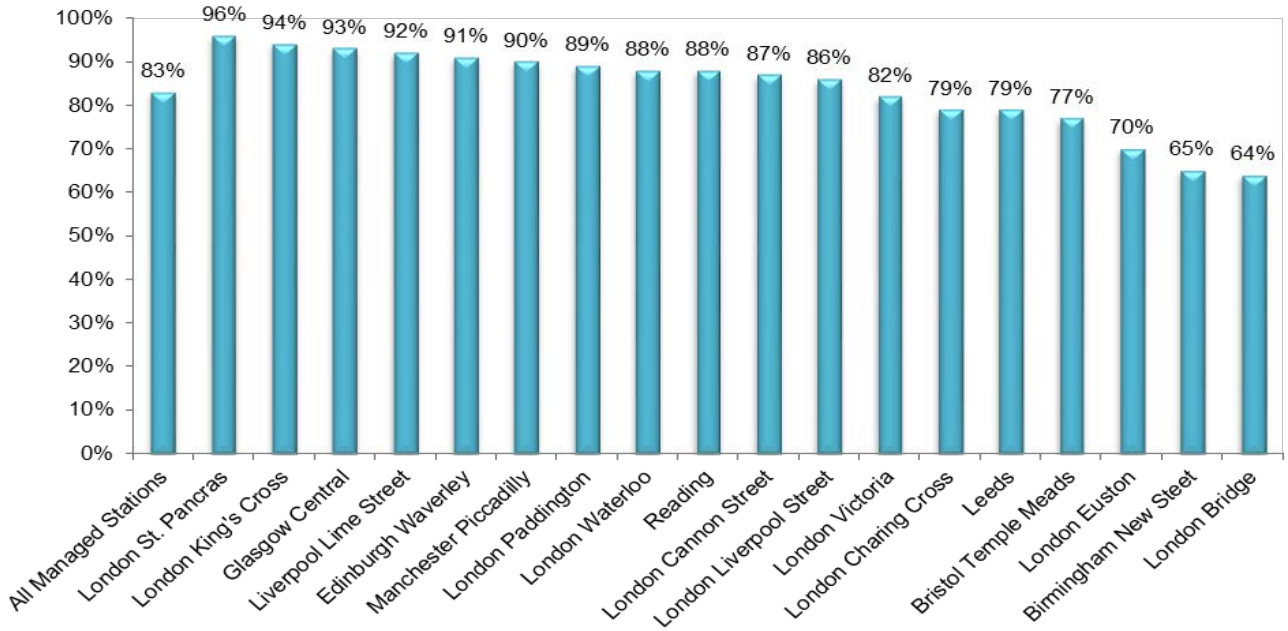
The percentage of passengers satisfied with train punctuality and reliability was 77 per cent, consistent with spring 2014 but two percentage points lower than autumn 2013. At a route level, South East experienced the lowest NRPS satisfaction score of 73 per cent. This score is heavily impacted by route-level train performance and by the London Bridge project.

'How well a train company deals with delays' remains a low scoring area, with 38 per cent satisfied. This is consistent with the spring 2014 survey but two percentage points worse than the autumn 2013 survey. Network Rail continues to work closely with train operators to improve Passenger Information During Disruption (PIDD), which is closely linked to this survey area.

Passenger feedback was the most positive for long distance journeys, with 86 per cent of passengers satisfied with their overall journey, although this result was two percentage points lower than autumn 2013 and one percentage point lower than spring 2014. For regional journeys, 84 per cent of passengers were satisfied, which was in line with autumn 2013 but two percentage points lower than spring 2014.

Network Rail directly influences satisfaction at its managed stations. Overall passenger satisfaction at managed stations was 83 per cent, consistent with the autumn 2013 survey.

Figure 7.4: Overall journey satisfaction levels at managed stations



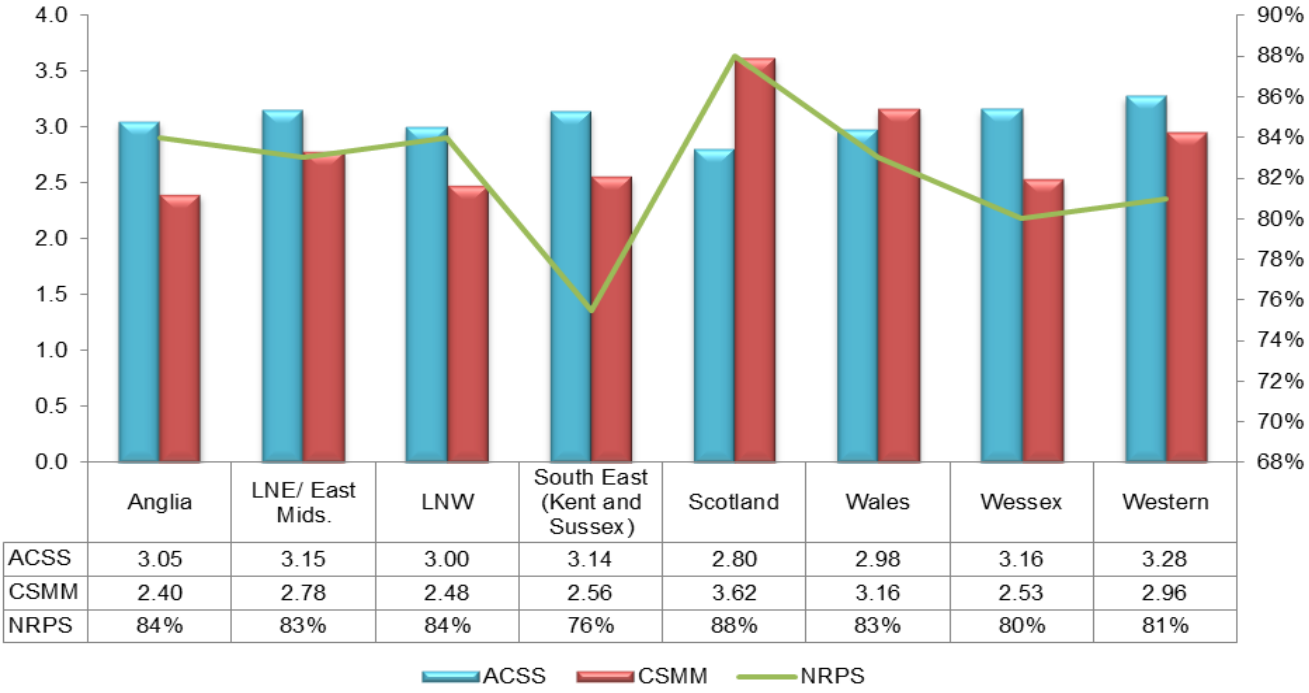
The highest scoring station was once again London St. Pancras, which achieved a 96 per cent satisfaction score, whilst the lowest scoring station was London Bridge with 64 per cent. Along with Birmingham New Street, the second lowest scoring station, London Bridge is currently undergoing significant project works. It is expected that both stations will see a significant increase in satisfaction scores on completion upon the projects, as the station disruption ends and the new station and facilities are made available to passengers.

The greatest improvement was at Reading station which, following the significant investment at the station, rose 13 percentage points to 88 per cent satisfied, well above the overall score.

Comparison of the three measures

The chart presents the National Rail Passenger Survey (measured by percentages), Annual Customer Satisfaction Survey and Customer Service Maturity Measure (both scored between one and five, where five is very satisfied) for each route. This is intended to present a holistic summary of customer relationship and delivery on an individual route basis.

Figure 7.5: Comparison of customer and passenger satisfaction measures



	Anglia	LNE/ East Mids.	LNW	South East (Kent and Sussex)	Scotland	Wales	Wessex	Western
ACSS	3.05	3.15	3.00	3.14	2.80	2.98	3.16	3.28
CSMM	2.40	2.78	2.48	2.56	3.62	3.16	2.53	2.96
NRPS	84%	83%	84%	76%	88%	83%	80%	81%

Section 8 – Network Availability

Possession Disruption Index – Passenger and Possession Disruption Index - Freight

The Possession Disruption Index – Passenger (PDI-P) quantifies the excess journey time passengers experience when possessions are taken. PDI-P 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).

The PDI-F measures the proportion of track kilometre available for freight operators to run freight services. (average freight tonne km per Strategic Route Section divided by average freight tonne km for network) x (track km available divided by total track km), baselined against 2007/08 values.

The moving annual average for possession disruption index – passenger (PDI-P) ended 2014/15 at 0.71, ten per cent better than the target of 0.79. The possession disruption index for freight (PDI-F) moving annual average ended 2014/15 at 0.88, 12 per cent ahead of the annual target of 1.00.

The year saw the delivery of a considerable amount of major project work including the Thameslink programme, Crossrail London Overground Capacity Improvement Programme (LOCIP), Cardiff Area Signal Renewals, Northern Hub, North West Electrification and Reading and Birmingham New Street station Area Developments.

Both PDI-P and PDI-F have benefited from the less than originally planned volume of renewals in the first year of CP5. This may have an adverse impact on PDI-P and PDI-F for the remainder of the Control Period if the year one renewals shortfall is not recovered in years two to five. This, together with the reforecasting of enhancements, may have an adverse impact on PDI-P and PDI-F.

Actions we are taking to mitigate this are:

- a joint initiative between the Industry Access Programme (IAP) and the National Access Planning Team, introducing the Access Change Tool that will seek to improve the way late changes are processed while providing improved management information that will allow the root causes of late change to be tackled
- additionally, through IAP, developing access frameworks that will take into account the impact they will have on Network Availability
- Capacity Planning is working with Infrastructure Projects (IP) and National Supply Chain on an integrated plan that aligns access and resources. Substantial progress has been made on this to date with the timescales at which resource conflicts are being resolved moving further out and access decisions being made based around the available resource at a national level.

Table 8.1: PDI-P – network-wide

	2010/11	2011/12	2012/13	2013/14	2014/15	CP5 Exit target
Actual	0.52	0.54	0.64	0.69	0.71	
Target	-	-	-	0.63	0.79	0.58

Table 8.2: PDI-F – network-wide

	2010/11	2011/12	2012/13	2013/14	2014/15	CP5 Exit target
Actual	0.89	0.85	0.79	0.87	0.88	
Target	-	-	-	1.00	1.00	0.73

Possession Indicator Report

The content of the Possession Indicator Report is as follows:

- Possession Disruption Index for passengers (discussed above)
- Possession Disruption Index for freight (discussed above)
- PDI-P and PDI-F by operator
- working timetable compliance at weekends
- rail replacement bus hours at weekends
- late changes to possessions
- number of planned disruption mitigating interventions
- delay minutes due to possession overruns
- cancellation minutes due to possession overruns
- possession notification discount factor
- planned versus unplanned Temporary Speed Restrictions.

Working timetable compliance at weekends

Measures the percentage of train schedules that ran as scheduled or were disrupted (cancelled or replaced) by buses versus the permanent timetable each weekend by franchised passenger train services.

The moving annual average ended 2014/15 at 83.66 per cent, this is the lowest figure seen since CP5 began. The last 13 periods have seen a consistent trend with the figure ranging between a minimum 83.66 per cent reported in Period 13 to the maximum of 84.33 per cent report in Period 6. The delivery of a large programme of works throughout the year including the Thameslink programme (London Bridge), Crossrail, London Overground Capacity Improvement Programme, Reading Station Area Development Scheme, Cardiff Area Signals Renewals and Pitsea remodelling work, Northern Hub and North West Electrification has been a contributory factor to this result.

Rail replacement bus hours at weekends

Measures the percentage of train schedules that ran and were disrupted (cancelled or replaced) by buses versus the permanent timetable per weekend per train operating company.

The actual total number of rail replacement bus hours reported for 2014/15 was 163,019, an improvement of 2.32 per cent on the previous year's figure. The moving annual average ended the year at 12,539 hours which is an improvement when compared to the same period in 2013/14 of 12,837 hours.

2014/15 has seen a consistent moving annual average trend being reported. This has been achieved despite a large programme of works being undertaken necessitating the need for bus replacement services. These have included the Thameslink programme (London Bridge), Crossrail, London Overground Capacity Improvement Programme, Reading Station Area Development Scheme, Cardiff Area Signals Renewals, Pitsea Remodelling work, Northern Hub and North West Electrification. The increased use of planned disruption mitigation interventions has contributed to this improvement.

Late change to possessions

Measures the number of new, cancelled, curtailed or extended disruptive possessions that were agreed between the Confirmed Period Possession Plan (CPPP) and the Weekly Operating Notice (WON) as approved by the Engineering Access Planning unit (EAP).

The average number of late notice changes to disruptive possessions was reduced over the year from 94 per period in 2013/14 to 74 per period in 2014/15. Further improvements in the late notice changes authorisation and the data collation process was a major contributory factor to the improvement. The continued rollout of the Access Change Tool which will improve the way the process is managed and provide much better management information is expected to help maintain this downward trend going forward

Number of planned disruptive mitigating interventions

Measures the number of adjacent line open interventions planned to minimise engineering works on rail users.

The number of planned disruptive mitigating interventions moving annual average ended 2014/15 reporting 159. This compares to 145 in 2013/14 and shows the commitment to use interventions where available to minimise rail user disruption.

Possession notification discount factor

Measures the percentage of disruptive passenger possessions notified in each of the three possession notification bands.

The moving annual average for late change notification payments made less than twelve weeks in advance ended 2014/15 at 6.24 per cent, an improvement of 29 per cent on 2013/14. Significant events occurred at the beginning and end of the year. Period 1 saw the tail end of the recovery from extreme weather conditions including Dawlish and Periods 12 and 13 were impacted by the Harbury landslip. The remainder of the periods were consistently stable which has contributed to the overall improvement.

Delay minutes due to possession overruns

Measures the delay minutes per 100 train kilometre run due to possession overrun.

Cancellation minutes due to possession overruns

Measures the number of cancellation minutes per 100 train kilometres run caused by cancellations due to possession overrun.

The moving annual average for both delay and cancellation minutes due to possession overruns ended the first year of CP5 with very similar figures to those reported at the end of CP4 - 0.045 and 0.028 respectively.

Overall in 2014/15 possession overruns have continued to cause more delay and cancellations than planned and together with other impacts from major project work has resulted in ORR investigations and reputational problems, particularly following the Christmas overruns at King's Cross and Paddington. The largest impact was seen in the London and South East sector, with particular problems around renewals activity and the Thameslink programme.

Unplanned temporary speed restrictions (TSR)

This measure provides an indication of the number of unplanned TSRs in place (the figures refer to the average number of TSR's which have not been de-duplicated).

The moving annual average (MAA) for Unplanned Temporary Speed Restrictions ended 2014/15 at 165, an increase when compared to 2013/14 of 156. Track related TSRs contributes to over 86 per cent of TSRs, with cyclic top and condition of ballast being the two biggest contributors.

A significant contribution to the increase in unplanned TSRs over the last year has been caused by the timing of recording runs and use of Plain Line Pattern Recognition on secondary routes. A change to internal policy in 2013, regarding imposition of cyclic top TSRs until the underlying causes have been addressed, the number of cyclic top TSRs has increased and has averaged around 50 TSRs in the last year compared to the previous year (2013/14) average of 20 TSRs.

Some of the affected sites in the early part of the year were caused by the after effects of the inclement wet weather experienced in winter 2013/14. Earthworks and structures TSRs were also at a three year high. As a result of the wet weather and the extensive and complex works required it took a considerable time to reduce these TSRs to a three year low at the end of the year. A Strategic Crisis Management Team (SCMT) set up in early 2014 identified a series of actions on weather resilience in the year with a comprehensive review of earthworks resulting in implementing an improved risk management document for earthworks in each route. This has helped to provide greater visibility of weather related earthwork risks and identify high risk locations to deliver strengthening works and also mitigating safety actions to protect traffic.

Level crossing TSRs broadly remained the same throughout the year with a few unplanned TSRs imposed as a result of risk assessments identifying additional risk and vegetation encroachment at some locations.

Route criticality impact caused by TSRs showed an increase trend in MAA for higher criticality routes (1, 2 and 3) until Period 8 with a downward trend from Period 9 until year end. However the MAA trend in TSRs on Route Criticality 5 has continued to increase throughout the year due to a rise in cyclic top and poor ballast condition.

Section 9 – Network Capability

This section reports on the capability of the network through our linespeed, gauge, route availability and electrified track measures and also covers information on Network Change. Tables in this section show Network Rail's Network Capability as at 31st March 2015. Commentary for Network Capability and Network Change details changes throughout 2014/15.

Linespeed (C1)

Definition

This is a measure 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
- 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 line speed is reported for that section.

Commentary

In 2014/15 the length of operational lines on the total network increased by 28 track kilometres. During the year there were many small lengths of track throughout the whole network which were added, removed or experienced linespeed changes. The most significant changes in linespeed occurred in Kent, LNE, LNW and Western and are detailed below.

Significant linespeed changes are:

- the delivery of the Redditch project in LNW which has provided just over 3.2km of additional '40-75mph' track in a passing loop from Alvecurch towards Redditch
- the re-opening of the Todmorden curve which has provided just under 0.5km of track in the 'up to 30 miles per hour' speed band
- 20 kilometres of '40-75mph' track between Swindon and Kemble for the doubling of the bi-directional line.
- six kilometres of RA9 for the construction of the North Doncaster Chord
- two kilometres of '40-75mph' track for the Hitchin Flyover
- three kilometres of RA10 for the two track Bacon Factory Curve.
- new platforms at Peterborough
- linespeed improvements on the St Pancras to Sheffield line

Table 9.1: Linespeed capability (km of track in each speed band) – network-wide

Speed Band (mph)	2010/11	2011/12	2012/13	2013/14	2014/15
Up to 35	3,653	3,561	3,577	3,558	3,560
40-75	16,806	16,728	16,711	16,665	16,639
80-105	7,571	7,696	7,712	7,712	7,764
110-125	3,078	3,078	3,075	3,157	3,157
Total	**31,108**	**31,063**	**31,075**	**31,092**	**31,120**

Table 9.2: Linespeed capability (km of track in each speed band) – England & Wales

Speed Band (mph)	2010/11	2011/12	2012/13	2013/14	2014/15
Up to 35	3,194	3,124	3,125	3,104	3,105
40 - 75	14,422	14,365	14,348	14,309	14,283
80 - 105	6,403	6,496	6,512	6,503	6,556
110 - 125	2,857	2,857	2,854	2,936	2,936
Total	**26,876**	**26,842**	**26,839**	**26,852**	**26,880**

Table 9.3: Linespeed capability (km of track in each speed band) – Scotland

Speed Band (mph)	2010/11	2011/12	2012/13	2013/14	2014/15
Up to 35	459	437	452	454	455
40 - 75	2,384	2,363	2,363	2,356	2,356
80 - 105	1,168	1,200	1,200	1,209	1,209
110 - 125	221	221	221	221	221
Total	**4,232**	**4,221**	**4,236**	**4,240**	**4,240**

Notes: Difference in total due to rounding.

Gauge (C2)

Definition

Gauge 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 Railway Group Standard: 'Requirements for the Application of Standard Vehicle Gauges', which are:

- W6 – the freight vehicle gauge for freight wagons
- W7 – a gauge for ISO 8' 0" (2,438mm) high containers, up to 2,438mm wide
- W8 – a gauge for ISO 8' 6" (2,590mm) high containers, up to 2,500mm wide
- W9 – a gauge for UIC-S containers 9' 0" (2,743mm) high, up to 2,600mm wide
- W10 – a gauge for up to ISO 9' 6" (2,590mm) high containers, up to 2,500mm wide
- W12 – a gauge for up to ISO 9' 6" (2,590mm) high containers, up to 2,600mm wide.

Commentary

The changes in the extent of the network reported in the linespeed capability measure are also reflected in the gauge capability measure. Gauge capability is reported in route kilometres rather than track kilometres so these numbers do not directly correlate to the linespeed capability measure.

Significant gauge capability changes are:

- increase of gauge capability on the GNGE joint line
- increase of gauge capability due to The Northern Hub enhancement project
- increase of gauge capability around Nottingham due to the Midland Mainline electrification
- opening of the Hitchin Flyover
- opening of the North Doncaster Chord.

Table 9.4: Gauge capability (km of track in each gauge band) – network-wide

Gauge Band	2010/11	2011/12	2012/13	2013/14	2014/15
W6	5,597	5,562	5,566	5,565	5,505
W7	3,191	3,084	3,016	3,023	2,940
W8	4,084	4,144	4,222	3,951	4,063
W9	1,381	1,306	1,306	1,131	1,126
W10 & W6	-	-	-	-	-
W10 & W8	114	163	162	178	180
W10 & W9	1,275	1,348	1,349	1,461	1,460
W12	135	135	136	448	488
Total	**15,777**	**15,742**	**15,757**	**15,757**	**15,763**

Table 9.5: Gauge capability (km of track in each gauge band) – England & Wales

Gauge Band	2010/11	2011/12	2012/13	2013/14	2014/15
W6	5,479	5,461	5,451	5,448	5,389
W7	2,258	2,188	2,120	2,126	2,044
W8	2,974	2,997	3,075	2,806	2,917
W9	1,023	947	947	771	766
W10 & W6	-	-	-	-	-
W10 & W8	114	163	162	178	180
W10 & W9	1,105	1,178	1,178	1,290	1,290
W12	135	135	136	448	488
Total	**13,088**	**13,069**	**13,069**	**13,067**	**13,073**

Table 9.6: Gauge capability (km of track in each gauge band) – Scotland

Gauge Band	2010/11	2011/12	2012/13	2013/14	2014/15
W6	118	101	115	117	117
W7	933	896	896	897	897
W8	1,110	1,147	1,147	1,145	1,147
W9	358	359	359	360	360
W10 & W6	-	-	-	-	-
W10 & W8	-	-	-	-	0
W10 & W9	170	170	171	171	171
W12	-	-	-	-	0
Total	**2,689**	**2,673**	**2,688**	**2,690**	**2,690**

Notes: Difference in total due to rounding.

Route Availability

Definition

The route availability (RA) measure is used to check the compatibility of the weight of trains with the strength of underline bridges. The 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 Annual Return 2010). 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 utilise 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 on our infrastructure but excludes sidings and depots.

Commentary

Increases in Route Availability together with network size alterations and the result of data cleansing as reported for the linespeed capability measure are the principal reason for changes in Route Availability for 2014/15. The principal changes resulting from the increase in the extent of the network are the following:

- 20 kilometres of RA8 between Swindon and Kemble for the doubling of the bi-directional line
- six kilometres of RA9 for the construction of the North Doncaster Chord
- three kilometres of RA8 for the doubling of Redditch branch line
- two kilometres of RA9 for the Hitchin Flyover*
- three kilometres of RA10 for the two track Bacon Factory Curve.

*Note that GEOGIS data currently shows this as RA0 (table numbers to be updated to reflect this).

The principal changes resulting from the reduction in the extent of the network are the following:

- rationalisation of data for track classifications
- 18 kilometres of RA8 due to rationalisation, remodelling and reclassifying of track at the London Bridge redevelopment
- two kilometres of RA8 due to rationalisation, remodelling and reclassifying of track in the Northern Hub programme.

Table 9.7: Structures route availability (km of track) – network-wide

Route availability band	2010/11	2011/12	2012/13	2013/14	2014/15
RA0	81	63	76	76	81
RA1	19	19	18	17	18
RA2	7	-	-	-	0
RA3	70	69	69	70	70
RA4	273	273	237	239	239
RA5	1,403	1,409	1,409	1,411	1,410
RA6	878	874	874	876	876
RA7	2,096	2,135	1,983	1,991	1,990
RA8	21,941	21,882	21,910	21,913	21,928
RA9	2,149	2,146	2,155	2,155	2,165
RA10	2,191	2,193	2,344	2,344	2,348
Total	**31,108**	**31,063**	**31,075**	**31,092**	**31,123**

Notes: Difference in total due to rounding.

Table 9.8: Structures route availability (km of track) – England & Wales

Route availability band	2010/11	2011/12	2012/13	2013/14	2014/15
RA0	78	60	66	65	70
RA1	19	19	18	17	18
RA2	7	-	-	-	0
RA3	32	32	32	32	32
RA4	273	273	237	239	239
RA5	469	475	475	477	475
RA6	871	867	867	869	869
RA7	1,873	1,907	1,906	1,914	1,913
RA8	21,042	21,000	21,020	21,022	21,037
RA9	2,145	2,142	2,151	2,151	2,161
RA10	67	67	67	66	69
Total	**26,876**	**26,842**	**26,839**	**26,852**	**26,882**

Notes: Difference in total due to rounding.

Table 9.9: Structures route availability (km of track) – Scotland

Route availability band	2010/11	2011/12	2012/13	2013/14	2014/15
RA0	3	3	10	11	11
RA1	-	-	-	-	-
RA2	-	-	-	-	-
RA3	38	37	37	38	38
RA4	-	-	-	-	-
RA5	934	934	934	934	934
RA6	7	7	7	7	7
RA7	223	228	77	77	77
RA8	899	882	890	891	891
RA9	4	4	4	4	4
RA10	2,124	2,126	2,277	2,278	2,278
Total	**4,232**	**4,221**	**4,236**	**4,240**	**4,240**

Notes: Difference in total due to rounding.

Electrified track capability (C4)

Definition

This is a measure 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.
- third 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 separately identified. In addition, line that is not energised and permanently earthed is counted as non-electrified.

Commentary

In CP5 Network Rail is undertaking a significant programme of new 25kV AC overhead line electrification as well as major enhancement schemes, such as Thameslink, which will have an impact on the electrified track lengths during the control period.

In 2014/15 the overall network-wide changes to electrification were:

- 25kV AC OLE increasing by 161km
- third rail 650/750V DC decreasing by 14km

Scotland has seen a net increase of 71km in 25kV A.C. overhead line electrification since last year. This is due to new electrification between Rutherglen to Coatbridge, Cowlairs to Garnqueen, and Garnqueen to Cumbernauld. The Rutherglen to Coatbridge scheme forms part of Scotland's new electrification programme in CP5 while the other two sections of new electrified track are part of the Edinburgh to Glasgow Improvement Programme (EGIP) enhancement scheme.

2013/14 marked the completion of phase one of the North West Electrification Programme and in 2014/15 Phases 2A and 2B of the programme were completed which has seen a net increase of 90km in 25kV AC overhead line added to the London North Western route. The newly electrified network is between Huyton junction to Springs branch junction and Earlstown junction to Bootle branch junction. This new infrastructure will allow electric passenger trains to run from Manchester Victoria to Liverpool and Wigan from May 2015.

Kent has seen a net decrease of around 15km in third rail 650/750V DC electrification since last year. This is due to the ongoing programme for Thameslink where major track and associated third rail 650/750V DC electrification reconfiguration has taken place in and around London Bridge station. This is not a permanent change and the electrification that has been removed will be replaced as the project progresses but the nature of taking a 'snap-shot' of the asset data for this Annual Return has resulted in this apparent reduction in electrified track capability.

Sussex has seen a net increase of around 2km in DC electrification since last year. This is due to work connected with the electrification of sidings at Oxted, Three Bridges and Brighton.

Other minor changes to electrified track capability (due to data updates and small network changes) are included within the figures for 2014/15.

Table 9.10: Electrification capability (km of electrified track) – England & Wales

	2010/11	2011/12	2012/13	2013/14	2014/15
25 kV AC Overhead Line Equipment (OLE)	6,757	6,739	6,750	6,777	6,867
Third rail 650/ 750V DC	4,470	4,469	4,473	4,476	4,462
Dual AC OLE/Third rail DC	37	35	34	35	35
1,500V DC OLE	39	39	39	39	39
Total electrified	11,303	11,282	11,296	11,327	11,403
Non-electrified	15,573	15,560	15,543	15,525	15,478
Total	**26,876**	**26,842**	**26,839**	**26,852**	**26,880**

Table 9.11: Electrification capability (km of electrified track) – Scotland

	2010/11	2011/12	2012/13	2013/14	2014/15
25 kV AC overhead line equipment (OLE)	1,302	1,495	1,514	1,560	1,631
Third rail 650/ 750V DC	0	0	0	0	0
Dual AC, OLE/third rail DC	0	0	0	0	0
1,500V DC OLE	0	0	0	0	0
Total electrified	1,302	1,495	1,514	1,560	1,631
Non-electrified	2,930	2,726	2,722	2,680	2,609
Total	**4,232**	**4,221**	**4,236**	**4,240**	**4,240**

Table 9.12: Electrification capability (km of electrified track) – network-wide

	2010/11	2011/12	2012/13	2013/14	2014/15
25 kV AC overhead line equipment (OLE)	8,059	8,234	8,264	8,337	8,498
Third rail 650/ 750V DC	4,470	4,469	4,473	4,476	4,462
Dual AC, OLE/third rail DC	37	35	34	35	35
1,500V DC overhead line	39	39	39	39	39
Total electrified	12,605	12,777	12,810	12,887	13,034
Non-electrified	18,503	18,286	18,265	18,205	18,087
Total	**31,108**	**31,063**	**31,075**	**31,092**	**31,120**

Notes: Difference in total due to rounding.

Discrepancies between actual and published capability

This information is taken from the Discrepancy Register, which is published alongside the National Electronic Sectional Appendix (NESA). The Discrepancy Register was established as part of the Infrastructure Capability Programme (ICP) to provide a comprehensive list of the differences between our published and actual capability.

By way of background information, CP4, which started in April 2009, began with a sizable number of capability discrepancies, brought to light by the verification activity supporting the publication of capability measures such as gauge (in some cases for the first time) in the Sectional Appendix. These discrepancies were summarised on a Discrepancy Register which was then used to track the progress towards resolution. An industry consultation exercise led to these discrepancies being temporarily addressed through the issuing of Short Term Network Change Notices (STNC) which committed restoration by various end dates to 'short', 'medium' or 'long' timescales. The number of discrepancies fell to a handful each year as reported in the Annual Return from 2009.

In the Annual Return 2014, three discrepancies remaining from the ICP were reported as detailed below.

Two of these are previously reported gauge discrepancies (Tapton Junction to Sheffield North and Thornhill Junction to Leeds, Holbeck East Junction) on sections for future electrification, where it would be wasteful to restore for W8 gauge and then revisit for electrification. However, the announcement on 25 June 2015 to pause the electrification of the Midland Main Line (MML) and the TransPennine route means that resolving these discrepancies will now require further consideration.

A further section (Smethwick – Stourbridge) has had the STNC expire without the former capability being reinstated. In this case a sizable engineering effort will be needed in order to recover gauge capability (through the Old Hill tunnel) and a new STNC will need to be consulted with work taking place later in CP5.

In addition, a small number of other gauge and STNC related issues are highlighted in this Annual Return as follows:

Table 9.13: Number of outstanding discrepancies, by type and proposed resolution

Discrepancies between actual and published capability
England & Wales
Newcastle to Carlisle (Whitchester Tunnel – 35 miles 69 chains). The STNC has now expired and an extension has yet to be secured. Freight operators have expressed a view that a full Network Change should be issued proposing to single the track through the tunnel so that the published gauge can be achieved. Network Rail has discounted this option in the immediate future as it would decrease capacity and have an adverse effect on performance. The recommended option in the last STNC is the 'permanent confirmation of the existing clearances' but this option has been rejected by the freight operators. Horsforth to Harrogate (St. James Drive [Bridge No. 39]; Tewit Footbridge [Bridge No. 40]). The STNC has expired and an extension has yet to be secured. No commercial freight traffic currently operates on this route.
Wincobank to Horbury (via Barnsley). The STNC has expired and an extension has yet to be secured. No commercial freight traffic currently operates on this route.
Hull to Seamer (Argyle Street [Bridge No.2]). The STNC has expired and an extension has yet to be secured. No commercial freight traffic currently operates on this route.
Scotland
Girvan to Stranraer (Townend footbridge [Bridge No. 82]). The STNC has expired and an extension has yet to be secured. No commercial freight traffic currently operates on this route.

As part of developing the Annual Return, Network Rail Routes have confirmed that there are no lines for which they are actively seeking to reduce the published capability in the Sectional Appendix through Network Change to manage bridges of substandard or potentially substandard capacity. Therefore no discrepancies have been declared in the Annual Return.

Network Rail undertakes a rolling programme of structural assessments and additionally undertook an assessment recovery programme, which was completed in April 2014. Through these activities a number of bridges were identified as being provisionally substandard. There are a variety of techniques for managing substandard bridges, including:

- Further assessment to more precisely defined capability
- Monitoring
- Load control (other than Network Change to RA)
- Minor works
- Strengthening/renewal works

Route Assessment teams keep the management of individual bridges under review and management techniques may be updated, for example deferral of a planned asset renewal may lead to application for a Short Term Network Change.

Network Rail is providing four new Bridge Strength Measures to the ORR in addition to the Annual Return. These will provide information on the number of substandard underline bridges.

Network Changes

A Network Change is a change which is likely to have a material effect on the operation of the network or on trains operated on the network. Network Changes can either be physical (e.g. changes to the layout, configuration or condition of the network) or operational (e.g. the introduction of a speed restriction on a section of track or a change to the way Network Rail maintains track). Operational changes are only classed as Network Changes if they last, or are likely to last, for more than six months.

Permanent network changes

Table 9.14: Network changes in 2014/15

	Permanent Network Changes	Established	Withdrawn
Anglia	20	21	2
LNE / East Midlands	51	27	19
Kent	8	10	0
LNW	25	18	0
Scotland	53	32	5
Sussex	12	10	2
Wales	9	0	2
Western	11	10	1
Wessex	8	8	0
Network Total	**198**	**138**	**31**

Notes: Major projects can also generate network changes. Where this is the case, details of these can be found on our website using this link.

Ongoing short-term network change proposals

Table 9.15: Number of proposed short-term Network changes

	Total	2015	2016	2017	2018	2019
Anglia	1	-	-	1	-	-
LNE / East Midlands	6	6	-	-	-	-
Kent	6	1	3	2	-	-
LNW	4	4	-	-	-	-
Scotland	30	17	5	4	2	2
Sussex	6	-	3	3	-	-
Wales	0	-	-	-	-	-
Wessex	4	1	2	1	-	-
Western	1	1	-	-	-	-
Network Total	**60**	**30**	**13**	**11**	**2**	**2**

Section 10 – Asset Management

Introduction

The following section contains a review of the asset management regulated outputs and indicators as set out in our CP5 Delivery Plan plus additional measures which review the asset condition and serviceability of the network. These are set out in this chapter as follows:

- Offering Rail Better Information Services (ORBIS)
- Asset Management Excellence Model (AMEM)
- Intelligent infrastructure
- Station Stewardship Measure (SSM)
- Light Maintenance Depot Stewardship Measure (LMDSM)
- asset condition reliability
- asset condition sustainability
- renewal volumes
- maintenance volumes
- additional asset condition and serviceability measures.

Routes

Nationally the infrastructure is divided into ten different operating routes. Many of the asset management metrics have been reported nationally and at route level as set out below:

- Network-wide
- England & Wales
- Scotland
- Anglia
- East Midlands
- Kent
- London North Eastern (LNE)
- London North Western (LNW)
- Sussex
- Wales
- Wessex
- Western.

Confidence grades

Confidence grades assigned by the independent reporter to measures reported in this Section of the Annual Return are set out in Table 2-3 of this Annual Return. Where no confidence grade has been assigned to a measure this is indicated by the use of a '-'. This is the case for most of the new measures.

It should be noted that a large proportion of the confidence grades have not been assessed for a number of years (with some dating back to 2008/09). Therefore the confidence grades assigned may not be reflective of the current position. However, the confidence grades awarded by the Independent Reporter are reported in Table 2-3 for completeness.

ORBIS

Definition

The ORBIS programme (Offering Rail Better Information Services) is a major investment in asset management that is set to change the way in which asset information is collected, stored and utilised. For each regulated output of the ORBIS programme, critical sub-milestones are agreed and tracked to build confidence in delivery to schedule.

Reporting method

The ORR regulated outputs are managed within the ORBIS Governance Framework and status is reported to the ORBIS Programme Board on a monthly basis.

Commentary

To date, all of the ORR regulated output milestones have been met with the exception of the June 2016 milestone: 'Ellipse replaces CARRS as the master system for Civils' (Table 10.1). The sub-milestones for future regulated outputs of ORBIS are tracking to schedule.

The BCAM programme (Buildings and Civils Asset Management) was stopped in November 2014 due to projected costs exceeding authorised budget and a three month exercise undertaken by the ORBIS programme to validate the solution, schedule, cost and business benefits case. This was presented to the February Network Rail Investment Panel who re-authorised the Civils and Structures Asset Management Solution (CSAMS) project to proceed under the ORBIS Governance Model.

The revised Delivery Plan for the CSAMS project is planned to deliver the regulated output 'Ellipse replaces CARRS as the master system for Civils' within 2016 but there is no contingency in the tight schedule.

Table 10.1: ORBIS milestones

Milestone	Description	Target date	Progress
Track Linear Asset Decisions Support (LADS) will bring together disparate track data sources to enable NR to target work more efficiently	National roll-out complete	May 2014	Closed We have received written confirmation from the ORR that this milestone has been completed and accepted.
Signalling Signalling Decision Support (SDS) will bring together disparate signalling data sources to enable NR to target work more efficiently	Data specification complete, including for core data	January 2015	Evidence has been presented to the ORR and it has agreed closure of the regulated output.
	National roll-out complete	September 2015	On Schedule - the project is on schedule to deliver within the target date.
Electrification & Plant Electrification & Plant Decision Support (E&PDS) will bring together disparate E&P data sources to enable NR to target work more efficiently	Data specification complete, including for core data	April 2015	Waiting formal closure by the ORR. Evidence was provided to the ORR 31/03/15
	National roll-out complete	December 2015	On Schedule - the project is on schedule to deliver within the target date.
Structures Ellipse replaces CARRs (Civils Asset Register & Reporting system) as the master system for Civils Structures	Data specification complete, including for core data	June 2014	Closed - we have received written confirmation from the ORR that this milestone has been completed and accepted.
	Asset hierarchies established and Ellipse designated as master system for Civils	June 2016	On Schedule but 'tight'. The Project was restarted April 2015 following NRIP re-authority and interim milestones will be tracked within ORBIS governance to monitor closure within the target.
Geographic and Infrastructure System (GEOGIS) decommissioned	GEOGIS will be replaced by strategic Asset Management Platform systems	December 2016	On Schedule - the project is on schedule to deliver within the target date.
Handheld Fault and incident data capture app roll-out complete	The new application will allow maintenance staff to enter fault data into handheld devices and for this to be electronically transmitted to control centre staff	August 2014	Closed We have received written confirmation from the ORR that this milestone has been completed and accepted.

AMEM and AMEM-Lite

Definition

The Asset Management Excellence Model (AMEM) measures an organisation's asset management capability by assessing its maturity in a range of core asset management activities. A score of over 70 per cent is needed to be in the excellent category. Our regulated output target is 72 per cent, to be achieved by January 2018.

AMEM-Lite is a method for assessing asset management capability by route. This is a new approach which allows measurement of every aspect of route capability or look at specific areas in more detail.

A higher percentage indicates better performance.

Reporting method

The level of maturity was independently assessed at the end of CP4. This assessment is to be repeated in March 2016 and then January 2018. These independent assessments are to be complimented by annual self-assessments (AMEM-Lite) which will be conducted at route level, in order to identify progress, current capability and areas for improvement.

Commentary

The end of CP4 assessment has shown that there has been good progress with four groups either meeting target or being within the margin of error of the assessment and all groups saw an improvement since the Strategic Business Plan (SBP) (Table 10.2). The significant improvement in the Asset Knowledge Enablers score reflects rollout of the first significant decision support tools through the ORBIS programme.

Implementation of Risk Based Maintenance showed the largest gap to target. The Organisation and People workstream saw slower than planned progress in rolling out the asset management competence programme. This is reflected in the lower score.

Good progress was made in our asset management capability development during CP4 and we are now an upper decile performer in the comparator group at Network Level. To succeed in this area will require further developments in risk based maintenance, data quality and asset information tools and is critically dependent upon awareness, adoption and integration of practices across our routes, projects and central functions, supported by strong collaborative behaviours.

Table 10.2: AMEM by core group (%) – network-wide

	CP5 SBP	End of CP4 Score	2015/16	2017/18
Asset Management Strategy & Planning				
Actual / forecast	65.80	67.30	69.60	72
Target	-		-	72
Asset Management Decision-Making				
Actual / forecast	58.70	60.40	67.80	72
Target	-		-	72
Lifecycle Delivery Activities				
Actual / forecast	69.20	71.40	72.00	72
Target	-		-	72
Asset Knowledge Enablers				
Actual / forecast	60.70	66.90	69.70	72
Target	-		-	72
Organisation & People Enablers				
Actual / forecast	67.30	69.20	72.00	72
Target	-		-	72
Risk & Review				
Actual / forecast	60.80	61.80	68.00	72
Target	-		-	72

Asset Data Quality

Definition

Asset data quality is assessed using confidence grading of data reliability (the process and governance for producing the data: A to D) and a grading of accuracy and completeness (1 to 6).

Reporting method

In order to demonstrate a comparable year on year forecast of data reliability (the alpha element of the Network Rail confidence grading methodology) this forecast has been measured against the level of governance that would represent A grade governance in 2017/18 for plain line and S&C track assets. The numeric measure of accuracy and completeness within the confidence grade is based upon a lowest value method of aggregating attribute level accuracy to a system level result. As such, the forecasted accuracy measure represents the lowest single result of any attribute that forms part of the system.

The Asset Data Confidence Grading methodology is a measure of fitness for purpose of data. The assessment measures the governance for producing data: A (best practice) to D (poorest governance) scale and the accuracy and completeness: 1 (>=99 per cent) to 6(<50 per cent) scale. As such, A2 data confidence requires Network Rail to achieve best practice governance with 95 per cent accurate and complete data by April 2017. This assessment is undertaken on a statistically significant sample size that provides 95 per cent confidence with a +/- 5 per cent confidence internal on the result.

Commentary

Asset data quality for signalling, telecoms, buildings, structures, and earthworks will be reported from the 2015 Delivery Plan onwards. Electrical power will be reported from the 2016 Delivery Plan onwards.

As of yet, no formal Asset Data Confidence Assessment has taken place in CP5. This is because Network Rail is currently building the definition of core data to be measured. Definitions for track, structures, signalling and electrical power have all been agreed or are in the process of being agreed with the ORR as per the regulated outputs set out in the CP5 Final Determination. The remaining specifications are set to be submitted to the ORR for agreement.

Data profiling techniques are currently being employed to assess the maximum possible accuracy achievable. This profiling focuses on the validity of data within asset registers and aims to identify where intervention is required to meet A2 data quality. These data quality reports work to the assumption that valid data is also accurate and all records are present in the asset register. The data quality reports will be phased in over the course of 2015.

Works undertaken throughout 2014/15 include; agreeing core data specifications for track, structures, and signalling and reviewing core data specifications for electrical power with the ORR. Data quality reports created for track, signalling and structures have been produced as well as publishing a plan to complete the remaining specifications and quality reports.

Key Improvement Plans have been set up and include:

1. Asset Data Policy
2. Asset Information and ORBIS.

Network Rail's approach to improving and sustaining accurate asset-related data will be driven by the key principle of treating data as an asset in its own right. A central component to this will be the development and implementation of an asset policy for data analogous to those that support physical assets such as track, signalling etc.

The data policy will be based on an internationally recognised management standard - ISO8000 Master Data: Quality Management Framework. In addition to the benefits of using tried and tested methods, this approach will also enable Network Rail to develop benchmarking and best practice sharing capability beyond traditional comparators.

The policy aims to coordinate but not dictate asset-related data management activities across a devolved business. The policy will define the outputs, and clarify system interfaces, activities, constraints and minimum competencies required to deliver those outputs whilst providing data stewards an appropriate level of autonomy as to how those outputs are achieved. This approach will enable data stewards to take advantage of the opportunities presented by devolution by implementing locally developed data quality improvement initiatives in addition to those delivered centrally without compromising the consistency and integrity of the national data set.

Network Rail will develop and implement an assurance regime in line with the existing three tiered assurance framework. Data quality measurement will include the application of policy in addition to data accuracy and, over time, an understanding of the relationship between policy and accuracy will enable a move toward a predict and prevent approach to the management of data quality.

Asset Information provides a range of services to data stewards / users. Asset Information has based its vision and strategy around the National Intelligence Model, a data to intelligence model founded on the five capabilities of data collection, evaluation, collation, analysis and communication. The ORBIS programme has been created to deliver the Asset Information vision, and will transform these five capabilities throughout the business during CP5 to enhance and enable the asset management system. Through the ORBIS programme of work the business will have the following:

- tools to capture, maintain and access high quality asset data
- ability to join and view asset data in collaborative environments
- decision support tools to better manage the asset.

Improvements to Network Rail's asset-related data and data collection, evaluation and collation capabilities will be delivered through a number of key programmes:

- Master Data Management has defined the national data specification required to deliver CP5 asset policy and equipped the Asset Information function with the tools and skills to maintain and enhance the specification to support maturing asset management policy.
- Mobile device and works management will continue to provide the front line workforce with tools to collect accurate asset-related data; the data collection services strategy will improve the capability to automate data collection through enhancements to the train-borne monitoring fleet.
- Geo viewer and location data improvement will visualise the railway using image-capture techniques such as Light Detection and Ranging (LIDAR), bird's eye and oblique photogrammetry. This capability will provide data stewards with a new perspective of the railway that will highlight instances of inaccurate data previously not easily visible.
- The Exchange of Asset Information from enhancement and renewals projects is of central importance to the accuracy of Network Rail's asset-related data. The Exchange of Asset Information programme will improve the clienting capability of Network Rail so that accurate asset-related data is exchanged throughout the life cycle of enhancement / renewal activities in a timely manner.
- The Rail Infrastructure Network Model (RINM) is a model of the railway as a system. The programme will enable the RINM to be viewed both topographically as a map and topologically as a schematic. RINM will bring together infrastructure data sets describing what, where, work bank and condition and system level data sets of capability, utilisation and performance. It will enable a step change in data quality business rules that can be applied to assess inaccuracy and direct subsequent improvement activities.
- The Asset Data Improvement Programme will work in parallel with local improvement initiatives delivered by data stewards to enhance specific areas of asset data quality shortfall.

For each asset type a number of attributes are selected by Network Rail and agreed with the regulator to be determined as core asset data. Core data is considered key data in supporting decision making in the following areas:

- safety
- maintenance and renewal volumes
- system capability
- legislative requirements e.g. RINF.

Our asset data is subject to various types of assurance to provide Network Rail with a level of confidence in the data quality. Data profiling is one of the assurance methods that focuses on querying data from our asset registers against a series of business rules. The results of this profiling, identifies the maximum data accuracy possible by identifying invalid data.

Table 10.3: A2 Core data specification & data quality reporting plan

Asset types	Core data specification	Trial data quality report	First issue data quality report	Complete data quality report
		50% of attributes profiled	75% of attributes profiled	100% of attributes profiled
Track				
Plain line	July 2014	December 2014	June 2015	September 2015
Switches & Crossings				
Signalling				
Interlocking				
Signals				
Train Detection Equipment	January 2015	March 2015	June 2015	September 2015
Point Operating Equipment				
Level Crossings				
Telecoms	June 2015	August 2015	October 2015	November 2015
Electrical Power				
High Voltage Switchgear				
Transformers				
Overhead Line Equipment	April 2015	May 2015	July 2015	October 2015
Conductor Rail				
High Voltage Cables				
Buildings	June 2015	July 2015	September 2015	November 2015
Structures				
Underline Bridges	June 2014	January 2015	September 2015	December 2015
Overline Bridges				
Earthworks	June 2015	July 2015	July 2015	August 2015

Table 10.4: Data quality reports – March 2015

	% of core attributes profiled	Distribution of attributes by numeric grade					
		1	**2**	**3**	**4**	**5**	**6**
Track	49	2	10	1	3	0	**1**
Plain line	53	1	5	0	2	0	**1**
Switches & Crossings	44	1	5	1	**1**	0	0
Signalling	95	47	2	5	3	0	**3**
Interlocking	100	6	0	1	**1**	0	0
Signals	93	13	0	0	0	0	**1**
Train Detection Equipment	93	12	0	0	0	0	**1**
Point Operating Equipment	93	11	2	0	0	0	**1**
Level Crossings	100	5	0	4	**2**	0	0
Structures	87	10	4	5	3	6	**5**
Underline Bridges	85	5	2	1	3	3	**3**
Overline Bridges	89	5	2	4	0	3	**2**

Intelligent Infrastructure

During 2014/15 we have continued with our Intelligent Infrastructure programme after successfully implementing the approach in CP4, fitting remote condition monitoring (RCM) equipment to a range of our assets, including points, track circuits, signalling power supplies and points heating systems ('other' in Table 10.5 refers to points heating and REB temperature monitoring). The CP5 programme was originally structured in a series of phases. These have now been renamed as tranches to take effect after Phase 3 which is planned to commence in 2015/16.

Phase 3a has been successful, delivering 740 more points than planned. There has been little delivery against Tranche 4 targets in 2014/15; we expect further delivery throughout the remainder of CP5. The small deficit in track circuit delivery has been added to the scope for Tranche 1 and will be delivered later in CP5.

There have been no generic loggers delivered in 2014/15 as these will now be delivered as a product within the reprogrammed Tranches through the remainder of CP5. This will be required to be delivered by routes and actual delivery will therefore be dependent on how the routes fund and programme this area of work. Signalling busbars are included in Table 10.5 as delivery in this area makes up part of the overall programme. Signalling busbar activity is profiled for years three to five of CP5.

Remote Condition Monitoring (RCM) enables detection of asset failures before they occur to avoid incidents and deliver reduction in delay minutes and schedule 8 costs. The resulting reduction in unplanned maintenance visits delivers safety benefit and an opportunity to reduce routine maintenance visits. 35,000 assets have been fitted with Intelligent Infrastructure and made the following contribution to train performance:

- Success rate and incidents avoided measures are both over 30per cent at end of 2014/15 showing the positive impact that use of Intelligent Infrastructure has on incident avoidance, there were 372 successful interventions made in the period before year end. This level of performance is being maintained nationally during the initial months of 2015, although structured continuous improvement plans are underway to share best practice across routes and drive up the value gained from existing II fitment.
- At end 2014/2015 the annual view of delay minutes avoided equalled 543,250, using an average value of delay minute provided by national infrastructure team this can be quantified as a schedule 8 cost avoidance (and not a budget reduction), equal to £24.4m schedule 8 cost avoidance using the original CP4 average value of a delay minute.

Table 10.5: Asset fitment volumes – Intelligent Infrastructure

Asset	2014/15 Target	2014/15 Actual
Phase 3a		
Points	1,600	2,340
Track Circuits	4,500	4,196
Other	600	729
Phase 4 (now Tranche 1 - 3)		
HPSS Points	200	0
Level Crossings (auto)	-	0
SSI	250	0
Signalling Power	50	304
Generic Loggers	200	0
Busbars	0	0

Station Stewardship Measure

Network Rail Station Stewardship Measure

Definition

The Station Stewardship Measure (SSM) is an average condition score of stations where Network Rail is the operator or landlord, in each of the station categories A to F in England & Wales, and across all stations in Scotland. A lower SSM score indicates a better station condition.

Reporting method

The condition score is calculated by assessing, by visual and detailed inspection, the asset remaining life of elements within the station lease area.

The condition of each element within a station is assessed through a survey before being uploaded into our Operational Property Asset System (OPAS) following checks by the asset management teams within the routes. The SSM scores are based on validated OPAS examination data generated automatically by the OPAS system. Table 10.6 shows the remaining life percentage range for each Condition Rating.

Commentary

Table 10.7 demonstrates that SSM targets have been exceeded for all station categories for England & Wales and in Scotland, as well as demonstrating an improvement from 2013/14.

Significant (five per cent) improvement to category A stations is due to a return of stations with major enhancement schemes, such as London King's Cross and Blackfriars, to the operational property portfolio. This category represents an eight per cent out-performance against target.

SSM scores within other categories were better than target. This indicates that station condition is stable and provides reasonable confidence that the CP5 targets are achievable.

Overall, improvements have been driven by Network Rail maintenance and renewals projects. However other station initiatives including enhancement schemes, Access for All, National Stations Improvement Programme (NSIP) projects also have a positive effect on the SSM results.

Table 10.6: Definitions 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 10.7: Station Stewardship Measure (SSM) ratings by category

	2010/11	2011/12	2012/13	2013/14	2014/15
Category A (England & Wales)					
Target (CP5)	-	-	-	-	2.24
Actual	2.30	2.26	2.21	2.16	2.05
Category B (England & Wales)					
Target (CP5)	-	-	-	-	2.34
Actual	2.40	2.37	2.34	2.32	2.29
Category C (England & Wales)					
Target (CP5)	-	-	-	-	2.40
Actual	2.47	2.43	2.40	2.36	2.35
Category D (England & Wales)					
Target (CP5)	-	-	-	-	2.40
Actual	2.47	2.41	2.39	2.35	2.33
Category E (England & Wales)					
Target (CP5)	-	-	-	-	2.40
Actual	2.50	2.43	2.39	2.36	2.35
Category F (England & Wales)					
Target (CP5)	-	-	-	-	2.48
Actual	2.50	2.47	2.47	2.44	2.43
Scotland					
Target (CP5)	-	-	-	-	2.33
Actual	2.33	2.28	2.33	2.23	2.21

Notes: **The figures exclude Abellio Greater Anglia (AGA) figures as these are presented separately below.**

Abellio Greater Anglia Station Stewardship Measure

Definition

A change to the franchise arrangement in CP4 led to Abellio Greater Anglia (AGA) taking full repair and renewal responsibilities for the stations in Anglia, in accordance with the requirements of its operating licence and franchise agreement.

Reporting Method

AGA is required to carry out an annual independent audit on the condition of these stations. Arup undertook this review in 2015. A selection of stations across all categories were reviewed.

Commentary

The SSM results provided by AGA (Table 10.8) indicate that station conditions for category B, C and D stations remain unchanged from 2013/14. There has been a slight deterioration in category E station condition which is offset by an improvement in category F station condition.

The Arup report suggests that the condition assessments being reported by AGA (as shown in Table 10.8) are worse than is actually the case. Given that AGA is projecting a more pessimistic view, Arup do not consider that the SSM results

reported by AGA are hiding any deterioration of the assets or any systemic deliberate intention to mask the true state of the assets. Instead, the variation is driven by differences of opinion in terms of asset life expectancy.

Table 10.8: Abellio Greater Anglia Station Stewardship Measure (SSM) ratings by category for 2014/15

	2014/15												
	Period												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Category B	2.46	2.46	2.46	2.46	2.48	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47
Category C	2.42	2.44	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43	2.43
Category D	2.46	2.46	2.47	2.46	2.46	2.46	2.47	2.46	2.46	2.46	2.46	2.46	2.46
Category E	2.41	2.41	2.42	2.42	2.42	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.45
Category F	2.59	2.59	2.59	2.59	2.59	2.58	2.57	2.55	2.55	2.53	2.53	2.53	2.53

Light Maintenance Depot Stewardship Measure

Definition

The Light Maintenance Depot Stewardship Measure (LMDSM) assesses the overall average condition of Light Maintenance Depots (LMDs) where Network Rail has responsibility for the repair and renewal of assets, providing at year-end, the average condition ratings of each depot. Depots leased to Depot Facility Owners on a full repairing basis are excluded from the calculation.

Reporting method

The score is calculated by assessing the asset remaining life of the elements within the LMD via an annual examination for operational property structural blocks and five yearly examination of all blocks and elements, then rolling up the results into an overall LMD score.

Commentary

In England & Wales (Table 10.9) the LMDSM showed a better than target improvement, achieving an outturn of 2.34. This has been driven by marginal improvements in site specific scores at various locations including Cambridge Cavendish Road, Welwyn Garden City, Chingford and Neville Hill LMDs from surveys carried after interventions at the locations.

There has been a significant improvement in the LMDSM results in Scotland in 2014/15 achieving 2.12 against a target of 2.43. The main driver for this is the inclusion of Bathgate LMD into the reporting cycle. Bathgate LMD was completed in 2011 therefore its condition is relatively new. Upon completion of significant refurbishment works carried out at Perth LMD, a resurvey of the asset has also driven improvements to the score.

The underlying trend of national LMD condition is broadly stable with recorded improvements driven by factors detailed above.

Table 10.9: Light Maintenance Depot Stewardship Measure

	2010/11	2011/12	2012/13	2013/14	2014/15
England & Wales					
Target	-	-	-	-	2.40
Actual	2.35	2.40	2.38	2.37	2.34
Scotland					
Target	-	-	-	-	2.43
Actual	2.80	2.66	2.45	2.38	2.12
Network-wide					
Target	-	-	-	-	2.41
Actual	2.41	2.43	2.39	2.37	2.31

Asset Condition and Serviceability

Broken Rails

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 (sidings and depots are excluded).

Reporting method

The National Engineering Reporting Team issues a daily broken rail report based on data from the National Control Centre Daily Log. In parallel maintenance areas are responsible for reporting all broken rails in the Rail Defect Management System database which is used to produce period and annual reports. This data is checked against various information sources prior to reporting. The Rail Defect Management System (RDMS) allows for standardised reports for the numbers and types of broken rail to be produced straight from RDMS. The procedure for collecting, confirming and collating the numbers of broken rails has been in place for eight years, and has been supported by RDMS since the start of CP4.

Commentary

The number of broken rails this year fell to 98 compared to 126 last year (Table 10.10). The biggest reductions were seen in primary, and in particular, secondary routes. A number of initiatives combined with the relatively mild winter resulted in the lowest number of broken rails on record as outlined below:

- the roll out of train based ultrasonic inspection on track categories four, five and six, carrying lower speed and tonnage traffic
- a number of routes focusing on earlier intervention at dipped joints on higher speed, higher tonnage track
- targeted replacement of rail that has carried a higher cumulative tonnage
- a focus on taking action on geometry faults at an earlier level
- the fourth ultrasonic test train (UTU) has now been operating to provide a higher frequency of ultrasonic inspection of the rail in lower track category routes. The ongoing programme of testing is now showing benefits in a reduction of breaks on secondary routes.

Work is continuing trialling modified ultrasonic testing techniques to try and enable small defects in the foot of the rail to be identified to allow better prioritising of rail replacement with the potential to reduce the number of breaks from these defects.

Table 10.10: Number of broken rails

		2010/11	2011/12	2012/13	2013/14	2014/15
England & Wales	Primary	87	65	97	59	52
	Secondary	49	42	49	42	23
	Rural	13	3	7	6	6
	Total	**149**	**110**	**153**	**107**	**81**
Scotland	Primary	7	7	5	8	2
	Secondary	15	8	17	11	14
	Rural	0	2	3	0	1
	Total	**22**	**17**	**25**	**19**	**17**
Network Total	Primary	94	72	102	67	54
	Secondary	64	50	66	53	37
	Rural	13	5	10	6	7
	Total	**171**	**127**	**178**	**126**	**98**

Rail defects

Definition

A defective rail is one with 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 squats, 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).

Immediate action defects are those defects which require the immediate imposition of an emergency speed restriction due to their severity. The underlying network total remains largely unchanged but has seen an increase from last year.

Continuous defects remaining in track (excluding (RCF)) are rail defects greater than one yard long made up primarily of untestable rail, lipping, wheelburns and hydrogen shatter cracking.

Reporting method

Maintenance areas are responsible for reporting all defective rails into the Rail Defect Management System (RDMS) database which is used to produce period and annual reports. The RDMS allows for standardised reports for the numbers and types of defective rail to be produced straight from RDMS. The procedure for collecting, confirming and collating the numbers of defects has been in place for eight years, and has been supported by RDMS since the start of CP4.

Commentary

The number of immediate action defects identified per 100 kilometres of track by route classification and Route show a significant reduction compared to last year (Table 10.11).

The Route and network totals all show a reduction compared to last year. The removal of defects in rural routes has resulted in significant reductions, particularly in Scotland, due to the removal of rail end defects in jointed track and the roll out and continued testing using an increased frequency of train based ultrasonic inspection over the last two years.

The aforementioned actions taken to reduce broken rails have also had a positive impact in reducing the number of immediate action defects by targeted re-railing of severe RCF sites, actioning geometry faults at an earlier level and the repair or replacement of dipped joints at lower intervention values.

These intervention actions have also helped control the continuous defects. Nationally there has been an increase in the overall defects remaining at 31 March 2015 compared to the same point in 2013/14. Scotland figures remain fairly constant year on year and can be partly attributed to the ongoing track defect maintenance previously discussed. The largest variance can be seen in England and Wales where further work needs to be done to remove or repair defects.

Table 10.11: Immediate Action Rail Defects per 100km

		2013/14	2014/15
England & Wales	Primary	4.11	2.32
	Secondary	2.69	1.91
	Rural	2.72	1.41
	Total	**3.32**	**2.44**
Scotland	Primary	1.63	1.75
	Secondary	1.51	1.13
	Rural	21.09	5.55
	Total	**5.59**	**2.16**
Network Total	Primary	3.96	3.17
	Secondary	2.47	1.76
	Rural	6.34	2.23
	Total	**3.63**	**2.40**

Table 10.12: Length of Continuous Rail Defects

		2010/11	2011/12	2012/13	2013/14	2014/15
England & Wales	Defects identified	71,937	76,585	127,022	153,587	144,578
	Defects removed / repaired	68,529	68,699	123,976	141,671	138,235
	Defects remaining at 31 March	58,009	65,858	76,996	88,912	95,255
Scotland	Defects identified	8,683	15,415	17,995	14,165	11,012
	Defects removed / repaired	9,273	14,451	7,280	23,907	10,479
	Defects remaining at 31 March	34,275	35,292	45,335	35,593	36,126
Network Total	Defects identified	80,620	92,000	145,017	167,752	**155,590**
	Defects removed / repaired	77,802	83,150	131,256	165,578	**148,714**
	Defects remaining at 31 March	92,283	101,150	122,331	124,505	**131,381**

Table 10.13: Length of Continuous Rail Defects by operating route in 2014/15

Classification	Anglia	East Midlands	Kent	LNE	LNW	Scotland	Sussex	Wales	Wessex	Western	Network Total
Defects identified	8,818	4,984	9,727	48,785	31,080	11,012	9,802	12,770	4,607	14,005	**155,590**
Defects removed / repaired	10,684	7,016	9,374	40,872	26,152	10,479	13,471	13,846	3,676	13,144	**148,714**
Defects remaining at 31 March	6,235	1,755	12,660	24,471	18,745	36,126	5,690	8,142	5,993	11,564	**131,381**

Rolling Contact Fatigue

Plain line

The volume of heavy and severe rolling contact fatigue (RCF) in plain line is measured in yards. The introduction and national use of RDMS has enabled the lengths of RCF reported to be split by severity. Light and moderate RCF, which is managed through cyclic inspection and grinding and requires no additional actions, has been omitted. Only heavy and severe RCF, which requires enhanced inspections, has been reported.

The total lengths of heavy and severe RCF across the network have both shown an increase over the previous year's figures with heavy increasing by 4.5 per cent and severe by 21.2 per cent from 2013/14 to 2014/15 (Table 10.16 and Table 10.17). The volumes of heavy and severe RCF have increased across all routes and a number of factors have contributed to the overall increase. Previous changes to standards to allow longer timescales for planning the replacement of heavy and severe RCF has resulted in heavy and severe RCF remaining in track longer, increasing the overall length that is recorded in RDMS. In addition to these changes, the delivery of plain line grinding has also resulted in lower volumes being delivered on certain routes that has led to an increase in the volumes of RCF reaching the heavy and severe category.

Eddy current non-destructive test equipment is now being implemented and is now fitted to all of our UTU fleet to provide new train based surface crack measuring technology to better understand the length and depth of RCF across the network. The data is now being routinely collected and will be used to improve the asset records using the new surface crack measuring equipment.

The improved data will be used to better prioritise the removal of more severe RCF before actionable ultrasonic defects are detected. In addition to this a review is underway to seek to increase the effectiveness of our grinding on both plain line and S&C. The benefits of improved knowledge gained from the new eddy current surface crack measuring equipment will be used to further improve our rail management policies and standards.

In addition to this, new premium rail steels have been developed and approved with improved wear and RCF resistance. These new steels are now being installed routinely into plain line curves where RCF or rail wear has resulted in the premature replacement of the previous rail.

S&C

The volume of heavy and severe RCF in S&C is reported as the number of components within the switches and crossings, such as switch rails, stock rails, closure rails and crossings that have a heavy or severe crack within the length of the component.

The data shows an increase of 4.4 per cent in the number of components affected by heavy RCF and an increase of 16.4 per cent in the number of components affected by severe RCF from 2013/14 to 2014/15. The most significant increases in severe RCF in S&C components were reported in Table 10.14.

Table 10.14: Rolling contact fatigue in S&C classified as heavy or severe (number of components)

	Classification	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
England & Wales	heavy	1,560	1,566	1,884	2,296	2,418	2,519
	severe	1,112	1,481	2,231	3,159	3,810	4,424
Scotland	heavy	247	271	280	323	350	372
	severe	151	187	220	252	262	316
Network Total	**heavy**	1,807	1,837	2,164	2,619	2,768	2,891
	severe	1,263	1,668	2,451	3,411	4,072	4,740

Table 10.15: Rolling contact fatigue in S&C classified as heavy or severe (number of components) by operating route

	Classification	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Anglia	Heavy	56	55	57	71	74	95
	Severe	19	34	47	48	79	99
East Midlands	Heavy	23	34	28	32	23	19
	Severe	51	84	141	175	211	240
Kent	Heavy	126	117	87	81	72	74
	Severe	156	141	75	76	82	75
LNE	Heavy	515	458	552	734	889	911
	Severe	218	341	580	797	1,057	1,237
LNW	Heavy	491	580	763	969	951	1,008
	Severe	199	330	606	1,035	1,318	1,540
Scotland	Heavy	247	271	280	323	350	372
	Severe	151	187	220	252	262	316
Sussex	Heavy	51	44	54	42	36	34
	Severe	7	17	57	83	67	64
Wales	Heavy	15	17	14	13	19	24
	Severe	49	45	76	101	101	147
Wessex	Heavy	209	204	271	274	257	268
	Severe	339	423	576	727	721	821
Western	Heavy	74	57	58	80	97	86
	Severe	74	66	73	117	174	201
Network Total	**Heavy**	**1,807**	**1,837**	**2,164**	**2,619**	**2,768**	**2,891**
	Severe	**1,263**	**1,668**	**2,451**	**3,411**	**4,072**	**4,740**

Table 10.16: Rolling contact fatigue in plain line classified as heavy or severe (yards)

	Classification	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
England & Wales	heavy	303,627	300,331	338,697	375,767	399,252	411,983
	severe	132,719	137,499	161,482	214,371	281,545	341,076
Scotland	heavy	28,947	32,242	40,687	47,767	65,779	74,173
	severe	14,506	16,518	19,543	23,637	32,811	39,975
Network Total	**heavy**	**332,574**	**332,573**	**379,384**	**423,534**	**465,031**	**486,156**
	severe	**147,225**	**154,017**	**181,025**	**238,008**	**314,356**	**381,051**

Table 10.17: Rolling contact fatigue in plain line classified as heavy or severe (yards) by operating route

	Classification	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Anglia	heavy	21,457	22,604	21,535	24,088	29,899	37,648
	severe	5,417	5,397	8,127	12,413	23,506	28,093
East Midlands	heavy	5,242	5,422	5,682	6,639	7,003	8,204
	severe	6,662	4,751	4,950	5,325	7,089	9,852
Kent	heavy	22,145	16,201	10,833	9,261	8,276	9,601
	severe	35,507	20,173	12,929	15,344	16,623	17,963
LNE	heavy	98,320	92,874	99,760	109,472	112,266	107,672
	severe	35,480	41,111	48,918	65,862	85,492	103,407
LNW	heavy	81,482	91,525	116,742	127,393	135,035	138,830
	severe	14,457	15,860	25,558	41,913	58,566	66,802
Scotland	heavy	28,947	32,242	40,687	47,767	65,779	74,173
	severe	14,506	16,518	19,543	23,637	32,811	39,975
Sussex	heavy	6,776	11,429	15,499	15,693	14,883	15,843
	severe	1,012	2,816	5,434	7,414	8,778	10,284
Wales	heavy	1,738	1,662	2,056	2,632	4,622	4,490
	severe	5,094	3,691	7,139	9,845	12,545	15,306
Wessex	heavy	30,724	27,962	34,985	41,687	47,143	48,335
	severe	17,795	31,356	35,832	43,347	52,190	69,601
Western	heavy	35,743	30,652	31,605	38,902	40,125	41,360
	severe	11,295	12,344	12,595	12,881	16,756	19,768
Network Total	**heavy**	**332,574**	**332,573**	**379,384**	**423,534**	**465,031**	**486,156**
	severe	**147,225**	**154,017**	**181,025**	**238,008**	**314,356**	**381,051**

Good Track Geometry

Definition

The measure for Good Track Geometry (GTG) is based on the proportion of track where the lateral and vertical alignment is categorised as ‘good’ or ‘satisfactory’. The alignment is measured by track geometry measurement and recording vehicles and the measurement used is standard deviation (in millimetres). The values of standard deviation that need to be achieved for alignment to be categorised as good or satisfactory vary with line speed. The threshold 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’.

Reporting method

The principal purpose of track geometry measurement is to support track maintenance teams in the management of track condition. Track geometry measurement and recording is carried out on a cyclical basis, with the frequency of measurement being aligned to the type of traffic, tonnage and line speed.

Track Geometry Faults are reported on a rolling 450 days’ time interval each period. The figures quoted for 2014/15 are taken from Period 13 at the end of the first year of CP5. This is consummate with previous Annual Returns. However there have been a number of changes to the measurement and reporting of track geometry faults that began from the later part of CP4 and changes continued into the beginning of CP5.

Track Geometry measurement systems have been upgraded. Such systems commenced a phased introduction from January 2013. As an example, the Serco Lewis system, one of the founding measurement systems of British Rail has been replaced with the Balfour Beatty True Track system. Other fleet measuring systems such as the Track Inspection Coach and Track Recording Unit have also been fitted with this new system. This new system has an improved fault location capability and has increased the number of new L2 faults as opposed to classifying them as repeat faults. Other additional data streams have also come on line such as the geometry information obtained from Plain Line Pattern Recognition fleet. This has increased the coverage of the network resulting in more faults being detected due to increased frequency of measurement.

Commentary

Changes in the applicable track maintenance standard have affected the Annual Return figures. Tight Gauge is now a new actionable L2 fault at Intervention Level. With Top & Line faults classified as Intervention Level only, they do not form part of the Immediate Action Geometry Faults per 100km. Although Cyclic Top faults are classified as both Intervention Level and Immediate Action Level, neither of these states have ever been included in the Annual Return but with the advent of recent derailments, and further changes to track standards in conjunction with RAIB recommendations, Network Rail propose these are included going forward but separate to the historic L2 tabled faults.

With the above in mind, GTG in general has an overall improvement from the 2013/14 National position of 137.7 per cent to 138.8 per cent for 2014/15. Increases have occurred across all groups with the exception of Primary England & Wales where GTG fell slightly by 0.1 per cent.

There have been a number of local initiatives which have aided performance such as a focus on On-Track-Machine quality output rather than on volume; targeted On-Track-Machine deployment to key clustered L2 fault areas, the delivery of key S&C sites that have had historic track quality issues, high output campaigns that have replaced significant jointed track and the use of recent decision support tools that have come on line such as the Linear Asset Decision Support tool (LADS).

Table 10.18: Good track geometry (%) by route classification

		2010/11	2011/12	2012/13	2013/14	2014/15
England & Wales	Primary	137.00%	137.00%	138.90%	138.40%	138.30%
	Secondary	139.40%	138.60%	139.90%	139.60%	140.50%
	Rural	130.00%	127.80%	133.40%	132.70%	138.40%
	Total	**137.20%**	**136.70%**	**138.80%**	**138.33%**	**139.91%**
Scotland	Primary	139.90%	139.50%	139.40%	140.80%	142.80%
	Secondary	141.70%	142.00%	140.80%	139.90%	143.50%
	Rural	101.50%	95.60%	97.50%	96.40%	94.90%
	Total	**135.30%**	**134.50%**	**134.10%**	**133.50%**	**135.98%**
Network Total	Primary	137.20%	137.20%	138.90%	138.60%	138.90%
	Secondary	139.80%	139.30%	140.10%	139.70%	141.40%
	Rural	124.60%	121.70%	126.40%	125.40%	128.10%
	Total	**137.00%**	**136.50%**	**138.10%**	**137.70%**	**138.80%**

Geometry Faults

Definition

This measure is based on discrete geometry faults identified against four principal parameters of vertical alignment, horizontal alignment, gauge (the distance between the rails) and twist (the relative vertical position across the opposite corners of a three metre bogie or vehicle). The presence of faults and their type and magnitude is given by the output of the track geometry measurement and recording vehicles. 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.

Reporting method

The principal purpose of track geometry measurement is to support track maintenance teams in the management of track condition. The track geometry measures always lag behind the actual situation on the ground. They are calculated from the national dataset at the end of each four week period which 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 behind the condition on the track, 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 re-measured). 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. With higher proportions of Secondary and Rural track, Scotland is particularly affected by this lagging effect.

Immediate Action Geometry Faults per 100km

Immediate Action Geometry Faults per 100km is reported in this format for the first time in the Annual Return 2015. This is the reporting of Twist and Track Gauge faults only. It does not include Cyclic Top figures or combination cyclic top / twist and cyclic top / alignment figures.

Table 10.19: Immediate Action Geometry Faults per 100km

		2014/15
England & Wales	Primary	0.71
	Secondary	0.89
	Rural	1.78
	Total	**0.93**
Scotland	Primary	0.00
	Secondary	0.43
	Rural	2.15
	Total	**0.70**
Network Total	Primary	0.67
	Secondary	0.81
	Rural	1.85
	Total	**0.90**

Table 10.20: Geometry faults per 100 track km

		2010/11	2011/12	2012/13	2013/14	2014/15
England & Wales	Primary	29.40	30.90	28.90	27.30	30.40
	Secondary	40.90	42.00	42.80	37.40	36.40
	Rural	66.20	65.70	67.10	59.60	58.00
	Total	**39.00**	**40.20**	**39.70**	**35.80**	**37.19**
Scotland	Primary	25.60	20.50	17.50	15.20	23.20
	Secondary	38.00	41.20	39.70	34.20	28.80
	Rural	78.30	96.30	82.60	83.80	68.20
	Total	**44.00**	**48.50**	**44.20**	**40.99**	**37.70**
Network Total	Primary	29.20	30.30	28.20	26.50	29.60
	Secondary	40.40	41.90	42.20	36.80	33.70
	Rural	68.70	71.80	70.20	64.50	60.90
	Total	**39.70**	**41.30**	**40.30**	**36.50**	**37.00**

Level 2 Exceedances

Nationally, Level 2 (L2) faults per 100km have increased slightly with the combined introduction of new parameters (Tight Gauge), changes in the accuracy of fault location, increased frequency of measurement with Plan Line Pattern Recognition (PLPR) and further coverage of the network. Level 2 Exceedances have increased in Primary routes in 2014/15. This is a reflection of the new reporting of 'Tight Gauge' as well as increased frequency of measurement with PLPR. Secondary and Rural routes continue with a steady decline which is a reflection of targeted tamping campaigns. The overall national trend continues to improve, which benefits from CP5 plans, and will continue to incorporate further changes to the management of Track Geometry. These initiatives are part of a wider strategy to continue to drive improvements to track geometry throughout CP5 and are listed below:

- alarm level reporting – This scheme plans to deliver alarm level reporting which will assist the routes in planning intervention earlier as well as concentrating mechanised plant in clustered L1 and L2 fault areas
- TIGER – Track Infrastructure Geometry Reporting. This system is to utilise the existing Rail Defect Management System IT architecture to monitor Level 2 exceedance faults from detection through to intervention and close out. It will link actual treatments referenced in Ellipse to establish effectiveness of rectification works
- updates to maintenance standards such as the management of Cyclic Top as art of addressing RAIB recommendations.

Table 10.21: Level 2 exceedances

		2012/13	2013/14	2014/15
England & Wales	Primary	3,195	3,032	3,363
	Secondary	4,520	3,955	3,720
	Rural	2,143	1,920	1,929
	Total	**9,858**	**8,907**	**9,012**
Scotland	Primary	130	113	173
	Secondary	954	826	698
	Rural	659	693	559
	Total	**1,743**	**1,632**	**1,430**
Network Total	Primary	3,325	3,145	3,536
	Secondary	5,474	4,781	4,418
	Rural	2,802	2,613	2,488
	Total	**11,601**	**10,539**	**10,442**

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 method

When discovered track buckles are reported according to a company standard, using a template form. Total numbers of buckles are normalised against the length of track (measured in hundreds of kilometres).

Commentary

The number of track buckles per 100km in England & Wales has shown a small improvement when compared to 2013/14., with numbers reducing by 0.05 to 0.04 buckles per 100km (Table 10.22). This improvement is primarily due to planned, preventative action and a relatively cool summer. In Scotland, temperatures on a number of days were significantly higher than previous years, resulting in sharp increase in the numbers of buckles from 0.01 to 0.09 buckles per 100km. To further improve track buckle performance, a number of initiatives are being developed to better manage the risk of buckles during hot weather which will be implemented later in CP5.

Table 10.22: Track buckles per 100km

		2010/11	2011/12	2012/13	2013/14	2014/15
England & Wales	Primary	N/A	N/A	N/A	N/A	0.04
	Secondary	N/A	N/A	N/A	N/A	0.04
	Rural	N/A	N/A	N/A	N/A	0.03
	Total	**0.10**	**0.05**	**0.04**	**0.05**	**0.04**
Scotland	Primary	N/A	N/A	N/A	N/A	0.12
	Secondary	N/A	N/A	N/A	N/A	0.08
	Rural	N/A	N/A	N/A	N/A	0.11
	Total	**0.02**	**0.00**	**0.00**	**0.01**	**0.09**
Network Total	Primary	N/A	N/A	N/A	N/A	0.05
	Secondary	N/A	N/A	N/A	N/A	0.04
	Rural	N/A	N/A	N/A	N/A	0.04
	Total	**0.09**	**0.04**	**0.03**	**0.06**	**0.04**

Temporary Speed Restrictions

Definition

The measure provides an indication of the quality of the stewardship of track, structures and earthworks. It identifies the number of sites where asset condition has fallen sufficiently below that required for the route speed and traffic type of that section of track, 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 also be planned for safety and consolidation of works. Sites where an ESR or TSR has been imposed for less than seven days due to being part of the normal maintenance cycle are excluded.

Reporting method

Each TSR or ESR (imposed for seven days or more) is recorded on a weekly basis by operating route and cause, and split between primary and secondary route. 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 planned 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 the Rules of the Route (ROTR), the Confirmed Period Possession Plan (CPPP) or the Draft Period Possession Plan (DPPP).

Commentary

The total number of network-wide TSRs for 2014/15 outturned at 2,249 (1,295 planned and 954 unplanned). Track related TSRs contributes to 1,901 against the total of 2,249 TSRs, with cyclic top and condition of ballast being the two biggest contributors. In 2014/15 there were 864 track renewal related TSR's (738 due to plain line renewals and 126 to S&C renewals). A more detailed explanation of 2014/15 TSR performance can be found in the Network Availability section on page 67.

Table 10.23: Temporary Speed Restrictions – network-wide

		2011/12		2012/13		2013/14		2014/15	
		Primary	**Secondary**	**Primary**	**Secondary**	**Primary**	**Secondary**	**Primary**	**Secondary**
Scotland	Unplanned	13	67	8	63	11	70	6	57
	Planned	68	122	43	99	10	124	18	74
England and Wales	Unplanned	566	92	642	68	885	160	408	363
	Planned	832	104	963	72	879	129	689	398
Network Total	Unplanned	579	159	650	131	896	230	414	420
	Planned	900	226	1006	171	889	253	707	472
	Grand Total	**1,479**	**385**	**1,656**	**302**	**1,785**	**483**	**1121**	**892**

Table 10.24: Temporary Speed Restrictions by category

			2014/15		
			Planned	**Unplanned**	**Total**
England & Wales	Primary	Track	651	351	1,002
		Structures	9	16	25
		Safety	23	11	34
		Earthworks	3	27	30
		SP&C	3	2	5
		Other	0	1	1
	Secondary	Track	327	302	629
		Structures	23	23	46
		Safety	41	14	55
		Earthworks	6	24	30
		SP&C	0	0	0
		Other	1	0	1
	Rural	Track	73	66	139
		Structures	12	7	19
		Safety	6	22	28
		Earthworks	11	19	30
		SP&C	0	2	2
		Other	0	2	2
Scotland	Primary	Track	16	5	21
		Structures	2	0	2
		Safety	0	0	0
		Earthworks	0	1	1
		SP&C	0	0	0
		Other	0	0	0
	Secondary	Track	51	50	101
		Structures	21	0	21
		Safety	1	0	1
		Earthworks	1	7	8
		SP&C	0	0	0
		Other	0	0	0
	Rural	Track	8	1	9
		Structures	3	1	4
		Safety	1	0	1
		Earthworks	2	0	2
		SP&C	0	0	0
		Other	0	0	0
Network total	**Primary**	**Track**	**667**	**356**	**1,023**
		Structures	**11**	**16**	**27**
		Safety	**23**	**11**	**34**
		Earthworks	**3**	**28**	**31**
		SP&C	**3**	**2**	**5**
		Other	**0**	**1**	**1**
	Secondary	**Track**	**378**	**352**	**730**
		Structures	**44**	**23**	**67**
		Safety	**42**	**14**	**56**
		Earthworks	**7**	**31**	**38**
		SP&C	**0**	**0**	**0**
		Other	**1**	**0**	**1**
	Rural	**Track**	**81**	**67**	**148**
		Structures	**15**	**8**	**23**
		Safety	**7**	**22**	**29**
		Earthworks	**13**	**19**	**32**
		SP&C	**0**	**2**	**2**
		Other	**0**	**2**	**2**
Final total					**2,249**

Asset Condition Reliability

Asset Condition Reliability measures the short term condition and performance of our assets including track, signalling, points, electrical power, telecoms, buildings, structures and earthworks.

Asset Condition Reliability in 2014/15 has shown positive variance to target across a number of the asset groups including, buildings, earthworks, electrical power and structures.

Track

The Asset Condition Reliability of track is assessed according to three measures:

- rail breaks and immediate action defects per 100km
- track geometry (poor track geometry)
- track failures (service affecting).

Rail Breaks and Immediate Action Defects per 100km

Definition

A broken rail is a rail which, before removal from track, has either a fracture through the fill cross section, or a piece broken out of the rail head exceeding 50mm in length. This measure includes broken rails on Network Rail running lines and excludes broken rails in sidings.

Immediate action defects are rail defects in running lines that require the line to be blocked, or the imposition of a speed restriction of 20mph or less.

Reporting method

The National Engineering Reporting Team issues a daily broken rail report based on data from the National Control Centre Daily Log. In parallel, maintenance areas are responsible for reporting all broken rails in the Rail Defect Management System (RDMS) database which is used to produce periodic and annual reports. The RDMS allows for standardised reports for the numbers and types of broken rails to be produced straight from RDMS. The number of broken rails and immediate action defects is normalised by the extent of running lines, per 100km. A lower figure represents better performance.

Commentary

The network-wide total number of rail breaks and immediate action defects per 100km in 2014/15 was 2.72. This is a significant over achievement against the target of 4.17.

The network-wide reduction in rail breaks and immediate action defects is reflected in all route totals. This performance can be attributed to a number of initiatives throughout the year:

- the introduction of train based ultrasonic inspection on track categories four to six, carrying lower speed and tonnage traffic
- focus on earlier intervention at dipped joints on higher speed, higher tonnage track
- targeted replacement of rail that has carried a higher cumulative tonnage
- a focus on action to resolve track geometry faults at an earlier stage
- the fourth Ultrasonic Test Unit (UTU) has now been operating to provide a higher frequency of ultrasonic inspection of the rail in lower track category routes. The ongoing programme of testing is now showing benefits in a reduction of breaks on secondary routes
- continued trials of modified ultrasonic testing techniques to try and enable small defects in the foot of the rail to be identified to allow better prioritising of rail replacement with the potential to reduce the number of breaks from these defects
- the removal of defects in rural routes has resulted in significant reductions, particularly in Scotland, due to the removal of rail end defects in jointed track and the roll out and continued testing using an increased frequency of train based ultrasonic inspection over the last two years.

Track Geometry (Poor Track Geometry)

Definition

Poor Track Geometry (PTG) is the proportion of track that is categorised as 'very poor' or 'super-red' for the main track quality parameters: alignment and top. These parameters are measured by track geometry measurement and recording vehicles and the measurement used is standard deviation (in mm). The threshold values to which standard deviation values are categorised are specified in Network Rail standards. The formula for this measure has additional weighting for extreme values of standard deviation; those categorised as 'super-red'. 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 with irregular radii.

Reporting method

Track geometry measurement and recording is carried out on a cyclical basis, with the frequency of measurement being aligned to the type of traffic, tonnage and line speed. The track geometry measures lag behind the actual situation on the ground. They are calculated from the national dataset at the end of each four week period which holds the most recent valid measurement result for each section of track, spanning the last 450 days. As the dataset can only be updated when a recording run takes place, the dataset will lag behind the condition on the track, 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 re-measured). A lower figure represents better performance.

Commentary

Network-wide Poor Track geometry (PTG) at the end of 2014/15 is 2.12 per cent (Table 10.25). This is 0.20 percentage points better than the target of 2.32 per cent. Targets have also been outperformed in the majority of routes with the exception of LNE and Western, where PTG was under target by 0.11 and 0.03 percentage points respectively.

Overall improvement in PTG can be attributed to a number of initiatives, both nationally and locally adopted:

- a focus on On-Track-Machine quality output rather than volume
- targeted On-Track-Machine deployment to key areas with high volumes of 'very poor' track geometry
- renewal of key switches and crossings sites that have had historic track quality issues
- high output campaigns that have replaced significant volumes of jointed track
- use of recent decision support tools that have come on line such as the Linear Asset Decision Support Tool (LADS).

Track failures (service affecting)

Definition

This measure reports the total number of train delay incidents that were attributed to track failures on Network Rail owned infrastructure, using data from TRUST (a train running system which records details of train running as compared with schedule). Track failures in TRUST include those service affecting failures caused by Temporary Speed Restrictions as a result of track condition, track faults including broken rails and rolling contact fatigue.

Reporting method

This data is compiled from TRUST and shows the number of track failures reported. A lower figure represents better performance.

Commentary

Track failures at the end of 2014/15 were 2.96 per cent worse than target nationally.

This overall result is the effect of significant under-performance in LNE (19.34 per cent) and Wales (72.66 per cent), with substantial over-achievement against target in Wessex and LNW contributing to counteract the negative variance.

Wales have seen a series of Emergency Speed Restrictions (ESRs) following track renewals in the Severn Tunnel.

Outperformance against target in Wessex is attributed to the accelerated High Output plan, Excavac programme and re-railing volumes that were delivered in 2014/15. These works targeted problem areas in which track failures were previously high. There has also been focused maintenance work to target rail defects and Level 2 faults which have contributed to the reduction in track failures.

Nationally, the start of 2014/15 saw an increase in the number of track failures. This decline was a result of the aftermath of a very wet winter (2013/14) which affected track formation, embankments and poor drainage locations resulting in an increase in Condition Of Track (COT) faults and Temporary Speed Restrictions (TSRs) rising to its highest position for a number of years.

The main contributors to the increase in Track faults were: seven day rail defects, track related TSRs, and heat speeds during the summer periods (Period 3 to Period 5).

The increase in seven day rail defects was a consequence of implementing Ultrasonic Testing Units (UTUs) and Plain Line Pattern Recognition (PLPR) on lower category lines, which saw an initial rise in faults that has since stabilised and also reduced slightly.

Heat speeds in the summer periods of 2014/15 were slightly reduced from 2013/14, however the warm summer in June and July saw an increase in the number of track incidents.

By contrast the number of track geometry faults started to improve after Period 7, following good progress in targeting and improving track geometry faults implemented across many of the routes. Long distance routes, such as LNW and LNE had previously implemented tighter actionable tolerances on track geometry faults in prior years, in particular dip angles, which continued to help reduce the number of broken rails to their lowest recorded level this year. Other actions implemented across the network included bringing in additional resources to improve focus and delivery of track geometry repairs to reduce the number, resourcing of a new On Track Machines (OTM) with Dynamic Track Stabiliser on LNE to help improve consolidation on track with poor formation and low traffic volumes and focus on 3M rail defects to reduce the volume of serious rail defects.

The benefits of the above actions implemented by routes and a reduction in TSRs following a renewed focus by routes, saw an improvement in track related faults from Period 7 which continued to reduce until year end. These areas of focus will continue to further improve the reliability of track. There will be continued use of remote control monitoring equipment and reporting from Intelligent Infrastructure to provide advance warning of failures to contribute to improvements in track failures. There will also be enhanced reporting of track failures through the fault-code lookup app, leading to improved root-cause analysis and identification of risks.

The relatively mild winter also helped to deliver continued improvements from Period 10 through to Period 13 delivering a 14 per cent reduction in track service affecting failures on the previous year.

Signalling

Definition

Signalling failures (service affecting) measures the total number of signalling failures causing train delays. This measure only included failures on Network Rail owned infrastructure.

Reporting method

This data is compiled from TRUST (a train running system which records details of train running as compared with schedule) and shows the number of signalling failures that have caused train delays. A lower figure represents better performance.

Commentary

There were 16,228 service affecting signalling failures in 2014/15 against a target of 16,434.

Scotland signalling reliability can be attributed to a significant improvement in train detection (115 incidents), partly through improved 24/7 Intelligent Infrastructure monitoring and attendance to alarms, and improvements in Axle Counter reliability in project areas. Lineside cable failures also improved due to better management of cables.

Anglia signalling failures have dropped significantly from 1,455 in 2013/14 to 1,258 at the end of 2014/15 (out-performing the target of 1,375). This is mainly due to the targeted condition reliability initiatives that have been implemented. The main focus was the replacement and renovation of Insulated Block Joints (IBJs) at Liverpool Street station which sits in a CRI Criticality 1 area. Other contributors to the reduction in failures can be attributed to: greater attention to maintenance, including maintenance of points by combined visits and interventions, teams being assigned ownership of key assets and remedial improvements to assets that commonly fail e.g. track insulation at junctions and points components.

In LNW, embedding of the new Fault Code Lookup application has helped to facilitate more effective root cause analysis to allow engineers working on the assets to input directly into the fault management system. This improves data quality and the ability to analyse failure trends more effectively. Delivery of key re-signalling schemes such as Stafford, Watford and Wolverhampton has also increased the underlying resilience of the assets and will yield long term performance

improvements. Work has been undertaken at Birmingham New Street to improve resilience in advance of re-signalling scheme delivery on the ground. There has been further work to progress insulation remote condition monitoring initiatives to detect signalling power cable degradation before performance is affected and further implementation of remote condition monitoring to further improve asset reliability. In addition, to reduce the number of train detection failures, axle-counter software upgrades and installation of replacement electronic cards has been completed. This has reduced service affecting failures and also the amount of delay when failures do occur.

Signal reliability has suffered due to the conversion of signals to LED light engines. This was expected to improve during 2014/15 with the introduction of an enhanced version of the LED light engine. However, this version was delayed and only partially successful at improving reliability. Further conversions have been suspended until the manufacturer can satisfy us that they have rectified the design issues with the product. Although the LED light engines product has had its problems, they have still proved to be more reliable than conventional signal lamps and some Routes are experiencing good reliability. However, we and the supplier are developing a version three and we will be looking at the design and performance of that unit once development has advanced. LED failures impacted on PPM in 2014/15 with 1,262 trains failing PPM as a result of 527 LED failures. Investigations into LED light engine failures are ongoing, with a report due in 2015/16 following an independent investigation by WS Atkins and a corrective action plan will subsequently be implemented. There has also been an increase in level crossing failures. The increase in failures is significantly related to the introduction of Obstacle Detection technology, with significant numbers of service-affecting incidents occurring at level crossings fitted with this equipment. Further work is being undertaken to identify and address the equipment reliability and installation issues.

Points

Definition

This measure reports the number of points failures causing train delays.

Reporting method

The data is compiled from TRUST (a train running system which records details of train running as compared with schedule) and PSS (Network Rail's Performance System) and shows the number of train delay incidents caused by points failures. A lower figure represents better performance.

Commentary

Nationally, points failures were 8.7 per cent better than the target of 4,390 for 2014/15 due to the majority of routes outperforming targets. Points reliability can be attributed to a number of initiatives nationally. The signalling programme has contributed to the decrease in points failures through continued roll-out of Remote Condition Monitoring (RCM) equipment combined with improved understanding and reporting capability for Intelligent Infrastructure. RCM fitments continue with the completion of the final phase authorised in CP4, whilst the first CP5 tranche has been approved and is under development. This introduces more comprehensive monitoring of High Performance Switch System (HPSS) points and provides monitoring of High Voltage Input (HVI) track circuits. Campaign nine gauging work, improved points set-up knowledge being embedded across the routes and improvements such as Interflon lubrication have also contributed to the national reliability on points.

The national performance is reflected in six routes, with notable achievement against target in LNW and Anglia.

In LNW (outperformance of 8.62 per cent against target), there has been implementation of the new Fault Code Lookup application to facilitate more effective root cause analysis. This allows engineers working on the assets to input directly into the fault management system which results in better data quality and the ability to analyse failure trends more effectively.

In Anglia points failures were 14.24 per cent better than target for 2014/15. There have been a number of contributing factors to this performance. There has been greater attention to performing quality maintenance work within the route, and maintenance of points specifically has been achieved by combined visits and interventions. Additionally, maintenance teams have been assigned ownership of key assets and remedial works have increased to assets that commonly fail such as points components.

The routes in which points failures in 2014/15 were worse than target were Scotland (5.68 per cent), East Midlands (1.05 per cent), Wales (6.51 per cent) and Western (5.76 per cent). In Western route, under-delivery against points failures target is notable as a significant proportion are on Criticality 1 track. The implementation of integrated point teams in one delivery unit has reaped significant benefit for that area and it is intended to extend this. Variance in these routes was made up in significant over-achievement against target in all other routes.

Telecoms

Definition

This measure reports the total number of train delay incidents caused by telecoms failures, and only includes failures on Network Rail owned infrastructure.

Reporting method

This data is compiled from TRUST (a train running system which records details of train running as compared with schedule) and shows the number of telecoms failures that have caused train delays. A lower figure represents better performance.

Commentary

The total number of telecoms failures causing delay in 2014/15 was 3,957 against a target of 2009. This represents a 97 per cent variance from target. The main reason for the underperformance can be attributed to the failures associated with the Global System for Mobile Communication – Railway (GSM-R) system. The increase in GSM-R failures is linked to more Train and Freight Operators that have migrated across from the legacy radio systems (National Radio Network and Cab Secure Radio) to GSM-R. While the upgrade to the latest GSM-R handset versions, with improved reliability, is fairly well advanced, other significant issues remain. A GSM-R Performance Improvement Plan is underway to further reduce incidents, which has been introduced first with South East route, before being rolled out across all other routes which will take place over the beginning of 2015/16.

The GSM-R performance during 2014/15 was affected by the roll out for Arriva Trains Wales and Merseyrail where challenges were encountered as drivers and signallers were new to GSM-R. This led to a dramatic increase in GSM-R related incidents. This area also suffered particularly with interference from public mobile network operators (MNOs). The effect from interference from public MNOs has been seen across all ten routes during 2014/15. This is primarily related to the wider introduction of 4G services in the 900MHz band. First TransPennine Express (FTPE) was faced with a relatively small fleet and drivers new to GSM-R which caused some issues and First Scotrail (FSR) GSM-R introduction on the Class 170 fleet, was impacted by the drivers of these units being new to GSM-R.

Cab mobile software updates have been ongoing with a continued upgrade from Version 1(V1) to Version 2 (V2) functionality across the year. V2 is more resilient than previous software issues. Some train operators have been slow to implement this change. The five most recurrent non GSM-R asset failures are detailed below:

- level crossing telephones
- telephone concentrators
- BT circuits
- FTN Transmission
- signal post telephones.

A number of Reliability Improvement Plans have been implemented throughout 2014/15 including; Network Rail Telecoms engagement with the GSM-R programme, Level Crossing Telephone Initiative and BT maintenance arrangements enhanced from Total Care to Critical Care for some high risk level crossing telephones.

Electrical Power

Definition

This measure reports the total number of train delay incidents caused by electrical power failures, and only includes failures on Network Rail owned infrastructure. Figures are reported according to the category of electrical power failure; AC traction, DC traction and non-traction.

Reporting method

This data is compiled from TRUST (a train running system which records details of train running as compared with schedule) and shows the number of electrical power failures that have caused train delays. A lower figure represents better performance. It should be noted that data reported in this Annual Return is not comparable with previous Annual Returns due to a change in the reporting method. However, historic data provided in this Annual Return has been aligned to the new reporting method.

Commentary

During 2014/15 there were 861 AC traction power failures causing train delays, a reduction on 2013/14's 938 incidents and 18 per cent better than the target of 1,051. There has been a reduction in the number of incidents across Anglia, Scotland and East Midlands. The Shortfall in East Midlands can be mainly attributed to resourcing constraints and affordability.

Scotland has provided the most significant year on year improvement with a 58 per cent reduction in the number of incidents since 2013/14. This has primarily been driven by improved vegetation management which has reduced the number of tripping incidents in Scotland from 101 in 2013/14 to 32 in 2014/15. Anglia has worked closely with the delivery units to assist in seasonal preparedness as well as improved vegetation management. East Midlands have been improving early intervention work across the route focusing on root cause analysis to identify key faults. This work has led to the prevention of five de-wirement incidents this year.

During 2014/15 there were 283 service affecting failures attributed to DC traction power. This was a reduction on 2013/14's 319 incidents, and out-performed the target of 330. There is a known cable lug issue currently affecting the network and the routes are working closely with the supply chain to improve the performance of these lugs. Analysis undertaken in Wessex indicates that there is no one reason for the reliability issues, but multiple causes, including:

- mechanical force cycling on the lug connection resulting in the reduction of force within the fixing bolts to retain the required electrical characteristics
- sub-standard installation due to a lack of specialist competence
- lack of capacity in the connection to cater for non-ideal installation factors.

By introducing a bi-metallic cable lug there has been a reduction in the number of installer related faults associated with lugs across the network. There has been a proposal to introduce a new national competency to further improve the quality of installation. A letter of instruction has been issued to make clear the requirements when connecting and disconnecting conductor rail cables. Kent has been installing dehumidifiers to improve a known condensation issue with switchgear.

During 2014/15 there were 263 service affecting incidents related to non-traction power supplies. This is new measure introduced for CP5 and is not directly comparable with previous years. The majority of routes significantly outperformed against target. There are a number of initiatives across the network looking to further improve performance of these assets. Scotland is installing uninterruptable power supplies (UPS) at critical junction sections to improve the resilience of the network. There has also been a large rollout of insulation resistance monitors across the network and this has improved early intervention work on signalling power cables. A change in scrap metal legislation has also reduced the number of cable theft incidents which have taken place on the network.

Buildings

Definition

This measure reports the total number of reactive faults requiring urgent intervention within Network Rail Operational Property assets. Each reported fault is categorised by location, severity and the risk the fault poses. The fault categorisations are ‘2 hour’ faults and ‘24 hour’ faults. All ‘2 hour’ faults require attendance on site within two hours, immediate investigation and to be made safe. All ‘24 hour’ faults require attendance on site within 24 hours, investigation and to be made safe.

Reporting method

All faults identified on Network Rail operational property assets are reported to Network Rail through the Operational Property Helpdesk (OPHD). The OPHD team record and report all reported faults. A lower figure represents better performance.

Commentary

The asset reliability in the Buildings portfolio continues to improve and at a national level has outurned at 5,835 against a target of 6,914 faults. A 14 per cent reduction the number of faults was achieved network-wide comprising 22 per cent and 13 per cent in Scotland and England & Wales respectively.

Several factors contribute to this reduction in the number of reactive faults. The most attributable are related to an improved planned preventive maintenance regime for operational property assets and development of detailed minor work plans with the effective management and implementation of the works within routes. There has also been an increase in Scotland’s minor work expenditure over the past three years which has addressed faults in a significantly larger portion of the portfolio providing a forward efficiency and preventing safety faults. Effort has been made to reduce the likelihood of faults occurring by identifying underperforming and repeat failing assets. This coupled with the site scoping visits has improved asset knowledge therefore targeted maintenance to prevent faults. These factors will be further monitored through CP5.

Structures

Definition

The measure is the number of open work items in the Civils Asset Register and Electronic Reporting System (CARRS) that have been assigned a risk score ≥12 from our standard NR/L3/CIV/006/11A 'Handbook for the examination of structures part 11A: reporting and recording examinations of structures in CARRS'. A risk score of 12 equates to an item that is 'probable' to lead to a line or road closure; or, 'likely' to result in a reduction of linespeed unless addressed within twelve months. This captures all work items that are delivered through structures maintenance teams and relate to the asset groups of 'bridge', 'tunnel' and 'wall'.

Reporting method

Network Rail route teams manage the risk data within the Civils Asset Register and Electronic Reporting System (CARRS).

Commentary

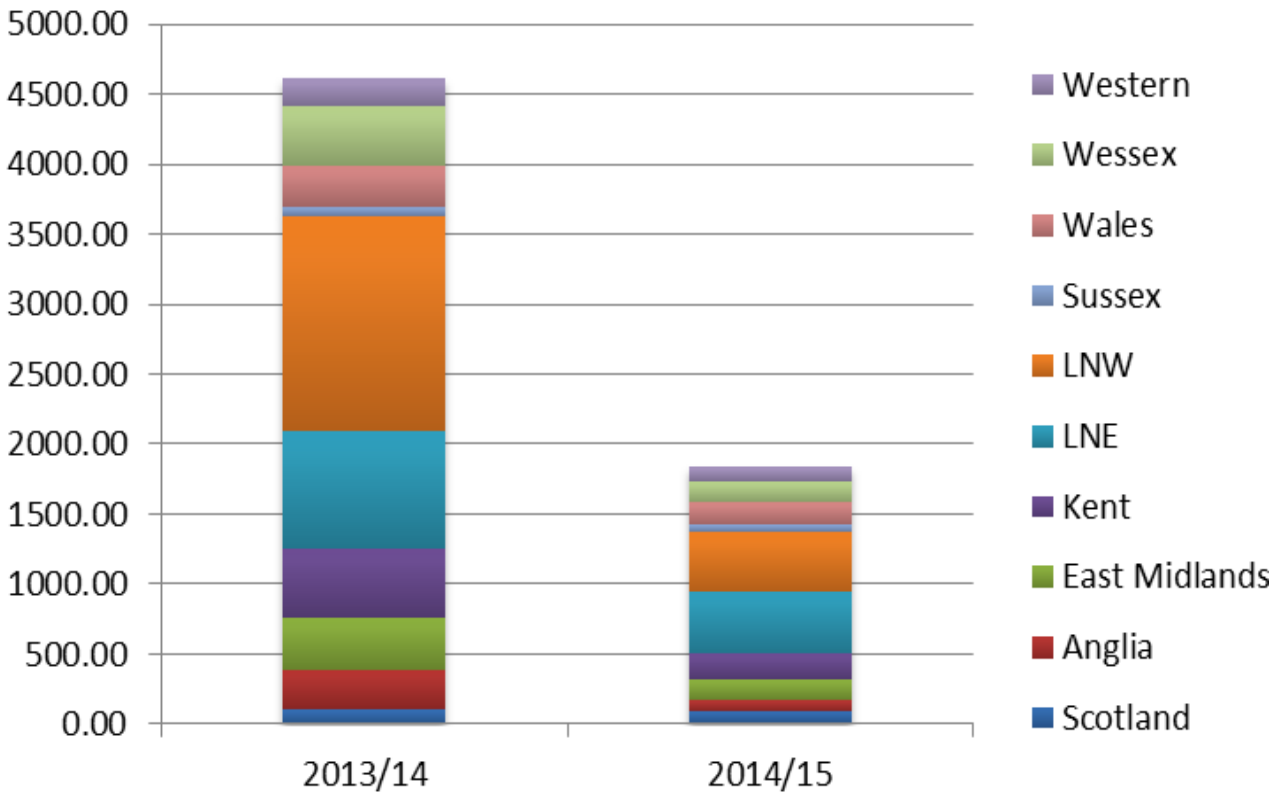
This is a new regulatory measure to be reported formally for CP5 which indicates the potential for structures assets to impact the reliability of the railway system. At the start of 2014/15, nationally, there were 4,619 open work items with risk scores greater than or equal to 12. This included a backlog of items including incomplete or inaccurate data. When a risk score was not available for an asset, it was assumed to have a risk score greater than or equal to 12.

Each Route was given an individual target, which formed a national target for a maximum of 2,726 open work items with risk scores greater than or equal to 12 to be remaining by the end of 2014/15. Through different initiatives including a proactive focus on minor works activity and staff dedicated to the management of work items, each route has exceeded their target, with notable improvements in Anglia and LNW where 70 per cent of their previous work items were closed.

This achieved a national total of 1,834, out-performing target by 33 per cent and demonstrating a reduction of 60 per cent from the end of 2013/14 (Figure 10.1). The previous backlog has been largely removed in 2014/15.

The contribution to NR's CRI is 'open' maintenance work items with a risk score >=12. The out performance of the target is a combination of increased investment and focus in maintenance activity, offset by a lag in receipt of examinations. This latter aspect would include potential maintenance items anticipated in year 1. As Network Rrail reaches a more stable position with respect to examinations this lag variability will be reduced.

Figure 10.1: Open work items in the Civils Asset Register and Electronic Reporting System with a risk score ≥12



Earthworks

Definition

This measure is the annual average number of earthworks failures measured over five years. Earthworks failures are defined as slopes in a state of collapse: e.g. rock fall or soil slip, slide or flow in an embankment, cutting or natural slope.

This measure, reported as defined above as a rolling five-year annual average for the first time in the 2014/15 Annual Return, is an evolution of the M6 measure reported previously.

Reporting method

Route Asset Management (RAM) teams submit reports of safety-related incidents centrally, where records are compiled and assurance provided that reporting is in line with the definition as set out above and fully defined in the Asset Reporting Manual and the Network Rail Standard NR/L3/CIV/028.

Commentary

There were 59 reportable Earthwork failures under the new definition and no associated train derailments during 2014/15. 2013/14 and 2014/15 were the first back-to-back years in which no train derailments have occurred due to earthworks failures since 1994/95. As a result of the 2014/15 failures the five-year moving annual average (MAA) now stands at 101 (to the nearest unit). This is slightly better than the forecast five-year MAA of 105 and an improvement on the CP5 entry position (106) although it must be noted that this measure is particularly sensitive to rainfall.

The UK rainfall total for the 2014 calendar year was 113 per cent of the 1981-2010 average. This was the fourth wettest year in the UK series from 1910, behind 2012, 2000, and 1954 (please refer to the UK Meteorological Office Annual 2014 summary). Five of the six wettest years in this series have occurred since 2000.

A major Earthwork failure occurred at Harbury in 2014/15. The failure was of a complex mixed cutting forming the country end approach to Harbury Tunnel on the Chiltern Mainline. The failed mass was substantial and the line was closed immediately with no safety consequences occurring. After completing temporary works and implementing a comprehensive monitoring strategy the line was reopened to traffic under speed restriction with permanent works ongoing.

Table 10.25: Network-wide asset condition reliability

Principal Asset	Description	2010/11	2011/12	2012/13	2013/14	2014/15 Target	2014/15 Actual
Track	Rail Breaks and Immediate Action defects per 100km	4.43	3.79	4.11	4.04	4.17	2.72
	Track geometry (Poor Track Geometry)	2.48%	2.58%	2.38%	2.32%	2.32%	2.12%
	Track failures (service affecting)	5,880	5,521	5,345	5,961	5,335	5,493
Signalling	Signalling failures (service affecting)	18,342	17,668	16,833	16,973	16,434	16,228
Telecoms	Telecoms failures (service affecting)	1,252	1,177	1,514	2,408	2,009	3,957
Electrical Power	AC traction power failures (service affecting)	1,011	1,026	927	938	1,051	861
	DC traction power failures (service affecting)	270	250	339	319	330	283
	Non traction operational power supply failures (service affecting)	488	490	504	525	560	263
Buildings	Buildings - Re-active Faults (2 & 24) (attention with 2hrs, fix within 24hrs) (attention within 24hrs, fix within 7 days)	8,060	6,579	6,826	6,783	6,914	5,835
Structures	Number of open work items with a risk score ≥ 12	N/A	N/A	N/A	4,619	2,726	1,834
Earthworks	Earthwork failures (5 year moving average)	101	77	88	106	105	101
Points	Point failures (service affecting)	5,803	5,162	5,022	4,380	4,390	4,008

Table 10.26: England & Wales asset condition reliability

Principal Asset	Description	2010/11	2011/12	2012/13	2013/14	2014/15 Target	2014/15 Actual
Track	Rail Breaks and Immediate Action defects per 100km	4.55	3.87	4.06	3.72	3.79	2.74
	Track geometry (Poor Track Geometry)	2.54%	2.62%	2.39%	2.35%	2.32%	2.18%
	Track failures (service affecting)	5,492	5,067	4,972	5,578	4,954	5,127
Signalling	Signalling failures (service affecting)	16,344	15,786	15,082	15,118	14,610	14,506
Telecoms	Telecoms failures (service affecting)	1,018	942	1,329	2,231	1,796	3,659
Electrical Power	AC traction power failures (service affecting)	946	948	862	806	965	805
	DC traction power failures (service affecting)	270	250	339	319	330	283
	Non traction operational power supply failures (service affecting)	441	439	448	483	518	231
Buildings	Buildings - Re-active Faults (2 & 24) (attention with 2hrs, fix within 24hrs) (attention within 24hrs, fix within 7 days)	7,321	6,020	6,219	6,308	6,324	5,464
Structures	Number of open work items with a risk score ≥ 12	N/A	N/A	N/A	4,521	2,628	1,744
Earthworks	Earthwork failures (5 year moving average)	79	60	65	84	84	82
Points	Point failures (service affecting)	5,251	4,602	4,528	3,929	3,950	3,543

Table 10.27: Scotland asset condition reliability

Principal Asset	Description	2010/11	2011/12	2012/13	2013/14	2014/15 Target	2014/15 Actual
Track	Rail Breaks and Immediate Action defects per 100km	3.61	3.30	4.41	6.06	6.65	2.57
	Track geometry (Poor Track Geometry)	2.12%	2.29%	2.32%	2.13%	2.40%	1.77%
	Track failures (service affecting)	388	454	373	383	381	366
Signalling	Signalling failures (service affecting)	1,998	1,882	1.751	1,855	1,824	1,722
Telecoms	Telecoms failures (service affecting)	234	235	185	177	213	298
Electrical Power	AC traction power failures (service affecting)	65	78	65	132	86	56
	DC traction power failures (service affecting)	-	-	-	-	-	-
	Non traction operational power supply failures (service affecting)	42	51	56	42	42	32
Buildings	Buildings - Re-active Faults (2 & 24) (attention with 2hrs, fix within 24hrs) (attention within 24hrs, fix within 7 days)	739	559	607	475	590	371
Structures	Number of open work items with a risk score ≥ 12	N/A	N/A	N/A	98	98	90
Earthworks	Earthwork failures (5 year moving average)	22	17	24	22	21	19
Points	Point failures (service affecting)	552	560	494	451	440	465

Table 10.28: Anglia asset condition reliability

Principal Asset	Description	2010/11	2011/12	2012/13	2013/14	2014/15 Target	2014/15 Actual
Track	Rail Breaks and Immediate Action defects per 100km	4.31	2.64	4.09	5.85	5.49	4.35
	Track geometry (Poor Track Geometry)	3.23%	3.61%	2.65%	2.69%	2.71%	2.16%
	Track failures (service affecting)	556	652	632	781	740	730
Signalling	Signalling failures (service affecting)	1,670	1,667	1,482	1,455	1,375	1,260
Telecoms	Telecoms failures (service affecting)	182	162	181	481	193	494
Electrical Power	AC traction power failures (service affecting)	406	469	382	300	375	262
	DC traction power failures (service affecting)	9	4	5	2	4	2
	Non traction operational power supply failures (service affecting)	39	39	48	50	50	22
Buildings	Buildings - Re-active Faults (2 & 24) (attention with 2hrs, fix within 24hrs) (attention within 24hrs, fix within 7 days)	683	636	642	607	793	490
Structures	Number of open work items with a risk score ≥ 12	N/A	N/A	N/A	293	80	80
Earthworks	Earthwork failures (5 year moving average)	2	1	1	4	5	3
Points	Point failures (service affecting)	448	385	414	362	330	283

Table 10.29: East Midlands asset condition reliability

Principal Asset	Description	2010/11	2011/12	2012/13	2013/14	2014/15 Target	2014/15 Actual
Track	Rail Breaks and Immediate Action defects per 100km	4.64	3.78	3.67	4.01	3.78	2.23
	Track geometry (Poor Track Geometry)	2.66%	2.41%	2.20%	1.98%	2.20%	1.71%
	Track failures (service affecting)	506	295	380	434	385	413
Signalling	Signalling failures (service affecting)	743	788	783	735	644	765
Telecoms	Telecoms failures (service affecting)	67	68	72	82	85	121
Electrical Power	AC traction power failures (service affecting)	79	63	46	63	124	54
	DC traction power failures (service affecting)	-	1	-	-	-	-
	Non traction operational power supply failures (service affecting)	35	58	40	35	39	10
Buildings	Buildings - Re-active Faults (2 & 24) (attention with 2hrs, fix within 24hrs) (attention within 24hrs, fix within 7 days)	N/A	N/A	N/A	163	240	193
Structures	Number of open work items with a risk score ≥ 12	N/A	N/A	N/A	372	273	150
Earthworks	Earthwork failures (5 year moving average)	1	1	1	1	1	1
Points	Point failures (service affecting)	218	167	183	203	190	192

Table 10.30: Kent asset condition reliability

Principal Asset	Description	2010/11	2011/12	2012/13	2013/14	2014/15 Target	2014/15 Actual
Track	Rail Breaks and Immediate Action defects per 100km	3.49	4.29	4.69	4.18	4.53	3.09
	Track geometry (Poor Track Geometry)	3.46%	4.00%	3.59%	3.69%	3.55%	3.22%
	Track failures (service affecting)	290	312	348	433	384	392
Signalling	Signalling failures (service affecting)	1,299	1,270	1,212	1,155	1,182	1,059
Telecoms	Telecoms failures (service affecting)	52	66	70	63	115	455
Electrical Power	AC traction power failures (service affecting)	-	4	4	4	7	2
	DC traction power failures (service affecting)	52	47	55	57	65	46
	Non traction operational power supply failures (service affecting)	24	24	32	28	28	24
Buildings	Buildings - Re-active Faults (2 & 24) (attention with 2hrs, fix within 24hrs) (attention within 24hrs, fix within 7 days)	640	543	588	650	506	576
Structures	Number of open work items with a risk score ≥ 12	N/A	N/A	N/A	486	424	191
Earthworks	Earthwork failures (5 year moving average)	4	3	4	18	17	17
Points	Point failures (service affecting)	481	380	403	340	381	296

Table 10.31: LNE asset condition reliability

Principal Asset	Description	2010/11	2011/12	2012/13	2013/14	2014/15 Target	2014/15 Actual
Track	Rail Breaks and Immediate Action defects per 100km	4.58	4.56	4.01	4.63	4.45	2.62
	Track geometry (Poor Track Geometry)	2.31%	2.62%	2.60%	2.58%	2.30%	2.41%
	Track failures (service affecting)	1,570	1,535	1,340	1,546	1,205	1,496
Signalling	Signalling failures (service affecting)	3,374	3,181	3,106	3,405	3,001	3,344
Telecoms	Telecoms failures (service affecting)	264	252	247	261	356	386
Electrical Power	AC traction power failures (service affecting)	218	192	192	175	193	206
	DC traction power failures (service affecting)	12	4	10	13	8	5
	Non traction operational power supply failures (service affecting)	118	104	117	98	96	61
Buildings	Buildings - Re-active Faults (2 & 24) (attention with 2hrs, fix within 24hrs) (attention within 24hrs, fix within 7 days)	N/A	N/A	N/A	1,089	947	865
Structures	Number of open work items with a risk score ≥ 12	N/A	N/A	N/A	839	551	430
Earthworks	Earthwork failures (5 year moving average)	12	10	9	9	8	9
Points	Point failures (service affecting)	811	773	978	682	772	727

Table 10.32: LNW asset condition reliability

Principal Asset	Description	2010/11	2011/12	2012/13	2013/14	2014/15 Target	2014/15 Actual
Track	Rail Breaks and Immediate Action defects per 100km	5.36	3.89	4.04	2.73	2.83	2.18
	Track geometry (Poor Track Geometry)	1.99%	1.87%	1.78%	1.66%	1.76%	1.54%
	Track failures (service affecting)	1,260	1,011	908	770	779	646
Signalling	Signalling failures (service affecting)	4,285	4,161	3,872	3,877	4,009	3,489
lecoms	Telecoms failures (service affecting)	99	119	190	203	255	687
Electrical Power	AC traction power failures (service affecting)	228	217	221	251	249	269
	DC traction power failures (service affecting)	42	37	51	56	58	42
	Non traction operational power supply failures (service affecting)	110	125	120	131	154	55
Buildings	Buildings - Re-active Faults (2 & 24) (attention with 2hrs, fix within 24hrs) (attention within 24hrs, fix within 7 days)	2,101	1,850	1,830	1,711	1,680	1,590
Structures	Number of open work items with a risk score ≥ 12	N/A	N/A	N/A	1,542	500	427
Earthworks	Earthwork failures (5 year moving average)	13	11	17	19	18	18
Points	Point failures (service affecting)	1,521	1,395	1,152	1,033	1,091	945

Table 10.33: Sussex asset condition reliability

Principal Asset	Description	2010/11	2011/12	2012/13	2013/14	2014/15 Target	2014/15 Actual
Track	Rail Breaks and Immediate Action defects per 100km	5.87	4.45	5.69	5.34	4.72	4.27
	Track geometry (Poor Track Geometry)	4.47%	5.35%	4.91%	4.81%	4.52%	4.48%
	Track failures (service affecting)	219	233	258	209	250	244
Signalling	Signalling failures (service affecting)	1,028	863	880	920	890	939
Telecoms	Telecoms failures (service affecting)	74	55	75	156	108	214
Electrical Power	AC traction power failures (service affecting)	-	-	-	1	-	-
	DC traction power failures (service affecting)	85	59	92	68	74	73
	Non traction operational power supply failures (service affecting)	20	14	12	26	25	13
Buildings	Buildings - Re-active Faults (2 & 24) (attention with 2hrs, fix within 24hrs) (attention within 24hrs, fix within 7 days)	816	493	601	694	850	497
Structures	Number of open work items with a risk score ≥ 12	N/A	N/A	N/A	62	85	51
Earthworks	Earthwork failures (5 year moving average)	8	5	6	6	6	6
Points	Point failures (service affecting)	252	206	204	256	235	182

Table 10.34: Wales asset condition reliability

Principal Asset	Description	2010/11	2011/12	2012/13	2013/14	2014/15 Target	2014/15 Actual
Track	Rail Breaks and Immediate Action defects per 100km	2.64	2.08	2.08	1.67	2.16	1.51
	Track geometry (Poor Track Geometry)	1.68%	1.58%	1.40%	1.46%	1.58%	1.57%
	Track failures (service affecting)	153	138	134	165	139	243
Signalling	Signalling failures (service affecting)	1,028	1,136	1,036	869	885	907
Telecoms	Telecoms failures (service affecting)	139	119	130	155	222	612
Electrical Power	AC traction power failures (service affecting)	-	-	-	-	-	-
	DC traction power failures (service affecting)	-	-	-	-	-	-
	Non traction operational power supply failures (service affecting)	25	24	26	28	28	14
Buildings	Buildings - Re-active Faults (2 & 24) (attention with 2hrs, fix within 24hrs) (attention within 24hrs, fix within 7 days)	281	192	203	262	232	162
Structures	Number of open work items with a risk score ≥ 12	N/A	N/A	N/A	294	265	170
Earthworks	Earthwork failures (5 year moving average))	9	8	6	6	6	4
Points	Point failures (service affecting)	289	270	200	185	169	180

Table 10.35: Wessex asset condition reliability

Principal Asset	Description	2010/11	2011/12	2012/13	2013/14	2014/15 Target	2014/15 Actual
Track	Rail Breaks and Immediate Action defects per 100km	5.71	5.23	4.46	3.69	3.72	3.69
	Track geometry (Poor Track Geometry)	3.25%	3.47%	2.97%	3.04%	3.34%	2.57%
	Track failures (service affecting)	541	594	675	876	800	646
Signalling	Signalling failures (service affecting)	1,221	1,279	1,302	1,182	1,193	1,277
Telecoms	Telecoms failures (service affecting)	64	51	84	472	240	279
Electrical Power	AC traction power failures (service affecting)	-	-	-	-	-	-
	DC traction power failures (service affecting)	70	98	126	123	125	115
	Non traction operational power supply failures (service affecting)	37	29	26	55	55	20
Buildings	Buildings - Re-active Faults (2 & 24) (attention with 2hrs, fix within 24hrs) (attention within 24hrs, fix within 7 days)	515	491	583	613	456	585
Structures	Number of open work items with a risk score ≥ 12	N/A	N/A	N/A	427	300	146
Earthworks	Earthwork failures (5 year moving average)	9	4	4	6	6	7
Points	Point failures (service affecting)	422	360	349	331	296	224

Table 10.36: Western asset condition reliability

Principal Asset	Description	2010/11	2011/12	2012/13	2013/14	2014/15 Target	2014/15 Actual
Track	Rail Breaks and Immediate Action defects per 100km	3.77	3.55	4.78	3.22	4.10	2.90
	Track geometry (Poor Track Geometry)	2.49%	2.16%	2.08%	2.02%	2.60%	2.23%
	Track failures (service affecting)	397	297	297	364	297	317
Signalling	Signalling failures (service affecting)	1,695	1,441	1,410	1,520	1,430	1,466
Telecoms	Telecoms failures (service affecting)	77	50	280	358	223	411
Electrical Power	AC traction power failures (service affecting)	15	3	16	12	17	12
	DC traction power failures (service affecting)	-	-	-	-	-	-
	Non traction operational power supply failures (service affecting)	34	22	27	32	43	12
Buildings	Buildings - Re-active Faults (2 & 24) (attention with 2hrs, fix within 24hrs) (attention within 24hrs, fix within 7 days)	765	616	533	519	620	506
Structures	Number of open work items with a risk score ≥ 12	N/A	N/A	N/A	206	150	99
Earthworks	Earthwork failures (5 year moving average)	22	16	17	17	17	17
Points	Point failures (service affecting)	809	666	645	537	486	514

Asset Condition Sustainability

Track

Definition

The sustainability of track condition is measured in terms of the percentage of the average service life that has been used within each of the track assets. These track assets are plain line rail, switches and crossings (S&C), sleepers and ballast.

Reporting method

The calculation of the average service life for rail, S&C and sleepers is based on the annual tonnage that has passed over the asset through its lifetime and the assets' characteristics that affect the rate of wear and fatigue on the asset (e.g. concrete or timber sleepers, jointed or continuously welded rail (CWR)). Thus, the used service life for each asset is accumulated year on year from its installation, dependent on the traffic running over it.

Ballast life is defined in terms of the percentage of the ballast that has been filled (e.g. from erosion due to traffic), as this gives an indication of the quality of the ballast.

This measure is based on the average service life for the track assets, given its characteristics. In reality, there are other influences on track deterioration (such as the local environmental and geological conditions, train designs and wheel set conditions) and useful life (e.g. line performance requirements, track access for maintenance) that mean that the actual track service life can vary considerably, with some track performing perfectly well for many years beyond its typical service life.

Commentary

The final Delivery Plan forecast CP4 exit figures for track sustainability measures, and that plain line sustainability indicators for rail, sleepers and ballast would remain approximately the same from the end of 2013/14 to the end of 2014/15. Under-delivery of renewals in the last year of CP4 caused the actual CP4 exit figures to vary from those forecast in the Delivery Plan. Under-delivery of plain line complete renewal and heavy refurbishment volumes throughout 2014/15 has resulted in a slight under-delivery against target for sleeper used life (1.4 percentage points under-delivery) and ballast used life (1.8 percentage points under-delivery). Conversely, S&C used life is above target by 0.8 percentage points.

The change in used life by Route Criticality follows the same relative pattern as that forecast in the 2014 Delivery Plan, with the highest criticality routes improving and the lowest ones slightly deteriorating. However, the shortfall when compared to the final Delivery Plan is greater on the higher criticality routes (one to three), because the great majority of works were planned for these routes, and any issues with delivering works were heightened due to the higher traffic volumes on them.

In the longer term, the forecasts for the rest of CP5 have been revised to account for the 2014/15 results. These show that the plain life used lives are expected to catch up with the 2014 forecast changes over CP5. S&C used life is still expected to improve significantly to the end of CP5 (by 2.2 per cent from the end of CP4).

In summary, track sustainability indicators at the end of 2014/15 are slightly worse than previously forecast, but the difference is unlikely to have a significant impact on track performance in the short-term. As long as the works planned for the remainder of CP5 are delivered, the track sustainability will have been maintained in line with the track policy.

Signalling

Definition

The sustainability of signalling asset condition is measured in terms of the average remaining life of Network Rail signalling infrastructure in years.

Reporting method

The Signalling Infrastructure Condition Assessment (SICA) process requires the inspection of signalling assets in the form of either primary or secondary inspections. Inspections are performed on a sample of the signalling infrastructure within the area of the railway controlled by an interlocking. The purpose of the inspection is to establish the condition of the inspected asset type and of the overall interlocking area. The SICA score is produced by algorithms and weightings based on the criticality of each asset to the overall signalling system.

Primary inspections are performed every five years from commissioning until predicted remaining life is less than ten years. Assets inspected are: control panel, interlocking, internal wiring, main cables, cable routes, location cases and power supplies.

Once predicted remaining asset life is less than ten years secondary inspections are performed every three years until remaining life is less than three years. Following this point, secondary inspections are performed annually. Secondary inspections are more detailed than primary inspections and encompass all the assets listed above, as well as remote control, main colour light signals, ground position signals, power operated points and train detection.

Commentary

The Signalling Condition Index (SICA Remaining Life) outturned at 12.60 against a target of 12.68. The CP5 targets have now been updated for signalling sustainability following a review of 2014/15 actuals. Work has been undertaken to re-forecast the remaining CP5 targets now that the full set of actual data is available. 2014/15 under-delivery of volumes has also been impacted by overspend in terms of actual costs for the work delivered. This has resulted in the initial deferral of some 2014/15 schemes. In addition the revised financial forecast (RF11.5) set in February 2015 has resulted in the deferral of some schemes and de-scoping of other schemes beyond CP5 into CP6.

2014/15 delivery has been delayed due to the final position in 2013/14. A number of large conventional and partial conventional re-signalling schemes which were unfinished projects rolled over into 2014/15. This is indicative of contractor resourcing constraints identified across a number of routes.

There remains concern regarding the deliverability of a number of planned CP5 major resignalling schemes, particularly within the South East, in later years of CP5 due to uncertainty around framework suppliers, contractor resource and the large number of schemes currently in development. Deferrals on signalling renewal schemes could also impact on the delivery of the Time Bound Action Plans (TBAPs) put in place to deal with 650V signalling power supply defects following the ORR Improvement Notice.

There are also concerns regarding the impact of 2014/15 deferrals across a number of assets on the deliverability of works programmes in later years of CP5. These include cross-asset impact e.g. Great Western Electrification Programme (GWEP) and Station Information and Security Systems (SISS).

At route level, the areas of concern for 2014/15 have been namely in LNW, Kent, Wales and Western. LNW has faced delays in commissioning to the Wolverhampton Resignalling Scheme which has meant completion will now be pushed back to later in the Control Period. This represents 140 SEUs (Signalling Equivalent Unit) which were recorded as having no residual life that would have been replaced with consequent impact on the CSI. Additionally, an expected partial renewal at Romiley was also delayed. Neither of these items will affect attainment of the overall target for the Control Period. In Kent there are concerns regarding later delivery for CP5 resignalling schemes. Wales has been largely impacted by the Cardiff Area Resignalling Scheme (CARS) as this has been part deferred due to delays in modular and level crossing scheme development. Western has been impacted by the delay of renewals work originally forecast for 2014/15 delivery. Major schemes at Bristol and Swindon have now been delayed to later in CP5. Bristol has been pushed back because of the delay of the Swindon scheme (Bristol requires the completion of Swindon fringes).

There has been completion of CP4 schemes in 2014/15. These volumes have not been included within the 2014/15 actuals.

Telecoms

Definition

This measure demonstrates the remaining life of the asset as a percentage.

Reporting method

Telecoms sustainability measure is represented as a remaining life percentage value. This value is the remaining life of the asset based on the cross section of the asset base that is being represented. Remaining life percentage is calculated based on all of the telecoms assets included in the nationally recognised regulated volumes.

Commentary

The network-wide percentage of asset remaining life for the end of 2014/15 is 63.83 per cent, outperforming the target of 62.0 per cent. This demonstrates a reduction in asset remaining life from the CP4 exit figure of 68 per cent but remains above of where asset sustainability was forecast to be for 2014/15, reflecting a very minimal impact from the reduced volume delivery within the year. The current forecasts for CP5 show a continual reduction in the percentage of asset remaining life that represents acceleration from the original forecast but in line with the CP5 exit target. The decline during CP5 can be explained by the impact of Fixed Telecom Network (FTN) and GSM-R assets which were largely installed in CP4 and are still relatively early on in their life which increased the CP4 exit figure. The downward trend is being controlled and demonstrates the efficient use of funds and timely renewals of assets.

The decline in percentage of asset remaining life will be monitored throughout CP5 to ensure that asset condition sustainability is in line with targets and that renewals efficiencies are maintained.

Electrical Power

Definition

For a given distinct section of conductor rail (measured in km), the remaining life is expressed as a percentage of the maximum allowable wear that remains:

$$\text{Remaining Life \%} = \frac{\text{Maximum Allowable Wear \% - Actual Wear \%}}{\text{Maximum Allowable Wear \%}} \times 100$$

The maximum allowable wear varies according to the type of conductor rail and the electrical protection characteristics.

For a given wire run, the remaining life is expressed as a percentage of the asset technical life (ATL) that remains such that:

$$\text{Remaining Life \%} = \frac{\text{Asset Technical Life – Effective Age}}{\text{Asset Technical Life}} \times 100$$

The ATL is the point at which, on average, the asset would, based on engineering judgement, reach the end of its useful life. The ATL reflects differences in asset type and utilisation.

The effective age is an intermediate parameter for condition and reflects the impact of historic or planned renewal / refurbishment interventions and represents the impact of carrying out refurbishment interventions on OLE. It allows assessment of remaining life to take account of historic and future interventions.

The effective age is calculated using a weighted assessment of the actual ages of the components that form OLE. For example, a wire run which is 50 years old has one component replaced. The ages of all components will be 50 years except for the replaced component which is 0 years old. The overall effective age depends on the weighted importance of the component that is replaced. If a replaced component has a weight of 10%, then the overall effective age of the OLE is 45 years (90% x 50 + 10% x 0).

The weightings used originate from work conducted for the Tier 2 Electrical Power Whole Life Costing strategic model, with inputs from the Electrification Condition Assessment Process. Typical examples include:

Table 10.37: Examples of intervention activity and impact on effective age reduction

Intervention Activity	Impact on Effective Age Reduction
Contact rewiring, including droppers and jumpers	34%
Full mid-life refurbishment (Contact, dropper and jumper, catenary, registration equipment and registration insulators)	91%

We have been extremely cautious in the application of effective age and have only used it for wire runs where there has been historic investment in recent control periods or where investment is due in CP5. For the vast majority of wire runs the current age, based on the year of installation, is used rather than effective age. This means that our estimates of remaining life are conservative.

Reporting method

The source data (asset inventory) used to calculate conductor rail remaining life originates from the Conductor Rail Web Reporting System (CRWRS). Data in the CRWRS has been validated.

The source data used to calculate the remaining life for Overhead Line Equipment (OLE) is derived from the OLE asset register, Ellipse, with subsequent validation.

Commentary

Following an adjustment to the end of CP4 position when the complete 2013/14 data set was available, the renewals workbank was reprofiled therefore affecting the year end position. The end of CP5 forecast for remaining life of conductor rail has increased from 63.9 per cent to 66.1 per cent. The reasons for this increase are a change in the planned work bank for CP5 and a change in the asset inventory used.

When the initial CP5 forecast was conducted in January 2014, 3,266km of 4,438km of conductor rail was measured and reported in the CRWRS. The 4,438km is less than the recorded 4,462km of conductor rail in GEOGIS as the asset inventory in CRWRS has not been fully updated. In order to produce remaining life, the 1,172km unmeasured conductor rail was assumed to be of the same characteristics as the measured rail. The characteristics are the conductor rail type (for example 100lb, 105lb, 106lb, 150lb and 150lb wide) and its corresponding average wear. The characteristics of the unmeasured rail were determined using comparable measured rail in the same route or, if no measured rail in a route was available, a national average. The new CP5 forecast, conducted in April 2015, is based on 3,977km of measured rail. This means the forecast is more accurate than before as it is less susceptible to the incorrect estimation of the conductor rail characteristic of the unmeasured rail.

The biggest effect on the end of CP5 remaining life has been the change in asset inventory rather than the increase in the planned CP5 work.

The end of CP5 forecast for the remaining life of Overhead Line Equipment (OLE) has decreased to 54.9 per cent from 55.3 per cent. The primary reason for the decrease is due to the remaining life submission for the CP5 Delivery Plan overstating the number of wire run renewals nationally. This resulted in the National forecast at the end of CP5 being several tenths of a percentage point higher than expected. This issue also affected the England and Wales figure, which has now reduced to 54.3 per cent from 54.9 per cent.

In CP5, Anglia Route is planning 188 wire run renewals for Phase 1 of the Great Eastern enhancement and 83 wire runs for Phase 2. This includes an additional 56 wire runs compared to the original plan thus resulting in the increase of the end of CP5 forecast from 52.4 per cent to 52.7 per cent. In 2014/15, Anglia delivered 20 wire runs.

East Midlands Route is now planning 36 wire run renewals for the whole of CP5. This has increased the end of CP5 forecast to 49.8 per cent from 48.0 per cent.

LNE completed five wire runs in 2014/15. The number of wire run renewals for LNE has now reduced to 87 from 105 due to renewal works being reprogrammed to be completed over four years rather than two. This has reduced the end of CP5 forecast to 53.4 per cent from 54.0 per cent.

LNW continue to plan 34 wire run renewals for the whole of CP5. The planned renewal has now been re-profiled and planned for 2017/18. This does not affect the end of CP5 forecast, which remains at 55.3 per cent.

The end of CP5 forecast for Kent, Scotland and Western remaining unchanged at 65.9 per cent, 58.0 per cent and 69.0 per cent respectively.

Signalling power supply (SPS) cables remaining life forecasts and target are currently being conducted by the Risk, Analysis and Assurance team (on behalf of the Head of Distribution) with the collaboration of Route E&P teams. Forecasts are underway and the finalisation is planned for November/December 2015.

The timescales for the development and production of SPS cable remaining life forecasts have been delayed due to:

- The availability of specialist resource from central and Route teams being engaged in the Signalling Power Supply Project (response to Improvement Notices) as a priority
- And the scale of the review of the signalling power cables input data from the Asset Data Improvement Programme which is now complete.

Buildings

Definition

This is the weighted Percentage Remaining Life of elements within critical blocks of stations and Light Maintenance Depots (LMDs).

Percentage Asset Remaining Life (PARL), derived by dividing the Asset Remaining Life (ARL) by Asset Life Expectancy (ALE), and volumes for each element are recorded on Operational Property Asset System (OPAS) as part of the regular operational property inspection regime. These values are then weighted by the cost of full renewal of the elements baseline during the strategic business planning.

Asset Condition Sustainability is a new measure introduced in CP5, it is therefore reported for the first time in this Annual Return.

Commentary

The 2014/15 station results indicate a 16.4 percentage point improvement in the station remaining life for nationally achieving 55.4 per cent against a target of 39 per cent.

The main driver for the stations PARL improvement is the return of stations with enhancement projects into the operational property reporting cycle e.g. King's Cross and Blackfriars stations. The highest route improvement of was in London North East route where 69.10 per cent was achieved against a target of 43.10 per cent.

The results for Light Maintenance Depots (LMD) indicate a 7.5 percentage point improvement nationally, attaining 52.20 per cent against a target of 44.70 per cent. In Scotland the LMD remaining life for 2014/15 was 54.70 percent against a target of 44.1 per cent. This was driven by the inclusion of a relatively new Bathgate LMD into the reporting cycle and also major renewals carried out at Perth LMD.

Overall, the results indicate that the asset conditions are being maintained and have remained sustainable within the past year. Based on the planned maintenance and renewals workbank, this trend is expected to be maintained in the future years of CP5.

Structures

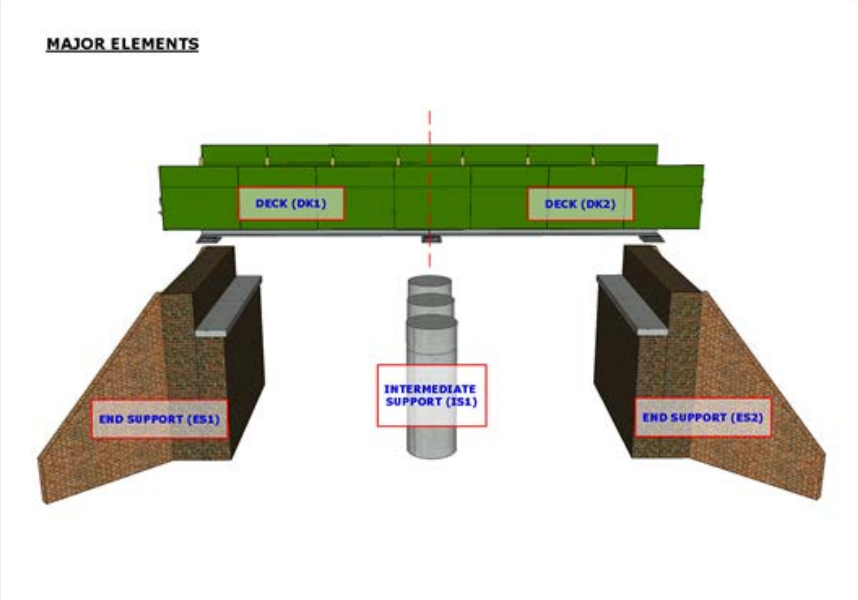
Definition

Asset Condition Sustainability for structures is a new measure for CP5. It is split into two parts: The average condition of bridge deck major elements and the tunnel condition marking index (TCMI).

The average condition of bridge deck major elements measure includes Network Rail owned overbridges and underbridges. The measure does not apply to third party bridges, footbridges, major structures or tenanted spans with obstructions.

The purpose of this measure is to help provide assurance that we are managing our bridges sustainably. Bridge deck major elements were selected for this measure because they attract a large amount of investment, and typically degrade faster than the substructures. Figure 10.2 shows typical major elements of a bridge. The green elements (DK1 and DK2) contribute to this measure.

Figure 10.2: Typical bridge major elements



The Tunnel Condition Marking Index (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.

The purpose of TCMI is to provide a condition score for each tunnel that undergoes a detailed examination. The system has been designed as a high level asset management tool in order to measure and demonstrate the change in condition of tunnels over time.

Reporting method

Each bridge asset that we own receives a detailed examination at an interval defined in our standards. As part of this activity, the condition of a bridge is recorded using the Bridge Condition Marking Index (BCMI). A score between 0 and 100 is calculated for each minor element based on the defects recorded in the examination. A score of 100 represents perfect condition. The minor element scores relating to a major element are then entered into an algorithm to create the BCMI score for the major element. The most recent BCMI score for each deck major element is used to calculate the average score across the national portfolio, then separately for England & Wales and Scotland.

It should be noted that the following asset types are excluded from this measure: footbridges, third party bridges, major structures and bridges excluded from receiving a BCMI score.

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 structurally significant defects generates a condition score for the tunnel. The scores range from 100 for the best condition descending to zero for the worst condition.

Each tunnel asset is sub-divided into components such as bores and portals. Tunnel bores are broken down into 20 metre lengths termed tunnel sections (also termed major elements within the TCMI scoring system). These split horizontally to form smaller discrete areas known as minor elements for condition reporting at a higher resolution. Similarly, tunnel portals are also split into major and minor elements.

Figure 10.3: Tunnel Bore Major and Minor Elements

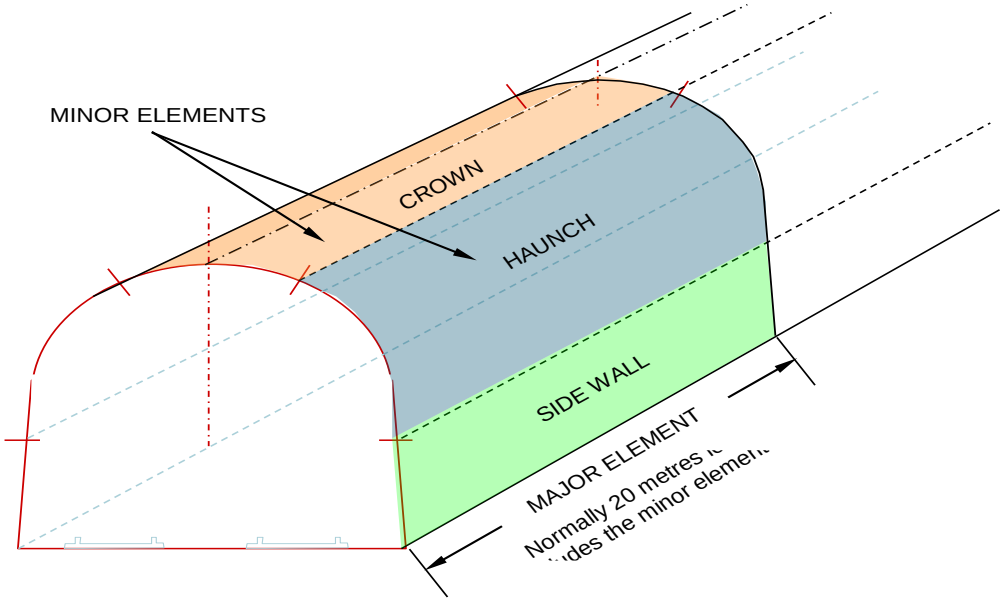
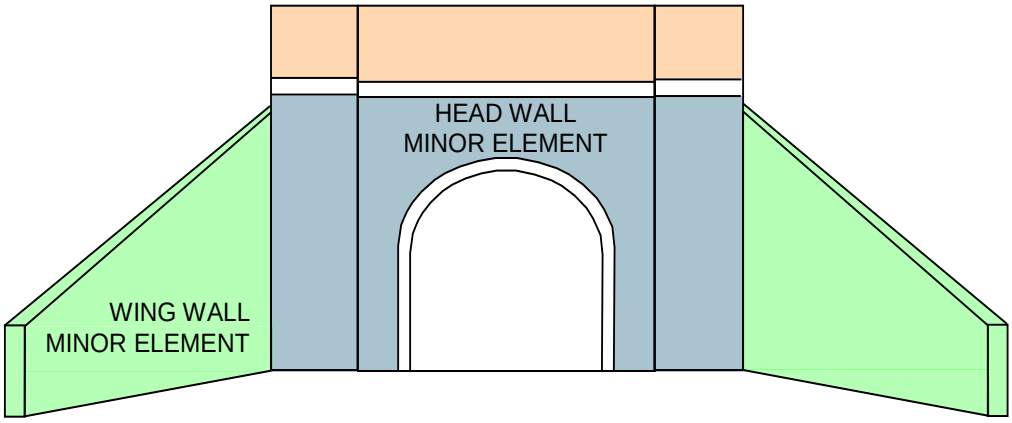


Figure 10.4: Portal Minor Elements



Commentary

For the past five years, the measure indicates the average condition of bridge deck major elements has been worsening nationally, from a score of 65.16 in 2009/10 to a score of 64.74 in 2013/14, which indicates that investment during CP4 was perhaps insufficient, or not appropriately invested to sustain the condition of the bridge deck portfolio.

The funding for structures has been increased for CP5 and an improvement in the score is expected during CP5. In 2014/15, the target score of 64.7 was achieved. However, this is a further decline of the deck condition, before an expected improvement is predicted in 2015/16. At this time, 18 per cent of the BCMI scores due for 2014/15 are still to be received, which will affect the accuracy of the score.

The England & Wales score reflects the same trend as the national profile, with a decrease in scores from 65.45 in 2009/10 to 64.95 in 2013/14. The target of 64.9 was achieved for 2014/15, however 20 per cent of the scores due in 2014/15 are still to be received.

In Scotland, the profile has improved marginally from 63.03 in 2009/10 to 63.14 in 2013/14. 12 per cent of the scores due in 2014/15 are still to be received.

In future years, once the improved civils asset management system is rolled-out, the new examination process will automatically import the BCMI data, giving greater confidence on the sustainability scores going forward. New data requirements at the handback of assets in future years following interventions, will also give a more accurate view of condition score, giving immediate realisation of condition uplifts that would historically only be captured during a detailed examination of the asset.

Figure 10.5: National average bridge deck major element score

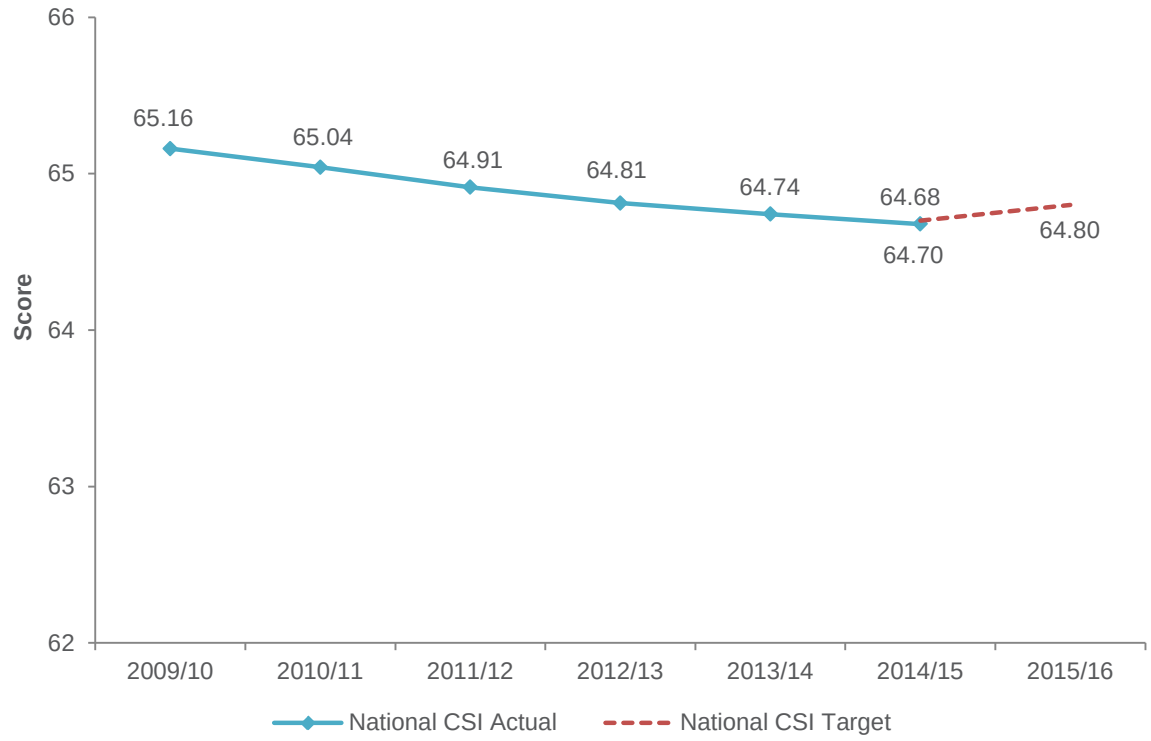
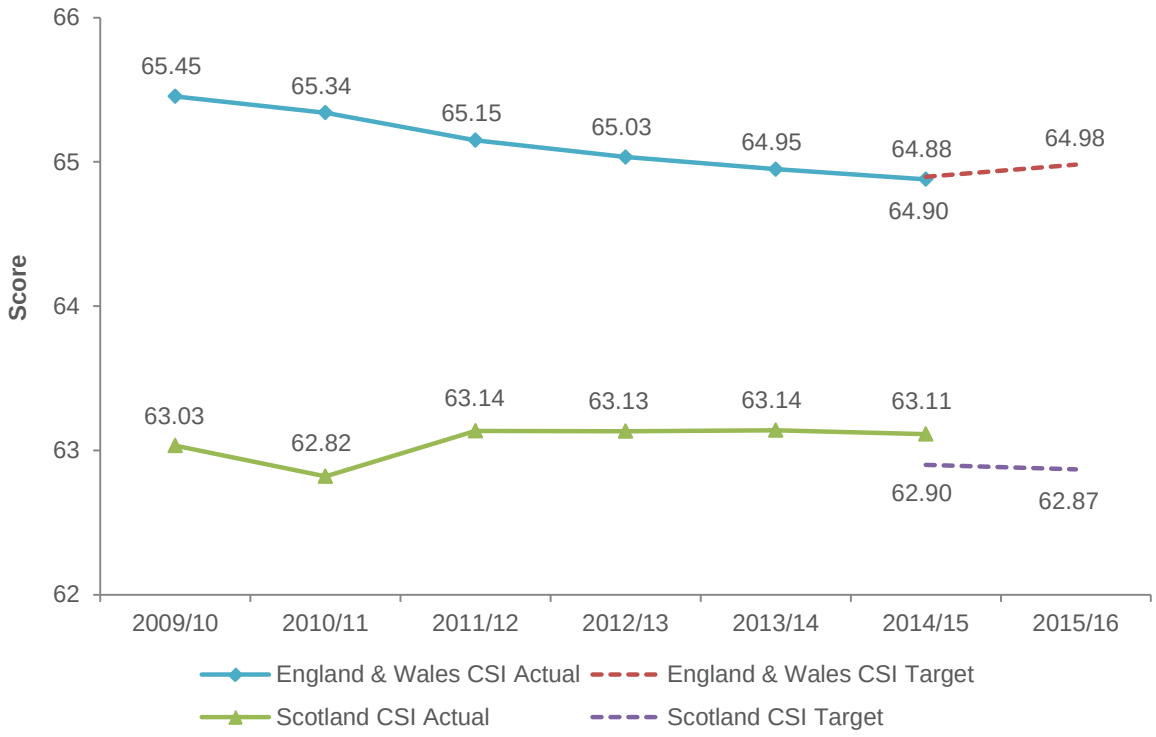


Figure 10.6: National average bridge deck major element score



Earthworks

Definition

The Earthworks Condition Score (ECS) is a sum of the count of the number of examined Earthwork assets within each Earthwork Hazard Category (EHC), multiplied by a weighting factor derived from historic failure probability, divided by the total number of examined assets. ECS is determined for all Earthwork assets combined (Soil Cuttings, Rock Cuttings and Embankments).

This measure, reported as defined above for the first time in the 2015 Annual Return, is an evolution of the M33 measure reported previously.

Reporting method

Routes implement an examination regime in accordance with NR/L3/CIV/065 Examination of Earthworks with data collected using electronic handheld units, which is then uploaded into the Network Rail Earthworks Examination Database. Periodically and at year-end information is extracted from the Database, including the calculated ECS, and any issues are resolved with routes as necessary.

Commentary

ECS is a weighted average of Earthwork asset portfolio condition, with a lowering score representing improving condition and an increasing score representing a worsening condition. The CP5 Earthworks Policy is to sustain ECS throughout CP5, i.e. to offset Earthwork asset degradation with condition-improving (Renewal and Refurbishment) and condition-maintaining (Maintenance) intervention activities at lowest whole-life cost.

In the CP5 Delivery Plan the projected 2013/14 National ECS was 1.75 as this was based on forecasted position at the time. Annual delivery targets were based on this forecast. The actual 2013/14 National ECS outturned at 1.80. This position demonstrated a less sustainable portfolio position. The 2014/15 National ECS (1.76) shows an improved portfolio condition, compared to the 2013/14 National ECS figure. However, this remains a small underdelivery against the target of 1.75.

This improvement cannot be directly correlated to Earthwork intervention activities, which are under-delivered in CP5 Year 1 (please refer to renewal volumes for further detail). The principal reason for the improved portfolio condition is the influence of Earthwork assets generally in favourable condition that were previously not attributed with an EHC (and therefore excluded from ECS calculations). Many of these assets have been examined in 2014/15 in compliance with the current Issue 5 of the NR/L3/CIV/065 Examination of Earthworks Company Standard and are now attributed with an EHC. Such assets were generally examined to an earlier issue of NR/L3/CIV/065 or its predecessor the RT030 Standard, which did not result in all attributes necessary to calculate EHC being collected. In accordance ECS is anticipated to continue to show volatility as electronic recording of Earthwork asset EHCs to current Company Standards (mandated by April 2017) is completed.

Table 10.38: 2013/14 vs. 2014/15 outturn

Route	Actual 2013/14 (CP4 exit/CP5 entry)	Actual 2014/15 (CP5 Year 1)
National	1.80	1.76
England and Wales	1.78	1.75
Anglia	1.69	1.62
Kent	1.81	1.78
LNE	1.53	1.53
LNW	1.90	1.83
East Midlands	1.36	1.35
Scotland	1.90	1.82
Sussex	1.97	1.93
Wales	2.03	1.97
Wessex	1.72	1.70
Western	2.14	2.14

Drainage

Definition

The Drainage Condition Score (DCS) is a sum of the count of the number of drainage assets inspected within each structural condition grade, multiplied by a weighting factor equal to the numeric value of the structural condition grade, divided by the total number of inspected assets. DCS is determined separately for drainage assets attributed to track and those attributed to earthworks (off-track) and structures combined.

This measure is a new measure known as M37, reported as defined above for the first time in the Annual Return 2015.

Reporting method

Routes implement an inspection regime in accordance with NR/L3/CIV/005 Railway Drainage Systems Manual with collected data uploaded into the Network Rail Drainage Inspection Database. Periodically and at year-end a report is extracted from the database, including the calculated DCS for Track and Earthworks/Structures and any issues are resolved with routes as necessary.

Commentary

A lowering DCS represents improving condition. For both Track and Earthworks/Structures DCS, both the National and England and Wales 2014/15 figures are considerably better than forecast. This is due to large variations in the Anglia and Sussex routes between 2014/15 forecasts and actuals.

Like earthworks, this improvement cannot be directly correlated to Drainage intervention activities, which are under-delivered in 2014/15. The principal reason for the improved portfolio condition is the influence of drainage assets generally in favourable condition that were previously not attributed with a structural condition grade (and therefore excluded from DCS calculations). The new measure is anticipated to continue to show volatility as electronic recording of Drainage assets and structural condition grades is completed using electronic applications. These are now rolled-out and training at Delivery Unit level is ongoing.

Table 10.39: Asset condition sustainability – network-wide

Principal Asset	Description	2014/15 Target	2014/15 Actual
Track	Track - Used Life - Rail	49.20%	51.50%
	Track - Used Life - Switch & Crossings	52.30%	51.50%
	Track - Used Life - Sleepers	61.10%	62.50%
	Track - Used Life - Ballast	47.70%	49.50%
Signalling	Signalling Condition Index (SICA Remaining Life)	12.68	12.60
Telecoms	Telecoms - Remaining Life	62.00%	63.83%
Electrical Power	EP - Remaining Life - Conductor Rail	65.80%	67.60%
	EP - Remaining Life - Overhead Line Equipment (OLE)	58.40%	58.00%
	EP - Remaining Life - Signalling Power Cable	-	-
Buildings	Stations - % Remaining Life	39.00%	55.40%
	Light Maintenance Depot (LMD) - % Remaining Life	44.70%	52.20%
Structures	Average condition of major deck elements	64.70	64.68
	Tunnel Condition Monitoring Index (TCMI)	83.40	88.33
Earthworks	Earthworks - Condition Score	1.75	1.76
Drainage	Track Drainage - Condition Score	1.70	1.48
	Earthwork/Structure Drainage - Condition Score	1.71	1.49

Table 10.40: Asset condition sustainability – England & Wales

Principal Asset	Description	2014/15 Target	2014/15 Actual
Track	Track - Used Life - Rail	47.70%	49.90%
	Track - Used Life - Switch & Crossings	52.70%	51.60%
	Track - Used Life - Sleepers	59.50%	60.70%
	Track - Used Life - Ballast	46.50%	48.60%
Signalling	Signalling Condition Index (SICA Remaining Life)	12.99	12.89
Telecoms	Telecoms - Remaining Life	62.10%	63.92%
Electrical Power	EP - Remaining Life - Conductor Rail	65.80%	67.60%
	EP - Remaining Life - Overhead Line Equipment (OLE)	57.60%	57.10%
	EP - Remaining Life - Signalling Power Cable	-	-
Buildings	Stations - % Remaining Life	39.50%	54.80%
	Light Maintenance Depot (LMD) - % Remaining Life	44.90%	51.60%
Structures	Average condition of major deck elements	64.90	64.88
	Tunnel Condition Monitoring Index (TCMI)	83.30	88.07
Earthworks	Earthworks - Condition Score	1.80	1.75
Drainage	Track Drainage - Condition Score	1.62	1.38
	Earthwork/Structure Drainage - Condition Score	1.82	1.53

Table 10.41: Asset condition sustainability – Scotland

Principal Asset	Description	2014/15 Target	2014/15 Actual
Track	Track - Used Life - Rail	58.80%	61.50%
	Track - Used Life - Switch & Crossings	48.30%	50.10%
	Track - Used Life - Sleepers	70.80%	73.70%
	Track - Used Life - Ballast	54.90%	55.50%
Signalling	Signalling Condition Index (SICA Remaining Life)	10.57	10.42
Telecoms	Telecoms - Remaining Life	61.20%	63.24%
Electrical Power	EP - Remaining Life - Conductor Rail	-	-
	EP - Remaining Life - Overhead Line Equipment (OLE)	62.90%	62.90%
	EP - Remaining Life - Signalling Power Cable	-	-
Buildings	Stations - % Remaining Life	42.50%	58.70%
	Light Maintenance Depot (LMD) - % Remaining Life	44.10%	54.70%
Structures	Average condition of major deck elements	62.90	63.11
	Tunnel Condition Monitoring Index (TCMI)	85.10	91.73
Earthworks	Earthworks - Condition Score	1.55	1.82
Drainage	Track Drainage - Condition Score	2.02	2.00
	Earthwork/Structure Drainage - Condition Score	1.32	1.27

Table 10.42: Asset condition sustainability – Anglia

Principal Asset	Description	2014/15 Target	2014/15 Actual
Track	Track - Used Life - Rail	47.50%	50.80%
	Track - Used Life - Switch & Crossings	57.10%	57.90%
	Track - Used Life - Sleepers	63.30%	63.80%
	Track - Used Life - Ballast	46.40%	49.50%
Signalling	Signalling Condition Index (SICA Remaining Life)	12.69	15.54
Telecoms	Telecoms - Remaining Life	56.00%	58.30%
Electrical Power	EP - Remaining Life - Conductor Rail	50.80%	51.50%
	EP - Remaining Life - Overhead Line Equipment (OLE)	50.00%	50.10%
	EP - Remaining Life - Signalling Power Cable	-	-
Buildings	Stations - % Remaining Life	38.00%	48.90%
	Light Maintenance Depot (LMD) - % Remaining Life	29.50%	48.10%
Structures	Average condition of major deck elements	70.30	70.04
	Tunnel Condition Monitoring Index (TCMI)	82.60	84.63
Earthworks	Earthworks - Condition Score	1.69	1.62
Drainage	Track Drainage - Condition Score	2.46	1.43
	Earthwork/Structure Drainage - Condition Score	2.26	1.42

Table 10.43: Asset condition sustainability – East Midlands

Principal Asset	Description	2014/15 Target	2014/15 Actual
Track	Track - Used Life - Rail	48.40%	47.70%
	Track - Used Life - Switch & Crossings	45.10%	39.90%
	Track - Used Life - Sleepers	57.90%	54.50%
	Track - Used Life - Ballast	46.70%	43.90%
Signalling	Signalling Condition Index (SICA Remaining Life)	13.19	14.02
Telecoms	Telecoms - Remaining Life	66.70%	67.73%
Electrical Power	EP - Remaining Life - Conductor Rail	-	-
	EP - Remaining Life - Overhead Line Equipment (OLE)	54.00%	52.30%
	EP - Remaining Life - Signalling Power Cable	-	-
Buildings	Stations - % Remaining Life	46.60%	64.00%
	Light Maintenance Depot (LMD) - % Remaining Life	57.60%	65.80%
Structures	Average condition of major deck elements	63.50	63.25
	Tunnel Condition Monitoring Index (TCMI)	83.50	90.69
Earthworks	Earthworks - Condition Score	1.69	1.35
Drainage	Track Drainage - Condition Score	1.2	1.23
	Earthwork/Structure Drainage - Condition Score	1.20	1.23

Table 10.44: Asset condition sustainability – Kent

Principal Asset	Description	2014/15 Target	2014/15 Actual
Track	Track - Used Life - Rail	49.00%	53.90%
	Track - Used Life - Switch & Crossings	55.20%	55.00%
	Track - Used Life - Sleepers	64.40%	65.90%
	Track - Used Life - Ballast	52.40%	54.60%
Signalling	Signalling Condition Index (SICA Remaining Life)	14.38	15.88
Telecoms	Telecoms - Remaining Life	55.30%	56.61%
Electrical Power	EP - Remaining Life - Conductor Rail	69.00%	70.70%
	EP - Remaining Life - Overhead Line Equipment (OLE)	71.80%	71.80%
	EP - Remaining Life - Signalling Power Cable	-	-
Buildings	Stations - % Remaining Life	36.20%	47.30%
	Light Maintenance Depot (LMD) - % Remaining Life	42.50%	40.70%
Structures	Average condition of major deck elements	68.50	68.10
	Tunnel Condition Monitoring Index (TCMI)	84.00	86.94
Earthworks	Earthworks - Condition Score	1.79	1.78
Drainage	Track Drainage - Condition Score	1.20	1.19
	Earthwork/Structure Drainage - Condition Score	1.50	1.54

Table 10.45: Asset condition sustainability – LNE

Principal Asset	Description	2014/15 Target	2014/15 Actual
Track	Track - Used Life - Rail	52.50%	54.30%
	Track - Used Life - Switch & Crossings	54.70%	53.70%
	Track - Used Life - Sleepers	62.20%	63.60%
	Track - Used Life - Ballast	49.10%	51.20%
Signalling	Signalling Condition Index (SICA Remaining Life)	11.26	12.96
Telecoms	Telecoms - Remaining Life	63.60%	67.88%
Electrical Power	EP - Remaining Life - Conductor Rail	-	-
	EP - Remaining Life - Overhead Line Equipment (OLE)	59.10%	58.50%
	EP - Remaining Life - Signalling Power Cable	-	-
Buildings	Stations - % Remaining Life	43.10%	69.10%
	Light Maintenance Depot (LMD) - % Remaining Life	53.30%	61.10%
Structures	Average condition of major deck elements	63.90	64.18
	Tunnel Condition Monitoring Index (TCMI)	83.10	91.63
Earthworks	Earthworks - Condition Score	1.71	1.53
Drainage	Track Drainage - Condition Score	1.40	1.43
	Earthwork/Structure Drainage - Condition Score	1.50	1.53

Table 10.46: Asset condition sustainability – LNW

Principal Asset	Description	2014/15 Target	2014/15 Actual
Track	Track - Used Life - Rail	42.20%	43.80%
	Track - Used Life - Switch & Crossings	47.50%	44.60%
	Track - Used Life - Sleepers	51.90%	54.50%
	Track - Used Life - Ballast	38.90%	42.00%
Signalling	Signalling Condition Index (SICA Remaining Life)	12.43	11.36
Telecoms	Telecoms - Remaining Life	61.90%	66.19%
Electrical Power	EP - Remaining Life - Conductor Rail	60.70%	60.50%
	EP - Remaining Life - Overhead Line Equipment (OLE)	59.60%	59.40%
	EP - Remaining Life - Signalling Power Cable	-	-
Buildings	Stations - % Remaining Life	39.90%	55.60%
	Light Maintenance Depot (LMD) - % Remaining Life	59.00%	65.00%
Structures	Average condition of major deck elements	64.60	64.34
	Tunnel Condition Monitoring Index (TCMI)	82.80	86.83
Earthworks	Earthworks - Condition Score	1.85	1.83
Drainage	Track Drainage - Condition Score	1.30	1.35
	Earthwork/Structure Drainage - Condition Score	1.70	1.69

Table 10.47: Asset condition sustainability – Sussex

Principal Asset	Description	2014/15 Target	2014/15 Actual
Track	Track - Used Life - Rail	56.20%	62.60%
	Track - Used Life - Switch & Crossings	70.50%	67.90%
	Track - Used Life - Sleepers	70.20%	71.50%
	Track - Used Life - Ballast	59.90%	60.70%
Signalling	Signalling Condition Index (SICA Remaining Life)	13.15	16.79
Telecoms	Telecoms - Remaining Life	52.40%	56.57%
Electrical Power	EP - Remaining Life - Conductor Rail	59.70%	62.00%
	EP - Remaining Life - Overhead Line Equipment (OLE)	-	-
	EP - Remaining Life - Signalling Power Cable	-	-
Buildings	Stations - % Remaining Life	39.60%	50.70%
	Light Maintenance Depot (LMD) - % Remaining Life	37.00%	41.60%
Structures	Average condition of major deck elements	68.00	68.15
	Tunnel Condition Monitoring Index (TCMI)	84.00	86.06
Earthworks	Earthworks - Condition Score	1.74	1.93
Drainage	Track Drainage - Condition Score	2.80	1.35
	Earthwork/Structure Drainage - Condition Score	2.30	1.53

Table 10.48: Asset condition sustainability – Wales

Principal Asset	Description	2014/15 Target	2014/15 Actual
Track	Track - Used Life - Rail	54.00%	55.30%
	Track - Used Life - Switch & Crossings	50.20%	56.80%
	Track - Used Life - Sleepers	71.00%	71.40%
	Track - Used Life - Ballast	54.30%	53.60%
Signalling	Signalling Condition Index (SICA Remaining Life)	17.36	10.73
Telecoms	Telecoms - Remaining Life	72.50%	73.21%
Electrical Power	EP - Remaining Life - Conductor Rail	-	-
	EP - Remaining Life - Overhead Line Equipment (OLE)	-	-
	EP - Remaining Life - Signalling Power Cable	-	-
Buildings	Stations - % Remaining Life	31.40%	43.30%
	Light Maintenance Depot (LMD) - % Remaining Life	44.00%	48.00%
Structures	Average condition of major deck elements	61.60	61.22
	Tunnel Condition Monitoring Index (TCMI)	82.20	82.45
Earthworks	Earthworks - Condition Score	2.01	1.97
Drainage	Track Drainage - Condition Score	-	1.58
	Earthwork/Structure Drainage - Condition Score	-	1.58

Table 10.49: Asset condition sustainability – Wessex

Principal Asset	Description	2014/15 Target	2014/15 Actual
Track	Track - Used Life - Rail	45.70%	48.50%
	Track - Used Life - Switch & Crossings	56.00%	54.70%
	Track - Used Life - Sleepers	61.90%	63.50%
	Track - Used Life - Ballast	50.10%	54.10%
Signalling	Signalling Condition Index (SICA Remaining Life)	12.10	12.34
Telecoms	Telecoms - Remaining Life	47.50%	52.62%
Electrical Power	EP - Remaining Life - Conductor Rail	66.90%	69.60%
	EP - Remaining Life - Overhead Line Equipment (OLE)	-	-
	EP - Remaining Life - Signalling Power Cable	-	-
Buildings	Stations - % Remaining Life	36.20%	49.80%
	Light Maintenance Depot (LMD) - % Remaining Life	43.70%	45.10%
Structures	Average condition of major deck elements	66.80	66.91
	Tunnel Condition Monitoring Index (TCMI)	82.90	83.74
Earthworks	Earthworks - Condition Score	1.69	1.70
Drainage	Track Drainage - Condition Score	1.70	1.71
	Earthwork/Structure Drainage - Condition Score	1.90	1.91

Table 10.50: Asset condition sustainability – Western

Principal Asset	Description	2014/15 Target	2014/15 Actual
Track	Track - Used Life - Rail	43.10%	45.50%
	Track - Used Life - Switch & Crossings	51.00%	49.50%
	Track - Used Life - Sleepers	50.90%	52.60%
	Track - Used Life - Ballast	41.10%	44.20%
Signalling	Signalling Condition Index (SICA Remaining Life)	11.57	10.06
Telecoms	Telecoms - Remaining Life	78.20%	78.42%
Electrical Power	EP - Remaining Life - Conductor Rail	-	-
	EP - Remaining Life - Overhead Line Equipment (OLE)	75.40%	75.40%
	EP - Remaining Life - Signalling Power Cable	-	-
Buildings	Stations - % Remaining Life	34.60%	47.40%
	Light Maintenance Depot (LMD) - % Remaining Life	36.40%	44.20%
Structures	Average condition of major deck elements	59.90	59.73
	Tunnel Condition Monitoring Index (TCMI)	84.60	88.10
Earthworks	Earthworks - Condition Score	1.96	2.14
Drainage	Track Drainage - Condition Score	-	1.13
	Earthwork/Structure Drainage - Condition Score	-	1.07

Renewal Volumes

Overview

There has been a slow start to the CP5 renewals programme. We have predominately underdelivered the level of renewals originally committed to for year one as outlined in the Delivery Plan across all asset groups (Track, Civils, Signalling, Electrification and Plant and Telecoms). Much of this work has been rephased for completion later in CP5. There has been a review of many of the work banks across all routes to look at how the work can be reprioritised. In doing so, resource availability and cost and efficiency saving associated with correct planning and timing of schemes will be reviewed.

Track renewals

Track renewal volumes are covered by the following categories:

- plain line
- Switches and Crossings
- Off Track.

Commentary

The volume of plain line track renewals delivered in 2014/15 was below target (Table 10.51). This deviation is made up of 87km (14 per cent) under-delivery of planned Conventional activity, a 17km (four per cent) shortfall on High Output work and a 77km (19 per cent) deficit in refurbishment works. There has been a reduction in complete renewal and re-railing activities across a number of routes.

The shortfall in conventional volume is driven, primarily, by variances in LNW (17km), Scotland (29km), Anglia (17km) and Sussex (14km), partially offset by acceleration in LNE where over-delivery equates to 24km. Much of the variance from target relates to notable shortage across Wessex, Western and Scotland, due to cancellations and shortfall associated with haulage, possessions and resource. Within LNW, Scotland and Anglia there have also been delays due to the re-prioritisation of planned possessions.

This year the High Output programme has delivered a minor shortfall. This is predominantly due to shortfalls in East Midlands (17km) and, to a lesser extent, LNW, Sussex, Western and Wessex. The overrun of the Track Renewal System (TRS) overhaul has severely impacted performance against target within East Midlands whilst, in LNW and Western, there have been further access and plant-based shortfalls. Within Sussex, the planned High Output programme has been pushed back to 2016/17 to facilitate longer-term planning horizons. These shortfalls have been partially off-set by overdelivery in LNE (7km) following opportunities which have arisen to increase volume at additional sites such as Crimdon Dean and Northorpe. Favourable outturn has been driven through work-bank planning improvements, which has cut shortfalls down to minimal levels across the route.

The Refurbishment workbank is 77km (19 per cent) below target nationally. The largest route level variance in Scotland is due to the loss of re-padding works due to access requirements as well as de-prioritisation of works due to stretched resources and access availability. This has resulted in a shortfall of 89km (61 per cent). There has been an over-delivery of 8km (26.5 per cent) in Wessex due to a shift within the in-year plain line workbank from renewal to refurbishment works to release delivery potential in year one to best effect and accelerate works to utilise resource, where possible.

Total Switches and Crossings (S&C) volume was 395 point ends (36 per cent) below the target of 1,095 point ends. Full S&C renewal volumes were 92 (29 per cent) below target. Refurbishment activity represents a 236 point ends (35 per cent) shortfall versus the target for 2014/15.

The total S&C shortfall is driven predominantly by shortfalls in LNW, Wales and Anglia. The Cardiff Area resignalling scheme in Wales has suffered significant delays, which has had a knock on effect on the associated S&C works. East Midlands route has over-delivered by 18 point ends, as a result of recovery of works originally planned for delivery in CP4 as well as acceleration from 2015/16 to take advantage of efficient access opportunities.

S&C refurbishment activity was below target, which was the result of a downturn in delivery experienced nationwide. Shortfall in LNW, the route with the most substantial deficit of 59 point ends (69 per cent), is due to workbank re-prioritisation. The shortfall in Wales is attributed to training requirements and the availability of plant / equipment as the predominant driver behind the shortfalls. A national training programme is being developed to support delivery in this area. Works are now being re-planned and mitigation works will be put in place as necessary to safeguard asset condition in the interim.

Off track volume delivery has been low. There has been no slab track delivered, as this was not profiled for 2014/15 delivery. Fencing has delivered marginally below target, delivering 797km against a target of 808km.

Table 10.52 to Table 10.62 provide a breakdown of track renewal volumes in 2014/15 broken down by Route Criticality nationally and for Scotland, England & Wales, and for each route.

Table 10.51: Track renewal volumes total – network-wide

		Route Criticality 1		Route Criticality 2		Route Criticality 3		Route Criticality 4		Route Criticality 5		Total	
		2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual
Plain Line													
Conventional													
Steel Relay	Track km	0	0	0	0	0	0	1	4	22	19	23	29
Complete Renewal	Track km	46	23	44	44	73	38	16	24	7	10	186	140
Complete (formation)	Track km	16	7	14	7	11	6	2	2	0	0	43	22
Rail Renewal	Track km	62	17	85	139	51	50	55	49	64	22	316	277
Single Rail	Track km	5	12	11	20	13	15	7	2	3	2	39	52
High Output													
Automated Ballast Cleaning	Track km	63	0	66	0	5	0	0	0	0	0	134	0
Rail Sleeper Relay	Track km	100	56	57	37	0	44	0	8	0	0	157	145
Heavy Refurbishment	Track km	14	61	2	83	34	26	51	61	1	0	103	232
Refurbishment													
Heavy Refurbishment	Track km	21	5	8	11	11	38	14	18	12	8	65	80
Medium (concrete)	Track km	2	1	29	39	52	19	51	29	44	19	178	107
Medium (other)	Track km	0	7	3	45	51	46	37	19	69	21	160	139
Switches & Crossings												403	326
S&C delivered													
Abandonment	Point Ends	14	4	9	5	46	7	17	10	20	13	106	39
Full Renewal	Point Ends	99	19	112	102	71	82	34	16	6	11	323	231
Refurbishment													
Heavy	Point Ends	32	7	60	68	88	54	58	34	27	7	265	170
Medium	Point Ends	40	40	57	90	160	82	55	28	50	20	401	260
Off Track													
Fencing	km	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	808	797
Slab track	Track km	0		0	0	0	0	0	0	0	0	0	0

Table 10.52: Track renewal volumes total – England & Wales

		Route Criticality 1		Route Criticality 2		Route Criticality 3		Route Criticality 4		Route Criticality 5		Total	
		2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual
Plain Line													
Conventional													
Steel Relay	Track km	0	0	0	0	0	5	1	3	6	5	6	13
Complete Renewal	Track km	46	23	36	39	63	34	11	17	6	10	163	124
Complete (formation)	Track km	16	7	11	6	10	4	2	2	0	0	39	20
Rail Renewal	Track km	62	17	81	104	43	50	53	49	31	21	270	241
Single Rail	Track km	5	12	5	7	4	15	1	2	1	2	15	38
High Output													
Automated Ballast Cleaning	Track km	63	0	66	0	5	0	0	0	0	0	134	0
Rail Sleeper Relay	Track km	100	56	57	37	0	44	0	18	0	0	157	145
Heavy Refurbishment	Track km	14	61	2	83	34	26	51	61	1	0	103	232
Refurbishment													
Heavy Refurbishment	Track km	21	5	6	11	6	36	13	18	10	8	57	78
Medium (concrete)	Track km	2	1	28	9	44	19	19	29	16	19	110	77
Medium (other)	Track km	0	7	3	21	26	46	34	19	28	21	90	114
Switches & Crossings												257	269
S&C delivered													
Abandonment	Point Ends	14	4	8	4	41	4	16	8	20	13	99	33
Full Renewal	Point Ends	99	32	95	94	61	74	34	9	6	11	296	208
Refurbishment													
Heavy	Point Ends	19	7	47	48	76	54	56	33	24	7	235	149
Medium	Point Ends	40	40	51	79	147	82	55	28	44	20	337	249
Off Track													
Fencing	km	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	593	571
Slab track	Track km	0	0	0	0	0	0	0	0	0	0	0	0

Table 10.53: Track renewal volumes total – Scotland

		Route Criticality 1		Route Criticality 2		Route Criticality 3		Route Criticality 4		Route Criticality 5		Total	
		2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual
Plain Line													
Conventional													
Steel Relay	Track km	0	0	0	0	0	1	0	1	17	14	17	16
Complete Renewal	Track km	0	0	8	5	10	5	4	7	0	0	23	17
Complete (formation)	Track km	0	0	2	1	1	1	0	0	0	0	4	2
Rail Renewal	Track km	0	0	3	35	8	0	3	0	32	0	46	37
Single Rail	Track km	0	0	7	13	9	0	6	0	3	0	24	13
High Output												114	85
Automated Ballast Cleaning	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Rail Sleeper Relay	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Refurbishment	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Refurbishment													
Heavy Refurbishment	Track km	0	0	1	0	5	2	0	0	2	0	8	2
Medium (concrete)	Track km	0	0	1	30	8	0	32	0	28	0	68	30
Medium (other)	Track km	0	0	1	25	25	0	3	0	41	0	70	25
Switches & Crossings												146	57
S&C delivered													
Abandonment	Point Ends	0	0	1	1	5	3	1	2	0	0	7	6
Full Renewal	Point Ends	0	0	17	8	10	8	0	7	0	0	27	23
Refurbishment													
Heavy	Point Ends	0	0	13	20	12	0	2	1	3	0	30	21
Medium	Point Ends	0	0	6	11	13	0	0	0	6	0	25	11
Off Track													
Fencing	km	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	215	226
Slab track	Track km	0	0	0	0	0	0	0	0	0	0	0	0

Table 10.54: Track renewal volumes total – Anglia

		Route Criticality 1		Route Criticality 2		Route Criticality 3		Route Criticality 4		Route Criticality 5		Total	
		2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual
Plain Line													
Conventional													
Steel Relay	Track km	0	0	0	0	0	1	0	0	0	1	0	2
Complete Renewal	Track km	8	0	7	0	1	0	2	0	0	0	18	12
Complete (formation)	Track km	2	0	2	0	0	0	0	0	0	0	4	1
Rail Renewal	Track km	0	0	7	17	8	3	10	0	2	0	27	20
Single Rail	Track km	3	0	0	0	0	0	0	0	0	0	3	0
High Output													
Automated Ballast Cleaning	Track km	0	0	14	0	0	0	0	0	0	0	14	0
Rail Sleeper Relay	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Refurbishment	Track km	0	0	0	17	0	0	0	0	0	0	0	17
Refurbishment													
Heavy Refurbishment	Track km	0	0	0	10	0	0	0	0	1	0	1	10
Medium (concrete)	Track km	2	0	4	0	2	0	1	0	0	0	9	0
Medium (other)	Track km	0	0	0	0	0	0	3	0	3	0	6	0
Switches & Crossings												16	10
S&C delivered													
Abandonment	Point Ends	0	0	0	0	0	0	0	0	12	0	12	0
Full Renewal	Point Ends	10	0	26	17	5	13	5	5	0	0	47	35
Refurbishment													
Heavy	Point Ends	8	0	6	29	1	0	8	0	0	0	23	29
Medium	Point Ends	14	0	15	8	5	0	11	0	5	0	50	8
Off Track													
Fencing	km	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	52	116
Slab track	Track km	0	0	0	0	0	0	0	0	0	0	0	0

Table 10.55: Track renewal volumes total – East Midlands

		Route Criticality 1		Route Criticality 2		Route Criticality 3		Route Criticality 4		Route Criticality 5		Total	
		2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual
Plain Line													
Conventional													
Steel Relay	Track km	0	0	0	0	0	2	0	0	0	0	0	2
Complete Renewal	Track km	2	0	3	8	0	0	0	1	0	0	5	9
Complete (formation)	Track km	2	0	1	1	0	0	0	0	0	0	3	1
Rail Renewal	Track km	5	1	22	19	0	0	0	3	2	2	29	24
Single Rail	Track km	0	0	0	0	0	0	0	0	0	0	0	0
High Output													
Automated Ballast Cleaning	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Rail Sleeper Relay	Track km	31	0	57	28	0	42	0	0	0	0	88	71
Heavy Refurbishment	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Refurbishment													
Heavy Refurbishment	Track km	0	0	0	0	0	0	0	1	0	0	0	1
Medium (concrete)	Track km	0	0	2	2	1	0	3	2	0	0	7	4
Medium (other)	Track km	0	0	1	3	0	0	4	1	3	3	8	7
Switches & Crossings													
S&C delivered													
Abandonment	Point Ends	2	0	0	0	0	0	0	6	0	0	2	6
Full Renewal	Point Ends	21	0	0	26	0	0	0	0	0	0	21	26
Refurbishment													
Heavy	Point Ends	5	3	3	8	0	0	6	15	0	0	14	26
Medium	Point Ends	14	6	16	20	0	0	5	6	0	0	35	32
Off Track													
Fencing	km	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	28	12
Slab track	Track km	0	0	0	0	0	0	0	0	0	0	0	0

Table 10.56: Track renewal volumes total – Kent

		Route Criticality 1		Route Criticality 2		Route Criticality 3		Route Criticality 4		Route Criticality 5		Total	
		2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual
Plain Line													
Conventional													
Steel Relay	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Complete Renewal	Track km	0	0	9	5	5	2	3	2	1	0	18	9
Complete (formation)	Track km	0	0	2	0	0	0	0	0	0	0	2	0
Rail Renewal	Track km	0	0	13	4	10	7	8	9	0	0	30	20
Single Rail	Track km	0	0	2	0	0	1	0	0	0	0	2	1
High Output													
Automated Ballast Cleaning	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Rail Sleeper Relay	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Refurbishment	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Refurbishment													
Heavy Refurbishment	Track km	0	0	4	0	2	2	0	0	4	2	11	4
Medium (concrete)	Track km	0	0	3	2	6	5	5	2	0	2	14	10
Medium (other)	Track km	0	0	0	0	2	0	0	0	0	0	2	1
Switches & Crossings												27	15
S&C delivered													
Abandonment	Point Ends	0	0	2	3	0	0	0	0	2	2	4	5
Full Renewal	Point Ends	0	0	22	14	5	8	0	0	0	0	27	22
Refurbishment													
Heavy	Point Ends	0	0	4	0	16	4	12	0	0	0	32	4
Medium	Point Ends	0	0	2	4	21	22	8	8	3	4	34	38
Off Track													
Fencing	km	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	31	13
Slab track	Track km	0	0	0	0	0	0	0	0	0	0	0	0

Table 10.57: Track renewal volumes total – LNE

		Route Criticality 1		Route Criticality 2		Route Criticality 3		Route Criticality 4		Route Criticality 5		Total	
		2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual
Plain Line													
Conventional													
Steel Relay	Track km	0	0	0	0	0	0	0	2	0	0	0	2
Complete Renewal	Track km	8	1	0	7	16	15	0	4	0	0	24	27
Complete (formation)	Track km	0	1	0	0	2	1	0	0	0	0	3	3
Rail Renewal	Track km	21	9	25	45	2	13	12	15	7	0	67	82
Single Rail	Track km	0	1	1	0	0	4	1	0	0	0	2	6
High Output													
Automated Ballast Cleaning	Track km	0	0	39	0	0	0	0	0	0	0	39	0
Rail Sleeper Relay	Track km	0	2	0	1	0	0	0	0	0	0	0	2
Heavy Refurbishment	Track km	0	0	1	56	33	11	24	36	1	0	59	103
Refurbishment													
Heavy Refurbishment	Track km	13	1	0	0	2	22	1	1	0	0	15	25
Medium (concrete)	Track km	0	0	17	1	17	3	0	0	0	0	34	4
Medium (other)	Track km	0	6	0	5	0	18	0	1	0	0	0	29
Switches & Crossings													
S&C delivered													
Abandonment	Point Ends	4	0	4	0	4	3	4	2	6	0	22	5
Full Renewal	Point Ends	35	7	9	12	10	16	0	0	2	0	56	35
Refurbishment													
Heavy	Point Ends	17	1	19	4	33	45	25	12	0	0	94	62
Medium	Point Ends	8	22	9	23	10	30	24	0	5	0	56	75
Off Track													
Fencing	km	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	149	108
Slab track	Track km	0	0	0	0	0	0	0	0	0	0	0	0

Table 10.58: Track renewal volumes total – LNW

		Route Criticality 1		Route Criticality 2		Route Criticality 3		Route Criticality 4		Route Criticality 5		Total	
		2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual
Plain Line													
Conventional													
Steel Relay	Track km	0	0	0	0	0	1	0	1	0	0	0	2
Complete Renewal	Track km	18	14	5	4	1	2	1	2	0	2	25	24
Complete (formation)	Track km	11	5	4	4	1	0	0	0	0	0	16	9
Rail Renewal	Track km	30	7	5	1	1	4	8	6	9	10	53	28
Single Rail	Track km	1	8	0	2	0	4	0	0	0	2	2	16
High Output													
Automated Ballast Cleaning	Track km	46	0	2	0	0	0	0	0	0	0	47	0
Rail Sleeper Relay	Track km	69	54	0	8	0	0	0	0	0	0	69	62
Heavy Refurbishment	Track km	14	57	0	3	0	0	0	0	0	0	14	61
Refurbishment													
Heavy Refurbishment	Track km	8	3	1	0	0	0	6	3	0	0	15	7
Medium (concrete)	Track km	0	1	0	0	8	7	0	12	0	7	8	27
Medium (other)	Track km	0	0	0	0	17	1	0	0	0	0	17	1
Switches & Crossings												40	35
S&C delivered													
Abandonment	Point Ends	8	4	0	1	1	0	1	0	0	3	10	8
Full Renewal	Point Ends	32	12	4	3	2	3	5	3	4	1	47	22
Refurbishment													
Heavy	Point Ends	2	3	0	5	2	4	0	3	0	0	4	15
Medium	Point Ends	0	12	0	0	82	0	0	0	0	0	82	12
Off Track													
Fencing	km	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	91	171
Slab track	Track km	0	0	0	0	0	0	0	0	0	0	0	0

Table 10.59: Track renewal volumes total – Sussex

		Route Criticality 1		Route Criticality 2		Route Criticality 3		Route Criticality 4		Route Criticality 5		Total	
		2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual
Plain Line													
Conventional													
Steel Relay	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Complete Renewal	Track km	0	0	7	3	2	0	2	2	0	0	10	5
Complete (formation)	Track km	0	0	1	0	0	0	0	0	0	0	2	1
Rail Renewal	Track km	0	0	7	3	1	1	4	3	3	0	15	8
Single Rail	Track km	0	0	2	1	0	0	0	0	0	0	2	1
High Output													
Automated Ballast Cleaning	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Rail Sleeper Relay	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Refurbishment	Track km	0	0	2	0	0	0	4	0	0	0	6	0
Refurbishment													
Heavy Refurbishment	Track km	0	0	0	0	0	6	1	1	0	0	1	7
Medium (concrete)	Track km	0	0	2	0	0	0	0	0	0	0	2	0
Medium (other)	Track km	0	0	0	1	2	0	6	2	1	0	9	2
Switches & Crossings													
S&C delivered													
Abandonment	Point Ends	0	0	2	0	0	0	1	0	0	0	3	0
Full Renewal	Point Ends	0	0	17	11	0	0	0	0	0	0	17	11
Refurbishment													
Heavy	Point Ends	0	0	11	0	3	0	1	0	0	0	15	0
Medium	Point Ends	0	0	8	20	5	16	4	5	4	1	21	42
Off Track													
Fencing	km	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	5
Slab track	Track km	0	0	0	0	0	0	0	0	0	0	0	0

Table 10.60: Track renewal volumes total – Wales

		Route Criticality 1		Route Criticality 2		Route Criticality 3		Route Criticality 4		Route Criticality 5		Total	
		2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual
Plain Line													
Conventional													
Steel Relay	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Complete Renewal	Track km	0	3	0	0	11	1	0	0	0	5	11	9
Complete (formation)	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Rail Renewal	Track km	0	0	0	0	0	0	2	0	2	0	4	0
Single Rail	Track km	0	0	0	0	0	0	0	0	0	0	0	0
High Output													
Automated Ballast Cleaning	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Rail Sleeper Relay	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Refurbishment	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Refurbishment													
Heavy Refurbishment	Track km	0	0	0	0	0	2	5	11	5	6	10	19
Medium (concrete)	Track km	0	0	0	0	7	0	7	12	6	11	20	22
Medium (other)	Track km	0	0	0	0	0	0	10	1	10	9	20	11
Switches & Crossings													
S&C delivered													
Abandonment	Point Ends	0	0	0	0	35	0	1	0	0	5	36	5
Full Renewal	Point Ends	0	0	0	0	0	0	24	0	0	10	24	10
Refurbishment													
Heavy	Point Ends	0	0	0	0	19	0	0	1	16	5	35	6
Medium	Point Ends	0	0	0	0	5	0	0	2	19	11	24	13
Off Track													
Fencing	km	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	132	68
Slab track	Track km	0	0	0	0	0	0	0	0	0	0	0	0

Table 10.61: Track renewal volumes total – Wessex

		Route Criticality 1		Route Criticality 2		Route Criticality 3		Route Criticality 4		Route Criticality 5		Total	
		2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual
Plain Line													
Conventional													
Steel Relay	Track km	0	0	0	0	0	0	0	0	6	2	6	2
Complete Renewal	Track km	0	0	4	2	11	5	3	2	4	0	22	9
Complete (formation)	Track km	0	0	0	0	4	2	1	1	0	0	6	3
Rail Renewal	Track km	0	0	2	10	16	19	5	10	4	4	26	43
Single Rail	Track km	0	0	0	0	3	2	0	0	0	0	3	2
High Output													
Automated Ballast Cleaning	Track km	0	0	0	0	0	0	0	0	0	0	0	0
Rail Sleeper Relay	Track km	0	0	0	0	0	2	0	3	0	0	0	5
Heavy Refurbishment	Track km	0	0	0	0	1	2	23	22	0	0	24	24
Refurbishment													
Heavy Refurbishment	Track km	0	0	1	0	1	3	0	0	0	0	2	3
Medium (concrete)	Track km	0	0	0	4	2	4	0	1	0	0	2	8
Medium (other)	Track km	0	0	0	0	1	0	0		1	1	1	2
Switches & Crossings												5	13
S&C delivered													
Abandonment	Point Ends	0	0	0	0	0	0	4	0	0	0	4	0
Full Renewal	Point Ends	0	0	17	10	26	22	0	1	0	0	43	33
Refurbishment													
Heavy	Point Ends	0	0	4	2	0	1	2	2	0	0	6	5
Medium	Point Ends	0	0	34	4	5	6	0	3	0	0	39	13
Off Track													
Fencing	km	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	37	25
Slab track	Track km	0	0	0	0	0	0	0	0	0	0	0	0

Table 10.62: Track renewal volumes total – Western

		Route Criticality 1		Route Criticality 2		Route Criticality 3		Route Criticality 4		Route Criticality 5		Total	
		2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual	2014/15 Target	2014/15 Actual
Plain Line													
Conventional													
Steel Relay	Track km	0	0	0	0	0	0	1	0	0	2	1	3
Complete Renewal	Track km	11	4	2	5	15	9	0	0	1	2	29	20
Complete (formation)	Track km	1	1	1	0	1	0	0	0	0	0	3	1
Rail Renewal	Track km	5	1	1	4	5	4	3	2	3	5	17	15
Single Rail	Track km	1	3	1	4	1	4	1	1	1	0	3	12
High Output													
Automated Ballast Cleaning	Track km	17	0	12	0	5	0	0	0	0	0	34	0
Rail Sleeper Relay	Track km	0	0	0	0	0	0	0	5	0	0	0	5
Heavy Refurbishment	Track km	0	3	0	8	0	13	0	3	0	0	0	27
Refurbishment													
Heavy Refurbishment	Track km	1	1	0	0	1	1	0	0	0	0	2	3
Medium (concrete)	Track km	0	0	0	0	1	0	3	0	10	0	14	0
Medium (other)	Track km	0	2	1	12	5	26	10	13	10	8	26	62
Switches & Crossings													
S&C delivered													
Abandonment	Point Ends	0	0	0	0	1	1	5	0	0	3	6	4
Full Renewal	Point Ends	1	0	0	1	13	12	0	0	0	0	14	13
Refurbishment													
Heavy	Point Ends	0	0	0	0	2	1	2	0	8	0	12	1
Medium	Point Ends	4	0	1	0	19	8	3	4	8	4	35	16
Off Track													
Fencing	km	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	54	54
Slab track	Track km	0	0	0	0	0	0	0	0	0	0	0	0

Civil renewals

Renewal volumes are broken down into the following sections:

- structures
- earthworks and Drainage
- buildings.

Commentary

Structures

Delivery of the structures programme is substantively different from the Delivery Plan across the full portfolio.

National underbridge volume under-delivered against target, predominantly driven by poor delivery against plan in LNE, LNW, East Midlands and Kent which has resulted in a sizeable deviation to plan of 56,547m². East Midlands has experienced the largest delay across the workbank (only delivering two per cent of target) as a result of the late award of Infrastructure Project (IP) framework contracts, which has slowed initial progress. Kent route's shortfall of 20,353m² from plan is largely due to a deviation from the approach used to establish Delivery Plan volumes. These shortfalls have been partially offset by favourable delivery in Western, Sussex and Anglia. The Anglia route has incorporated the continuation of its CP4 programmes relating to spandrel walls and scour protection into its CP5 plan. Wales route delivered close to target following the substantial completion of Hawarden underbridge.

Overbridge volumes delivered 10,711 m² which was 58 per cent behind target. There were deviations from plan on most routes but most notably LNW and LNE. LNW is lower than planned due to scope changes associated, primarily, with Lytham Road Bridge. LNE route has experienced delay due to the late award of IP framework contracts. Lost volume is planned to be recovered in CP5. Anglia has re-planned four interventions for 2015/16 to tie in with the Gospel Oak to Barking blockade, which will provide the best possible opportunity for delivery. Wales has not delivered any of the overbridge volumes for year one, Ewenny works are now being funded via enhancements, with no volume yield, and Fordell Colliery scheme has been de-scoped following disputes with the incumbent landowner.

Tunnel volume has delivered 39 per cent of target. The variance is driven predominantly by five schemes across LNW, Scotland and Wessex. Works in LNW have been re-profiled including both Holme and Kilsby tunnel. Cowburn tunnel, however, has now been deferred from this year due to site-based deliverability constraints. Scotland route were forced to push back the completion of two interventions due to the Commonwealth Games however these were still managed to be delivered within 2014/15. Works in LNE have overdelivered by 5,860m² due to works being accelerated at Standedge within the CP5 to maximise access opportunities.

National footbridge volume delivered 48 per cent against target for 2014/15 driven by activity in Scotland, LNW, Wessex and Kent. This includes schemes at Whitebridge Lane (LNW), Bromley North and Landgate (Kent) which were carried over from CP4 due to plant failure and redesign requirements and delivered in 2014/15. Scotland has completed works on both Clachnaharry and Backsands footbridges ahead of plan. Anglia has deferred two schemes to later in CP5 due to design issues lengthening the development phase

Coastal and Estuarial Defence works have exceeded the target of 2,070 m² by 5,259m², delivering a total of 7,329 m². This is predominantly due to additional, emergency activity undertaken in Wales to restore asset condition following storm damage. This has been partially offset by some delay in LNW across a number of small schemes such as Flimby South, Parton-Harrington and Bransty-Parton.

Work on Retaining Walls has delivered close to target, achieving 3,425m² against a target of 4,046m². Minor underdelivery in a number of routes has been offset by delivery of an extra 1,000m² in Sussex. LNW has had issues with third party access which has caused delays to programmes. The Scotland variance is the largest of the routes delivering 75m² (83 per cent under target) due to works associated with the Langbank site, which will be completed later in CP5 following the Coastal and Estuarial works. Wales and Anglia are rephasing works and Wessex have re-profiled their workbank in order to fit in with Works Delivery.

Earthworks and Drainage

For earthworks renewal volume in 2014/15 the year-end total was a 2,304 earthwork assets renewed against a target of 3,178, 28 per cent shortfall against target. There were significant under-deliveries both in maintenance and refurbishment activity. Across the work bank, activity on earthworks has had a slow start due to the late award of delivery contracts across several routes.

Renewals work across the three core areas (Embankments, Rock Cuttings and Soil Cuttings) has been mixed with overdelivery against plan across both Rock Cuttings and Soil Cuttings but an underdelivery on the Embankments portfolio. There has been positive volume outturn on the Scotland route whereby there have been over-deliveries across much of the Renewals work bank but this has been offset by underdelivery in the remaining routes, especially in East Midlands which delivered three earthwork assets against a target of 182.

The Embankment Renewals work bank is below target at 2014/15 year-end. This is predominantly driven by a large shortfall in LNE as well as smaller shortfalls in both Wessex and Scotland. Renewals in LNE have suffered widespread deferral due to the delayed signature of IP framework contracts. Works in Scotland have been delayed due to the prioritisation of rock and soil cuttings to respond to emerging asset assessment and needs. Wessex has re-prioritised its work bank in order to focus on high priority emergency works.

Rock Cuttings renewals activity is slightly above 2014/15 year end plan. This is as a result of an increased outturn in Western due to acceleration of works using delivery resources that were originally put in place to deliver fiscal stimulus works in CP4.

Soil Cuttings renewals are ahead of plan. This is due primarily due to increased activity in Western route; delivery of emergency schemes such as Chipping Sodbury, Callow Hill, Uphill, Sunnyside, Windjammer and Bedminster which were predominantly linked to flood recovery / resilience works. This has been offset by reduced activity in Scotland of due to resource and delivery constraints.

Refurbishment works have out-turned below plan across the three core areas.

Embankments Refurbishment works are behind plan. This is driven by large shortfalls in LNW, Western, Scotland and Wales. The shortfall in LNW is due to rephasing of Whilton/Long Buckby to next year due to environmental issues as well as a proportion of the Works Delivery portfolio now being non-volume. Western route is behind plan as a result of delay to the Badger Sett programme due to procurement delays. Scotland has reprioritised its work bank based on asset knowledge and Wales has similarly rephased its work bank over two years in order to maximise value for money.

Rock Cuttings Refurbishment works are behind plan. This is predominantly due to a shortfall in Western, Wessex, LNW and Scotland. Western has been challenged by procurement issues relating to the late signature of their framework contracts whilst Scotland have suffered from resource issues within their Works Delivery team which has resulted in a shortfall on activity. This has been partially offset by an overdelivery in Wales where works have been packaged in order to maximise value for money.

Soil Cuttings Refurbishment works have underdelivered. This is predominantly due to deviations from plan in LNE, Western, LNW and Anglia. LNE is due to delays in the signature of framework contractors and LNW due to a better understanding of the work bank resulting in a change in work mix from refurbishment to renewals and maintenance. Western, as mentioned previously has re-prioritised its work bank of maintenance volumes to Embankments.

Increased delivery of maintenance volumes has been offset by a reduction in refurbishment works due to flexes in the mix between the two across a number of routes which reflects deviations in work bank, scope and intervention approaches.

Maintenance works for Rock Cuttings are below plan, however they are above plan for both Embankments and Soil Cuttings. This is partly as a result of mitigation works undertaken to sustain priority assets in the interim until more substantive renewals and refurbishment activity can be re-planned.

Earthworks drainage volumes are below target across Earthwork renewals (1,576 delivered against a target of 7,574), refurbishment (1,227 delivered against a target of 1,610) and maintenance (3,032 delivered against a target of 24,066). New builds have overdelivered achieving 7,107 against a target of 5,302. This underdelivery is reflected across the majority of routes excluding LNW. This is reflective of the fact that work of this nature is usually delivered alongside wider earthworks interventions and therefore widespread delays would be expected given the general trend of underdelivery seen in 2014/15.

The acceleration of earthwork drainage volumes seen in LNW is due a decision taken to disaggregate the earthworks and drainage elements of numerous projects. A full evaluation of the earthworks workbank has been carried out in parallel which has resulted in a better understanding of asset knowledge since the end of CP4.

Asset condition is being managed locally with individual routes tailoring their own recovery plans respectively to prioritise effectively and pragmatically.

Buildings

Compared to the Delivery Plan targets, there has been some re-prioritisation of schemes during the year in response to improved asset knowledge and to align with other initiatives within the routes which has impacted on volume delivery for

2014/15. Another driver for this variance in year one is the late award of contracts to delivery partners for projects to commence early in CP5. Delivery and Multi Functional Frameworks (MFFs) are now in place for all routes with Positive Management Actions (PMAs) and recovery plans being developed with relevant routes.

The most significant variances across the portfolio, on a national basis, relate to Managed Stations (MS) and Franchised Stations (FS). Across both Franchised and Managed Stations the Buildings volume metric delivered above target, MS Buildings 6,712m² (14 per cent) and FS Buildings 22,575m² (239 per cent). This is principally due to works completed in Sussex route being 6,182m² on Managed Stations and 7,790m² on Franchised Stations in relation to works completed at Victoria concourse and at East Croydon.

Whilst the reasoning behind the national shift in building renewal volumes differs from route-to-route this is largely as a result of workbank and site prioritisation and emerging knowledge of both asset condition and volume classification. Where volumes are changing substantively at route level, reviews undertaken have provided assurance that asset condition is being managed to best effect. Volumes for Train shed work at Bristol TM will now be delivered under the MS Train shed Key Volume Line. The delivery of this work item has been ref-phased from 2014/15 to later in the control period.

Both MS Platforms and FS Platforms have under delivered with a considerable deviation of 2,383m² (92 per cent) on MS Platforms and 25,456m² (32 per cent) on FS Platforms. The variance on MS Platforms is due to the Victoria concourse works which were incorrectly classified within the baseline and have now been reallocated to Buildings in order to properly reflect the nature of the works undertaken. For FS the majority of the variance can be attributed to Wessex where there was an underdelivery as a result of both Vauxhall station and Queens Town Road station being deferred due to access restrictions and a change in purchasing strategy resulting in a change in volumes. Materials for these works have been bulk purchased as an efficiency initiative and the volumes will now be delivered over CP5.

National delivery of canopies at FS was 51,140m², exceeding the 2014/15 target by 92 per cent, primarily driven by an increase in LNE of 33,080m² above target due to the re-measurement of volumes for East Coast Phase 2 and works at York station. For MS only five per cent of target was delivered (265m²) due to works being deferred and removed from this year's workbank in Anglia and Wessex at Liverpool Street and Waterloo stations to align with planned enhancements at the stations. Anglia has re-scoped requirements at Liverpool Street, which has led to a slight delay the implementation programme for further works in 2014/15. Works at Waterloo, on Wessex route, have been deferred to tie in with large-scale enhancement scheme which will happen later in the Control Period.

Train shed renewals were significantly below target. FS Train Shed volume has resulted in national delivery of 8,213m², against a target of 24,253m², which is 16,040m² below plan. 4,000m² of FS Train Shed volume has been lost across Western, due to amendments to the delivery strategy for multi-asset works at Bristol Temple Meads. The majority of the volume was delivered in LNE route in relation to activity undertaken on Leeds station, was were identified as important preventative works were required to manage the asset. Conversely, MS Train Shed has delivered no volume following the deferral of planned works to later in CP5 following a full scope review. Overall, for assets where work items have been rephased, routes have developed improved preventive maintenance and inspection regimes to mitigate risk to safety and functionality of the assets.

The 2014/15 delivered volume from Footbridge activity has deviated from plan across a number of routes, which has resulted in underdelivery of 75 per cent for FS with only four schemes having been substantially completed. The most significant variances equate to Anglia, where only six per cent (41.2m²) of the total target was delivered due to schemes which are still in development following franchise transition and in LNE where 14 per cent of target has been delivered due to phasing issues. In Kent, the Hither Green scheme has been deferred to next year to align with Access for All works. Wales, Cogan and Eastbrook have been deferred until progress is made on the Valley Line Electrification programme.

The majority of the Lifts & Escalator (L&E) volume deviation is attributable to Scotland, Wessex and Western. Work delivered through the national L&E team is progressing, but has not been able to match volume definition specified in the Delivery Plan.

Variance in Light Maintenance Depots (Buildings) volumes recorded in 2014/15 was majorly driven by Wales LMD volumes were 60,000sqm budgeted for the Cardiff Canton water underground repairs. This work has now been re-planned for 2015/16 based on improved understanding of the requirements to carry out the works. In addition, a new fuelling and water system was planned at Etches Park by East midlands Route. This has also been rephased into future years.

Overall, we expect to recover the rephased volumes in future years within CP5 with little or no negative impact on condition and long term sustainability of assets.

Table 10.63: Civils renewal volumes – network-wide

		2014/15 Target	2014/15 Actual
Structures			
Underbridges	m^2	121,031.00	64,484.00
Overbridges (incl BG3)	m^2	25,317.00	10,711.00
Tunnels	m^2	28,719.00	17,433.00
Culverts	m^2	2,099.00	4,765.00
Footbridges	m^2	2,007.00	967.70
Coastal & Estuary Defences	m^2	2,070.00	7,329.00
Retaining Walls	m^2	4,046.00	3,425.00
Earthworks Total	Earthwork assets	3,178.00	2,303.71
Embankments - Maintenance	Earthwork assets		741.10
Embankments - Refurbishment	Earthwork assets		238.00
Embankments - Renewal	Earthwork assets		99.30
Rock Cuttings - Maintenance	Earthwork assets		98.00
Rock Cuttings - Refurbishment	Earthwork assets		112.00
Rock Cuttings - Renewal	Earthwork assets		120.00
Soil Cuttings - Maintenance	Earthwork assets		557.31
Soil Cuttings - Refurbishment	Earthwork assets		238.00
Soil Cuttings - Renewal	Earthwork assets		100.00
Track Drainage			
Renewal	lm	7,343.00	5,829.32
Refurbishment	lm	32,509.00	15,605.20
New Build	lm	811.00	2,467.15
EW Drainage			
Renewal	lm	7,574.00	1,576.00
Refurbishment	lm	1,610.00	1,227.00
Maintenance	lm	24,066.00	3,032.00
New Build	lm	5,302.00	7,107.00
Franchised Stations			
Footbridges	m^2	5,244.00	1,326.20
Train Sheds	m^2	24,253.00	8,213.00
Canopies	m^2	26,649.00	51,140.00
Platforms	m^2	79,937.00	54,481.33
Buildings	m^2	6,669.00	22,575.00
Lifts & Escalators	No.	76.00	4.00
Managed Stations			
Footbridges	m^2	-	120.00
Train Sheds	m^2	1,600.00	-
Canopies	m^2	5,930.00	265.00
Platforms	m^2	2,600.00	217.00
Buildings	m^2	5,874.00	6,712.00
Lifts & Escalators	No.	11.00	3.00
Light Maintenance Depots			
Buildings	m^2	67,000.00	243.00
Depot Shed	m^2	31,021.00	40,883.00
Lineside Buildings			
Buildings	m^2	18.97	5,356.00
MDU			
Buildings	m^2	22,216.00	11,147.00

Table 10.64: Civils renewal volumes – England & Wales

		2014/15 Target	2014/15 Actual
Structures			
Underbridges	m^2	106,953.00	53,624.00
Overbridges (incl BG3)	m^2	23,850.00	9,426.00
Tunnels	m^2	27,359.00	16,073.00
Culverts	m^2	1,838.00	4,432.00
Footbridges	m^2	1,504.00	543.70
Coastal & Estuary Defences	m^2	1,740.00	6,999.00
Retaining Walls	m^2	3,614.00	3,350.00
Earthworks Total	Earthwork assets	2,748.00	1,576.30
Embankments - Maintenance	Earthwork assets		595.00
Embankments - Refurbishment	Earthwork assets		178.00
Embankments - Renewal	Earthwork assets		83.30
Rock Cuttings - Maintenance	Earthwork assets		65.00
Rock Cuttings - Refurbishment	Earthwork assets		56.00
Rock Cuttings - Renewal	Earthwork assets		41.00
Soil Cuttings - Maintenance	Earthwork assets		372.00
Soil Cuttings - Refurbishment	Earthwork assets		123.00
Soil Cuttings - Renewal	Earthwork assets		63.00
Track Drainage			
Renewal	lm	7,343.00	5,829.32
Refurbishment	lm	32,509.00	15,605.20
New Build	lm	808.00	2,467.15
EW Drainage			
Renewal	lm	6,091.00	1,566.00
Refurbishment	lm	1,270.00	1,017.00
Maintenance	lm	21,150.00	2,755.00
New Build	lm	5,302.00	5,410.00
Franchised Stations			
Footbridges	m^2	4,968.00	1,326.20
Train Sheds	m^2	23,669.00	7,753.00
Canopies	m^2	17,976.00	45,801.00
Platforms	m^2	77,503.00	51,901.33
Buildings	m^2	6,116.00	22,575.00
Lifts & Escalators	No.	9.00	4.00
Managed Stations			
Footbridges	m^2	-	120.00
Train Sheds	m^2	1,600.00	-
Canopies	m^2	5,930.00	265.00
Platforms	m^2	2,600.00	217.00
Buildings	m^2	5,554.00	6,432.00
Lifts & Escalators	No.	4.00	3.00
Light Maintenance Depots			
Buildings	m^2	66,101.00	232.00
Depot Shed	m^2	30,588.00	32,450.00
Lineside Buildings			
Buildings	m^2	18,704.00	5,356.00
MDU			
Buildings	m^2	22,160.00	7,397.00

Table 10.65: Civils renewal volumes – Scotland

		2014/15 Target	2014/15 Actual
Structures			
Underbridges	m^2	14,078.00	10,860.00
Overbridges (incl BG3)	m^2	1,467.00	1,285.00
Tunnels	m^2	1,360.00	1,360.00
Culverts	m^2	261.00	333.00
Footbridges	m^2	503.00	424.00
Coastal & Estuary Defences	m^2	330.00	330.00
Retaining Walls	m^2	432.00	75.00
Earthworks Total	Earthwork assets	430.00	727.41
Embankments - Maintenance	Earthwork assets		146.10
Embankments - Refurbishment	Earthwork assets		60.00
Embankments - Renewal	Earthwork assets		16.00
Rock Cuttings - Maintenance	Earthwork assets		33.00
Rock Cuttings - Refurbishment	Earthwork assets		56.00
Rock Cuttings - Renewal	Earthwork assets		79.00
Soil Cuttings - Maintenance	Earthwork assets		185.31
Soil Cuttings - Refurbishment	Earthwork assets		115.00
Soil Cuttings - Renewal	Earthwork assets		37.00
Track Drainage			
Renewal	lm	-	-
Refurbishment	lm	-	-
New Build	lm	3.00	-
EW Drainage			
Renewal	lm	1,483.00	10.00
Refurbishment	lm	-	210.00
Maintenance	lm	2,916.00	-
New Build	lm	-	1,697.00
Franchised Stations			
Footbridges	m^2	276.00	-
Train Sheds	m^2	584.00	460.00
Canopies	m^2	8.67	5,339.00
Platforms	m^2	2.43	2,580.00
Buildings	m^2	553.00	-
Lifts & Escalators	No.	67.00	-
Managed Stations			
Footbridges	m^2	-	-
Train Sheds	m^2	-	-
Canopies	m^2	-	-
Platforms	m^2	-	-
Buildings	m^2	320.00	280.00
Lifts & Escalators	No.	7.00	-
Light Maintenance Depots			
Buildings	m^2	899.00	11.00
Depot Shed	m^2	433.00	8,433.00
Lineside Buildings			
Buildings	m^2	265.00	-
MDU			
Buildings	m^2	56.00	3,750.00

Table 10.66: Civils renewal volumes – Anglia

		2014/15 Target	2014/15 Actual
Structures			
Underbridges	m^2	3,092.00	4,257.00
Overbridges (incl BG3)	m^2	722.00	1,413.00
Tunnels	m^2	-	-
Culverts	m^2	98.00	996.00
Footbridges	m^2	288.00	177.70
Coastal & Estuary Defences	m^2	-	-
Retaining Walls	m^2	160.00	173.00
Earthworks Total	Earthwork assets	211.00	208.00
Embankments - Maintenance	Earthwork assets		104.00
Embankments - Refurbishment	Earthwork assets		99.00
Embankments - Renewal	Earthwork assets		5.00
Rock Cuttings - Maintenance	Earthwork assets		-
Rock Cuttings - Refurbishment	Earthwork assets		-
Rock Cuttings - Renewal	Earthwork assets		-
Soil Cuttings - Maintenance	Earthwork assets		-
Soil Cuttings - Refurbishment	Earthwork assets		-
Soil Cuttings - Renewal	Earthwork assets		-
Track Drainage			
Renewal	lm	1,254.00	-
Refurbishment	lm	-	360.00
New Build	lm	26.00	-
EW Drainage			
Renewal	lm	760.00	-
Refurbishment	lm	180.00	491.00
Maintenance	lm	760.00	227.00
New Build	lm	19.00	2,104.00
Franchised Stations			
Footbridges	m^2	656.00	41.20
Train Sheds	m^2	-	-
Canopies	m^2	150.00	-
Platforms	m^2	2,763.00	-
Buildings	m^2	401.00	-
Lifts & Escalators	No.	-	-
Managed Stations			
Footbridges	m^2	-	-
Train Sheds	m^2	-	-
Canopies	m^2	1,600.00	-
Platforms	m^2	-	-
Buildings	m^2	1,095.00	66.00
Lifts & Escalators	No.	-	-
Light Maintenance Depots			
Buildings	m^2	1,101.00	-
Depot Shed	m^2	-	-
Lineside Buildings			
Buildings	m^2	-	-
MDU			
Buildings	m^2	-	-

Table 10.67: Civils renewal volumes – East Midlands

		2014/15 Target	2014/15 Actual
Structures			
Underbridges	m^2	10,648.00	165.00
Overbridges (incl BG3)	m^2	601.00	143.00
Tunnels	m^2	1,240.00	400.00
Culverts	m^2	-	-
Footbridges	m^2	160.00	35.00
Coastal & Estuary Defences	m^2	-	-
Retaining Walls	m^2	-	-
Earthworks Total	Earthwork assets	182.00	3.00
Embankments - Maintenance	Earthwork assets		-
Embankments - Refurbishment	Earthwork assets		1.00
Embankments - Renewal	Earthwork assets		1.00
Rock Cuttings - Maintenance	Earthwork assets		-
Rock Cuttings - Refurbishment	Earthwork assets		-
Rock Cuttings - Renewal	Earthwork assets		-
Soil Cuttings - Maintenance	Earthwork assets		-
Soil Cuttings - Refurbishment	Earthwork assets		1.00
Soil Cuttings - Renewal	Earthwork assets		-
Track Drainage			
Renewal	lm	-	-
Refurbishment	lm	-	-
New Build	lm	-	-
EW Drainage			
Renewal	lm	295.00	1.00
Refurbishment	lm	61.00	10.00
Maintenance	lm	6,089.00	-
New Build	lm	-	-
Franchised Stations			
Footbridges	m^2	80.00	-
Train Sheds	m^2	-	-
Canopies	m^2	840.00	608.00
Platforms	m^2	-	2,821.00
Buildings	m^2	-	-
Lifts & Escalators	No.	-	-
Managed Stations			
Footbridges	m^2	-	-
Train Sheds	m^2	-	-
Canopies	m^2	-	-
Platforms	m^2	-	-
Buildings	m^2	-	-
Lifts & Escalators	No.	-	-
Light Maintenance Depots			
Buildings	m^2	5,000.00	-
Depot Shed	m^2	-	6,500.00
Lineside Buildings			
Buildings	m^2	30.00	-
MDU			
Buildings	m^2	160.00	850.00

Table 10.68: Civils renewal volumes – Kent

		2014/15 Target	2014/15 Actual
Structures			
Underbridges	m^2	22,252.00	1,899.00
Overbridges (incl BG3)	m^2	194.00	197.00
Tunnels	m^2	10,300.00	-
Culverts	m^2	59.00	57.00
Footbridges	m^2	203.00	134.00
Coastal & Estuary Defences	m^2	700.00	50.00
Retaining Walls	m^2	517.00	-
Earthworks Total	Earthwork assets	156.00	55.00
Embankments - Maintenance	Earthwork assets		6.00
Embankments - Refurbishment	Earthwork assets		2.00
Embankments - Renewal	Earthwork assets		10.00
Rock Cuttings - Maintenance	Earthwork assets		5.00
Rock Cuttings - Refurbishment	Earthwork assets		12.00
Rock Cuttings - Renewal	Earthwork assets		7.00
Soil Cuttings - Maintenance	Earthwork assets		5.00
Soil Cuttings - Refurbishment	Earthwork assets		3.00
Soil Cuttings - Renewal	Earthwork assets		5.00
Track Drainage			
Renewal	lm	5,089.00	105.00
Refurbishment	lm	197.00	-
New Build	lm	682.00	-
EW Drainage			
Renewal	lm	380.00	8.00
Refurbishment	lm	78.00	60.00
Maintenance	lm	651.00	798.00
New Build	lm	-	405.00
Franchised Stations			
Footbridges	m^2	910.00	703.00
Train Sheds	m^2	-	-
Canopies	m^2	360.00	828.00
Platforms	m^2	2,929.00	8,122.00
Buildings	m^2	385.00	65.00
Lifts & Escalators	No.	-	-
Managed Stations			
Footbridges	m^2	-	-
Train Sheds	m^2	-	-
Canopies	m^2	-	-
Platforms	m^2	-	-
Buildings	m^2	-	126.00
Lifts & Escalators	No.	-	3.00
Light Maintenance Depots			
Buildings	m^2	-	90.00
Depot Shed	m^2	-	-
Lineside Buildings			
Buildings	m^2	230.00	5,036.00
MDU			
Buildings	m^2	-	420.00

Table 10.69: Civils renewal volumes – LNE

		2014/15 Target	2014/15 Actual
Structures			
Underbridges	m^2	22,671.00	5,912.00
Overbridges (incl BG3)	m^2	5,965.00	975.00
Tunnels	m^2	20.00	5,880.00
Culverts	m^2	306.00	483.00
Footbridges	m^2	176.00	84.00
Coastal & Estuary Defences	m^2	-	-
Retaining Walls	m^2	-	32.00
Earthworks Total	Earthwork assets	511.00	97.30
Embankments - Maintenance	Earthwork assets		3.00
Embankments - Refurbishment	Earthwork assets		19.00
Embankments - Renewal	Earthwork assets		3.30
Rock Cuttings - Maintenance	Earthwork assets		23.00
Rock Cuttings - Refurbishment	Earthwork assets		11.00
Rock Cuttings - Renewal	Earthwork assets		13.00
Soil Cuttings - Maintenance	Earthwork assets		4.00
Soil Cuttings - Refurbishment	Earthwork assets		15.00
Soil Cuttings - Renewal	Earthwork assets		6.00
Track Drainage			
Renewal	lm	-	3,874.00
Refurbishment	lm	-	360.00
New Build	lm	-	2,467.15
EW Drainage			
Renewal	lm	1,656.00	79.00
Refurbishment	lm	110.00	260.00
Maintenance	lm	7,879.00	-
New Build	lm	-	-
Franchised Stations			
Footbridges	m^2	1,172.00	160.00
Train Sheds	m^2	18,450.00	7,753.00
Canopies	m^2	5,580.00	38,660.00
Platforms	m^2	7,832.00	5,313.00
Buildings	m^2	1,420.00	14,695.00
Lifts & Escalators	No.	1.00	-
Managed Stations			
Footbridges	m^2	-	120.00
Train Sheds	m^2	1,600.00	-
Canopies	m^2	-	-
Platforms	m^2	-	-
Buildings	m^2	-	58.00
Lifts & Escalators	No.	-	-
Light Maintenance Depots			
Buildings	m^2	-	140.00
Depot Shed	m^2	-	-
Lineside Buildings			
Buildings	m^2	255.00	160.00
MDU			
Buildings	m^2	22,000.00	4,857.00

Table 10.70: Civils renewal volumes – LNW

		2014/15 Target	2014/15 Actual
Structures			
Underbridges	m^2	22,540.00	15,964.00
Overbridges (incl BG3)	m^2	10,882.00	5,515.00
Tunnels	m^2	11,063.00	7,392.00
Culverts	m^2	158.00	348.00
Footbridges	m^2	308.00	-
Coastal & Estuary Defences	m^2	990.00	278.00
Retaining Walls	m^2	1,955.00	1,897.00
Earthworks Total	Earthwork assets	625.00	600.00
Embankments - Maintenance	Earthwork assets		179.00
Embankments - Refurbishment	Earthwork assets		31.00
Embankments - Renewal	Earthwork assets		21.00
Rock Cuttings - Maintenance	Earthwork assets		30.00
Rock Cuttings - Refurbishment	Earthwork assets		7.00
Rock Cuttings - Renewal	Earthwork assets		5.00
Soil Cuttings - Maintenance	Earthwork assets		282.00
Soil Cuttings - Refurbishment	Earthwork assets		36.00
Soil Cuttings - Renewal	Earthwork assets		9.00
Track Drainage			
Renewal	lm	-	-
Refurbishment	lm	-	-
New Build	lm	-	-
EW Drainage			
Renewal	lm	-	1,083.00
Refurbishment	lm	-	91.00
Maintenance	lm	-	1,730.00
New Build	lm	-	1,144.00
Franchised Stations			
Footbridges	m^2	449.00	112.00
Train Sheds	m^2	1,219.00	-
Canopies	m^2	1,477.00	1,447.00
Platforms	m^2	25,402.00	11,498.00
Buildings	m^2	-	25.00
Lifts & Escalators	No.	-	4.00
Managed Stations			
Footbridges	m^2	-	-
Train Sheds	m^2	-	-
Canopies	m^2	-	-
Platforms	m^2	-	202.00
Buildings	m^2	-	-
Lifts & Escalators	No.	-	-
Light Maintenance Depots			
Buildings	m^2	-	2.00
Depot Shed	m^2	-	-
Lineside Buildings			
Buildings	m^2	-	160.00
MDU			
Buildings	m^2	-	1,067.00

Table 10.71: Civils renewal volumes – Sussex

		2014/15 Target	2014/15 Actual
Structures			
Underbridges	m^2	528.00	441.00
Overbridges (incl BG3)	m^2	2,074.00	1,000.00
Tunnels	m^2	260.00	-
Culverts	m^2	-	-
Footbridges	m^2	100.00	-
Coastal & Estuary Defences	m^2	-	-
Retaining Walls	m^2	-	1,000.00
Earthworks Total	Earthwork assets	114.00	45.00
Embankments - Maintenance	Earthwork assets		4.00
Embankments - Refurbishment	Earthwork assets		-
Embankments - Renewal	Earthwork assets		10.00
Rock Cuttings - Maintenance	Earthwork assets		-
Rock Cuttings - Refurbishment	Earthwork assets		2.00
Rock Cuttings - Renewal	Earthwork assets		3.00
Soil Cuttings - Maintenance	Earthwork assets		4.00
Soil Cuttings - Refurbishment	Earthwork assets		21.00
Soil Cuttings - Renewal	Earthwork assets		1.00
Track Drainage			
Renewal	lm	-	-
Refurbishment	lm	-	-
New Build	lm	-	-
EW Drainage			
Renewal	lm	63.00	170.00
Refurbishment	lm	210.00	20.00
Maintenance	lm	89.00	-
New Build	lm	-	175.00
Franchised Stations			
Footbridges	m^2	510.00	240.00
Train Sheds	m^2	-	-
Canopies	m^2	2,520.00	-
Platforms	m^2	3,551.00	13,417.00
Buildings	m^2	-	7,790.00
Lifts & Escalators	No.	-	-
Managed Stations			
Footbridges	m^2	-	-
Train Sheds	m^2	-	-
Canopies	m^2	-	-
Platforms	m^2	2,500.00	-
Buildings	m^2	730.00	6,182.00
Lifts & Escalators	No.	-	-
Light Maintenance Depots			
Buildings	m^2	-	-
Depot Shed	m^2	3,700.00	-
Lineside Buildings			
Buildings	m^2	2,009.00	-
MDU			
Buildings	m^2	-	-

Table 10.72: Civils renewal volumes – Wales

		2014/15 Target	2014/15 Actual
Structures			
Underbridges	m^2	6,540.00	6,243.00
Overbridges (incl BG3)	m^2	2,100.00	-
Tunnels	m^2	600.00	-
Culverts	m^2	284.00	-
Footbridges	m^2	30.00	-
Coastal & Estuary Defences	m^2	50.00	6,611.00
Retaining Walls	m^2	530.00	-
Earthworks Total	Earthwork assets	285.00	18.00
Embankments - Maintenance	Earthwork assets		-
Embankments - Refurbishment	Earthwork assets		1.00
Embankments - Renewal	Earthwork assets		-
Rock Cuttings - Maintenance	Earthwork assets		1.00
Rock Cuttings - Refurbishment	Earthwork assets		4.00
Rock Cuttings - Renewal	Earthwork assets		4.00
Soil Cuttings - Maintenance	Earthwork assets		-
Soil Cuttings - Refurbishment	Earthwork assets		2.00
Soil Cuttings - Renewal	Earthwork assets		6.00
Track Drainage			
Renewal	lm	-	-
Refurbishment	lm	6,312.00	8,449.00
New Build	lm	-	-
EW Drainage			
Renewal	lm	500.00	-
Refurbishment	lm	231.00	85.00
Maintenance	lm	2,228.00	-
New Build	lm	-	182.00
Franchised Stations			
Footbridges	m^2	626.00	-
Train Sheds	m^2	-	-
Canopies	m^2	3,197.00	156.00
Platforms	m^2	818.00	292.33
Buildings	m^2	438.00	-
Lifts & Escalators	No.	-	-
Managed Stations			
Footbridges	m^2	-	-
Train Sheds	m^2	-	-
Canopies	m^2	-	-
Platforms	m^2	-	-
Buildings	m^2	-	-
Lifts & Escalators	No.	-	-
Light Maintenance Depots			
Buildings	m^2	60,000.00	-
Depot Shed	m^2	-	-
Lineside Buildings			
Buildings	m^2	1,000.00	-
MDU			
Buildings	m^2	-	203.00

Table 10.73: Civils renewal volumes – Wessex

		2014/15 Target	2014/15 Actual
Structures			
Underbridges	m^2	7,472.00	7,511.00
Overbridges (incl BG3)	m^2	77.00	183.00
Tunnels	m^2	1,768.00	1,127.00
Culverts	m^2	423.00	41.00
Footbridges	m^2	199.00	113.00
Coastal & Estuary Defences	m^2	-	-
Retaining Walls	m^2	302.00	248.00
Earthworks Total	Earthwork assets	162.00	73.00
Embankments - Maintenance	Earthwork assets		8.00
Embankments - Refurbishment	Earthwork assets		5.00
Embankments - Renewal	Earthwork assets		15.00
Rock Cuttings - Maintenance	Earthwork assets		6.00
Rock Cuttings - Refurbishment	Earthwork assets		-
Rock Cuttings - Renewal	Earthwork assets		-
Soil Cuttings - Maintenance	Earthwork assets		38.00
Soil Cuttings - Refurbishment	Earthwork assets		-
Soil Cuttings - Renewal	Earthwork assets		1.00
Track Drainage			
Renewal	lm	1,000.00	-
Refurbishment	lm	26,000.00	670.00
New Build	lm	100.00	-
EW Drainage			
Renewal	lm	308.00	225.00
Refurbishment	lm	60.00	-
Maintenance	lm	2,621.00	-
New Build	lm	5,283.00	1,400.00
Franchised Stations			
Footbridges	m^2	120.00	-
Train Sheds	m^2	-	-
Canopies	m^2	1,523.00	602.00
Platforms	m^2	33,608.00	9,313.00
Buildings	m^2	-	-
Lifts & Escalators	No.	3.00	-
Managed Stations			
Footbridges	m^2	-	-
Train Sheds	m^2	-	-
Canopies	m^2	4,330.00	265.00
Platforms	m^2	-	-
Buildings	m^2	3,729.00	-
Lifts & Escalators	No.	3.00	-
Light Maintenance Depots			
Buildings	m^2	-	-
Depot Shed	m^2	-	-
Lineside Buildings			
Buildings	m^2	15,180.00	-
MDU			
Buildings	m^2	-	-

Table 10.74: Civils renewal volumes – Western

		2014/15 Target	2014/15 Actual
Structures			
Underbridges	m^2	11,211.00	11,232.00
Overbridges (incl BG3)	m^2	1,235.00	-
Tunnels	m^2	2,108.00	1,274.00
Culverts	m^2	510.00	2,507.00
Footbridges	m^2	40.00	-
Coastal & Estuary Defences	m^2	-	60.00
Retaining Walls	m^2	150.00	-
Earthworks Total	Earthwork assets	502.00	477.00
Embankments - Maintenance	Earthwork assets		291.00
Embankments - Refurbishment	Earthwork assets		20.00
Embankments - Renewal	Earthwork assets		18.00
Rock Cuttings - Maintenance	Earthwork assets		-
Rock Cuttings - Refurbishment	Earthwork assets		20.00
Rock Cuttings - Renewal	Earthwork assets		9.00
Soil Cuttings - Maintenance	Earthwork assets		39.00
Soil Cuttings - Refurbishment	Earthwork assets		45.00
Soil Cuttings - Renewal	Earthwork assets		35.00
Track Drainage			
Renewal	lm	-	1,850.32
Refurbishment	lm	-	-
New Build	lm	-	-
EW Drainage			
Renewal	lm	2,129.00	-
Refurbishment	lm	340.00	-
Maintenance	lm	833.00	-
New Build	lm	-	-
Franchised Stations			
Footbridges	m^2	445.00	70.00
Train Sheds	m^2	4,000.00	-
Canopies	m^2	2,329.00	3,500.00
Platforms	m^2	600.00	1,125.00
Buildings	m^2	3,472.00	-
Lifts & Escalators	No.	5.00	-
Managed Stations			
Footbridges	m^2	-	-
Train Sheds	m^2	-	-
Canopies	m^2	-	-
Platforms	m^2	100.00	15.00
Buildings	m^2	-	-
Lifts & Escalators	No.	1.00	-
Light Maintenance Depots			
Buildings	m^2	-	-
Depot Shed	m^2	26,888.00	25,950.00
Lineside Buildings			
Buildings	m^2	-	-
MDU			
Buildings	m^2	-	-

Signalling renewals

Signalling renewal volumes are covered by six metrics as follows:

- Full Conventional resignalling
- ERTMS resignalling text
- Partial Conventional resignalling
- Targeted Component renewal
- Modular resignalling
- Level Crossing Renewals.

Commentary

In 2014/15 there have been some notable shifts in signalling compared to the 2014/15 target. This is the result of the deferral of a number of key schemes.

Full Conventional volume out-turned at 51 per cent below target, partial Conventional activity at 72 per cent below target and Targeted Component Renewal works at 95 per cent behind plan. However, this does not include progress what has been done in terms of design and preparatory works across the portfolio.

In LNW, Wolverhampton resignalling was delayed due to scheme complexity. This project is now scheduled for completion in early 2015/16 and therefore impact upon asset condition in CP5 is limited. The remaining deviation on LNW relates to Crewe Steelworks, which is now scheduled to complete in the latter stages of 2015/16, and Huyton to Roby whereby the scheme commissioned a mix of Partial and Full Conventional volumes as opposed to all Full Conventional Volumes. Works at Watford Junction have continued to progress in-year despite required amendments to the scheme's work plan as a result of the landslip at Harbury on the Chiltern Line, which was a planned diversionary route.

In Wales, the final phase of the Cardiff Area Signalling Renewals (CASR) scheme was not commissioned in 2014/15 due to complexities associated with its delivery and the knock-on effect of delays within the completion of earlier phases of the project. This scheme is now re-planned for later in CP5.

In LNE, the Sudforth Lane delivery, originally planned for completion in CP4, has now been commissioned. Postponement of its original completion was due to the Hatfield Landslip. Similarly, the East Sussex resignalling scheme and the commissioning of Poole to Wool, have now also completed in 2014/15 following deferral from CP4.

Partial conventional volumes have delivered a total of 168.76 SEUs, an underdelivery of 440.24 SEUs. This is primarily due to underdelivery in Western of 454.15 units, delivering a total of 136.85 units against a target of 591, as a result of Swindon Area Resignalling suffering significant programme slippage. The scheme missed its planned August possession and as a result Bristol Area also had its first part-commissioning date pushed back. Consequently, Western route has re-planned its partial conventional resignalling programme over CP5 which will improve the spread in terms of commissioning dates and resource requirement.

Final Targeted Component Renewal (TCR) volumes were 95 per cent below target. From a route perspective this is due to deviations on Kent, Scotland and LNE. Works at Hastings (Kent) have been deferred pending proposed enhancements works which may negate the need for any renewals activity. Carmont and Stonehaven (Scotland) works have been delayed to allow for re-tendering. Belmont and Norwood (LNE) have been have been postponed pending a further specification.

The substantive variance within the Modular Resignalling portfolio relates to the East Nottingham scheme. This scheme has been postponed subject to the determination of a revised asset management plan in light of the ERTMS programme.

A total of 35 Level Crossings have been delivered, underperforming against the target of 62. Level Crossing Renewals are mostly delivered within scope of major re-signalling schemes, therefore if the re-signalling schemes are delayed or deferred then this will also impact the delivery of the associated Level Crossing renewals. Several routes such as Sussex and Scotland have outperformed their target and compensated for some of the other routes who are on or around target. The main impacts on the program of level crossing renewals has been:

- East Midlands Route (0 delivered from 9 planned) – The East Nottingham modular signalling scheme is postponed subject to review for ERTMS implementation.
- Wales Route (2 delivered from 6 planned) – Resultant from delays with the Cardiff Area Signalling Renewals (CASR)

- Western (2 delivered from 16 planned) – Significant slippage in the Swindon Area Re-signalling (SASR) project which has also delayed renewals within scope of Bristol re-signalling.

For those delayed re-signalling schemes that are still planned to be delivered in the control period (CP5) then the realised outputs in terms of asset condition and safety risk reduction will still be delivered.

Across the national portfolio much of the work undertaken in 2014/15 equates to scheme development. Expenditure and GRIP stage-gate completion are closely monitored to understand any emerging risk to remaining CP5 commissioning dates.

The asset condition associated with deferrals is manageable in the interim and any reliability concerns will be treated through either the existing, or marginally uplifted, minor works activity, for example to combat wire degradation, life expired relays and other such interim concerns.

Signalling Renewal Volumes

Table 10.75: Signalling renewal volumes – Network-wide

		2014/15 Target	2014/15 Actual
Full Conventional resignalling	SEUs	1,061.00	519.90
ERTMS resignalling	SEUs	-	-
Partial Conventional resignalling	SEUs	609.00	168.76
Targeted Component renewal	SEUs	145.00	6.60
Modular resignalling	SEUs	70.00	-
Level Crossing Renewals	No.	62	35

Table 10.76: Signalling renewal volumes – England & Wales

		2014/15 Target	2014/15 Actual
Full Conventional resignalling	SEUs	1,057.00	515.98
ERTMS resignalling	SEUs	-	-
Partial Conventional resignalling	SEUs	609.00	168.76
Targeted Component renewal	SEUs	141.00	6.60
Modular resignalling	SEUs	70.00	-
Level Crossing Renewals	No.	58	30

Table 10.77: Signalling renewal volumes – Scotland

		2014/15 Target	2014/15 Actual
Full Conventional resignalling	SEUs	4	3.92
ERTMS resignalling	SEUs	0	0
Partial Conventional resignalling	SEUs	0	0
Targeted Component renewal	SEUs	4	0
Modular resignalling	SEUs	0	0
Level Crossing Renewals	No.	4	5

Table 10.78: Signalling renewal volumes – Anglia

		2014/15 Target	2014/15 Actual
Full Conventional resignalling	SEUs	0	0
ERTMS resignalling	SEUs	0	0
Partial Conventional resignalling	SEUs	0	0
Targeted Component renewal	SEUs	0	6.6
Modular resignalling	SEUs	0	0
Level Crossing Renewals	No.	0	0

Table 10.79: Signalling renewal volumes – East Midlands

		2014/15 Target	2014/15 Actual
Full Conventional resignalling	SEUs	0	0
ERTMS resignalling	SEUs	0	0
Partial Conventional resignalling	SEUs	0	0
Targeted Component renewal	SEUs	0	0
Modular resignalling	SEUs	31	0
Level Crossing Renewals	No.	9	0

Table 10.80: Signalling renewal volumes – Kent

		2014/15 Target	2014/15 Actual
Full Conventional resignalling	SEUs	0	0
ERTMS resignalling	SEUs	0	0
Partial Conventional resignalling	SEUs	0	0
Targeted Component renewal	SEUs	49	0
Modular resignalling	SEUs	0	0
Level Crossing Renewals	No.	2	1

Table 10.81: Signalling renewal volumes – LNE

		2014/15 Target	2014/15 Actual
Full Conventional resignalling	SEUs	0	85.26
ERTMS resignalling	SEUs	0	0
Partial Conventional resignalling	SEUs	1	2.58
Targeted Component renewal	SEUs	7	0
Modular resignalling	SEUs	0	0
Level Crossing Renewals	No.	10	7

Table 10.82: Signalling renewal volumes – LNW

		2014/15 Target	2014/15 Actual
Full Conventional resignalling	SEUs	372	140.14
ERTMS resignalling	SEUs	0	0
Partial Conventional resignalling	SEUs	17	28.61
Targeted Component renewal	SEUs	7	0
Modular resignalling	SEUs	39	0
Level Crossing Renewals	No.	4	4

Table 10.83: Signalling renewal volumes – Sussex

		2014/15 Target	2014/15 Actual
Full Conventional resignalling	SEUs	228	69.58
ERTMS resignalling	SEUs	0	0
Partial Conventional resignalling	SEUs	0	0.72
Targeted Component renewal	SEUs	1	0
Modular resignalling	SEUs	0	0
Level Crossing Renewals	No.	1	9

Table 10.84: Signalling renewal volumes – Wales

		2014/15 Target	2014/15 Actual
Full Conventional resignalling	SEUs	364	114
ERTMS resignalling	SEUs	0	0
Partial Conventional resignalling	SEUs	0	0
Targeted Component renewal	SEUs	0	0
Modular resignalling	SEUs	0	0
Level Crossing Renewals	No.	6	2

Table 10.85: Signalling renewal volumes – Wessex

		2014/15 Target	2014/15 Actual
Full Conventional resignalling	SEUs	93	107
ERTMS resignalling	SEUs	0	0
Partial Conventional resignalling	SEUs	0	0
Targeted Component renewal	SEUs	1	0
Modular resignalling	SEUs	0	0
Level Crossing Renewals	No.	10	5

Table 10.86: Signalling renewal volumes – Western

		2014/15 Target	2014/15 Actual
Full Conventional resignalling	SEUs	0	0
ERTMS resignalling	SEUs	0	0
Partial Conventional resignalling	SEUs	591	136.85
Targeted Component renewal	SEUs	76	0
Modular resignalling	SEUs	0	0
Level Crossing Renewals	No.	16	2

Electrification and Plant renewals

Renewal volumes are covered by six areas as follows:

- Contact Systems
- Conductor Rail
- AC Distribution
- DC Distribution
- Fixed Plant
- Rail Heating.

Commentary

The electrification work bank has seen numerous deviations to plan at a national level with a mix of both under and overdelivery across the portfolio. Overall, this is due to changes in the delivery strategy.

Contact systems

58 OLE wire runs have been delivered nationally in 2014/15, which is above the 37 wire runs target (Table 10.87). From a route perspective, this is predominantly due to positive variance to target in Scotland due to the continuation of campaign change works in Scotland and strong delivery on the Great Eastern programme. In Anglia, the delivery methodology has been enhanced to expedite progress. An additional four wire runs were delivered nationally as ORR approved rollover from CP4.

LNE East Coast Main Line OLE project delivered two volumes against a planned total of 21 (Table 10.93) due to 19 volumes being de-scoped from the project, of which some volumes were delivered under enhancement schemes. The under-delivery in LNE is due to the reprogramming over four years rather than two in order to deliver at a more efficient rate and improve productivity through use of a specialist team. They have opted to procure a wiring train to aid the delivery. However, due to this taking eighteen months to arrive LNE has recruited additional resource in order to deliver these volumes together, but training the new starters has caused delay to delivery. In addition, new OLE construction methodologies are under development to facilitate future wire run renewals within shorter possession times.

Conversely, no mid-life refurbishment works have been completed to date nationally compared to the planned 56 (Table 10.87). Substantive renewals works programmes on the asset have been deferred pending certainty around the scope of the Midland Mainline electrification enhancement programme these volumes have been reprogrammed to later in the CP5 plan. This is also affecting the completion of interlinked Structures refurbishment programme on the route.

In 2014/15, 81 structural renewals were delivered compared to the planned 113 volumes originally formed part of the Delivery Plan via a project in Anglia Route (Table 10.87). However, due to an error in the baseline, these volumes should have been split across three projects. 35 volumes (CP4 agreed rollover) were delivered against the Great Eastern Project; 25 were delivered against a CP5 project and 18 via a CP4 unbudgeted rollover project leaving a variance to the plan of eleven volumes. These 11 volumes have been re-packaged into years two to four in order to allow improved planning which is anticipated to leverage greater efficiency. In addition there have been delays caused by integration of works with the Midland Mainline Electrification Enhancement programme, which has affected the delivery of 19 volumes.

Conductor Rail

At a national level the level of Conductor Rail renewals was 26 per cent below target in 2014/15. At a route level there has been a positive achievement against target in Sussex, where year-end delivery has exceeded the target of 7km by 10.28km. This is the result of re-profiling undertaken across the route, to manage delivery and to align to the wider route delivery strategy and in line with planned possessions. In addition Sussex has delivered 17km of CP4 non agreed rollover under two projects, which were not in the original Delivery Plan.

Early in CP5, Kent and Sussex carried out a work bank review which determined that planned conductor rail activity in the first year of CP5 was no longer deliverable due to insufficient development and the prioritisation of works originally planned for completion in CP4, which has constrained resource. Reduced delivery expectations within Kent has meant that the workbank has been rephased across the Control Period to reduce deliverability risk. The Route Asset Management team remains confident that asset condition is manageable in the interim and will continue to prioritise the plan accordingly across the Control Period.

Wessex also re-evaluated and adjusted its delivery strategy in line with possession availability, with the majority of work reprogrammed for delivery in years two to three of CP5. The original submission, largely an even spread of both cost and volume data across CP5, did not fully take into account the impact of available resources and delivering CP4 rollover on

top of the CP5 plan. The decision was made to prioritise and protect the delivery of works which were originally planned for CP4 completion as far as possible and thereby mitigate the impact of deferred renewals. This change also saw asset renewals packaged into a more geographically focussed and sustainable manner to help meet the efficiency profile and challenges of the targets.

AC Distribution

Across the AC Distribution work-bank, HV Switchgear Renewal has over-achieved against target by 31 per cent. This is due to 17 volumes (CP4 non-agreed rollover) which did not form part of the Delivery Plan being delivered. The planned sixteen volumes in the Delivery Plan have been deferred into 2015/16. This is due to delays in Distribution Network Operator (DNO) installation and a new LV (low voltage) supply to the substations. In addition four volumes (CP4 non agreed rollover) were delivered by LNE; these did not form part of the Delivery Plan.

There has been a shortfall of volumes on Booster Transformers in 2014/15. No booster transformers were delivered against a national target of 21, as a result of LNW (17), Anglia (3) and East Midlands (1) deferring works for more efficient delivery.

DC Distribution

Changes in strategy across Kent, Sussex and Wessex have led to significant variances to target, particularly within the DC Distribution portfolio. In some instances this has led to additional volume, primarily due to the recovery of works originally planned in CP4, but other elements of the workbank have been re-profiled or deprioritised.

In 2014/15 109 HV switchgear circuit breakers were delivered. Five projects related to CP4 approved rollover delivered a combined total of 107 volumes. The additional two volumes that have been delivered relate to LNE. These were projects initially scheduled for completion in CP4 and did not form part of the Delivery Plan.

There has been under-delivery across the DC distribution work-bank with an 84 per cent variance to target for HV Cables, a total of 6.49km was delivered against a target of 40km. The main reasons for the variance between the planned delivery and the actual volumes are due to approved rollover of CP4 works that have been delivered but not counted in the final numbers. This accounts for 47km of HV Cables. For example, seven volumes were delivered in Kent that were not in the Delivery Plan however no volume has been included for 2014/15 delivery. Anglia was the main contributor to the 6.49km delivered volume. Anglia has delivered 4.1km of unbudgeted HV Cable volume, which is due to catch-up delivery of their North London Line Feeder renewals programme.

There has been a 17 per cent underdelivery for LV Switchgear Renewals. This can mainly be attributed to underdelivery in Kent Route where only eight were renewed against a target of 36. However, the route has delivered 94 volumes as ORR-approved CP4 rollover and 57 volumes as a result of work initially scheduled for completion in CP4 that were not in the Delivery Plan.

Conversely the volume outturn associated with LV Cables and Transformer Rectifiers has exceeded target for 2014/15. These variances and overall deviation in work-bank mix are predominantly due to re-profiling across Kent, Sussex and Wessex to enable alignment of work to deliver multiple assets types at the same locations. 22km were delivered which compared to the planned 19km LV cables in 2014/15. In Kent, three volumes were not delivered due to being deferred to later on in CP5 to allow for better planning. The route is monitoring very closely and we are inspecting these assets as often as practical, given that the assets are located in red zone working. If the cables begin to show any signs of deterioration to the point of failure, the renewals work will be expedited immediately.

In 2014/15, eight transformer rectifier volumes were delivered compared to the planned two. An additional five non-PR13 rollover volumes were delivered across the South East. The majority of the additional volume has been driven through additional works which were not included within the Delivery Plan baseline for completion in Year 1. Primarily this is due to the re-phasing of the five year plan to package works more effectively and also to facilitate the completion of units which originally should have been closed out in 2013/14 which have, as such, now been absorbed into the CP5 workbank.

Reprofiled work is being better packaged to promote delivery efficiencies through longer-term planning and geographic focus. We are comfortable that asset condition is manageable in the interim and reliability can be maintained through their maintenance and reactive capital works regimes.

Fixed Plant

In 2014/15 22 volumes were delivered compared to the planned 273 for Signalling Power Cable Renewal. The major contributor to this underdelivery was in LNW. 78km were not delivered in LNW (north) due to a change in delivery strategy and reprofiling of works which will now be delivered through the remainder of CP5. 31 volumes were not delivered by LNE due to cable theft, access issues and signalling records not being available. These will now be delivered later in CP5. 27 planned volumes in Scotland Route have slipped into 2015/16 due to contractual issues and planning arrangements. In

Western, 24 volumes slipped into 2015/16 due to a delay in Electrification and Plant Design Group (EPDG) designs from development phase. Ten volumes have been delivered by Wessex against six in the Delivery Plan. This work emerged during the year following identification of cable degradation by the Reading Delivery Unit.

In 2014/15 22 Principal Supply Point volumes were delivered compared to the planned 20. Seven volumes were not delivered by Anglia; these volumes have been deferred into later years of CP5 in order to package works more efficiently. Network Rail has conducted surveys on asset life and is confident that the existing asset performance can be maintained until the renewal takes place.

Point Heaters

In 2014/15, 71 volumes were delivered compared to the planned 334. This can mainly be attributed to Wessex where there has been a variance of 89 heaters, with 31 delivered against the target of 120. In LNW there has been no delivery this year mainly due to poor design submissions which resulted in some abortive works. The quality of some of the works has meant that some of the installations have had to be redone. Additionally, a number of Distribution Network Operator (DNO) applications have also delayed the programme.

Across the other routes there have been delays in Kent, Western, East Midlands, Anglia and Wales, due to delays to schemes re-profiling and re-planning of work across the remainder of CP5.

Electrification and Plant Renewal Volumes

Table 10.87: Electrification and plant renewal volumes – network–wide

		2014/15 Target	2014/15 Actual
Contact Systems			
OLE Re-wiring	wire runs	37.00	58.00
Mid-life Refurbishment	wire runs	56.00	-
Structure Renewals	No.	113.00	80.98
Conductor rail			
Renewals	km	35.00	25.83
AC distribution			
HV Switchgear Renewal	No.	16.00	21.00
Booster Transformers	No.	21.00	-
DC distribution			
HV Switchgear Renewal	No.	2.00	2.00
HV Cables	km	40.00	6.49
LV Switchgear Renewal	No.	78.00	65.00
LV Cables	km	19.00	22.19
Transformer Rectifiers	No.	2.00	8.00
Fixed plant			
Signalling Power Cable Renewal	km	273.00	22.09
Principle Supply Point Renewal	No.	20.00	22.00
Rail Heating			
Points Heating Renewal	Point End	334.00	71.00

Table 10.88: Electrification and plant renewal volumes – England & Wales

		2014/15 Target	2014/15 Actual
Contact Systems			
OLE Re-wiring	wire runs	36.00	21.00
Mid-life Refurbishment	wire runs	56.00	-
Structure Renewals	No.	113.00	80.98
Conductor rail			
Renewals	km	35.00	25.83
AC distribution			
HV Switchgear Renewal	No.	16.00	21.00
Booster Transformers	No.	21.00	-
DC distribution			
HV Switchgear Renewal	No.	2.00	2.00
HV Cables	km	40.00	6.49
LV Switchgear Renewal	No.	78.00	65.00
LV Cables	km	19.00	22.19
Transformer Rectifiers	No.	2.00	8.00
Fixed plant			
Signalling Power Cable Renewal	km	246.00	20.09
Principle Supply Point Renewal	No.	20.00	12.00
Rail Heating			
Points Heating Renewal	Point End	334.00	71.00

Table 10.89: Electrification and plant renewal volumes – Scotland

		2014/15 Target	2014/15 Actual
Contact Systems			
OLE Re-wiring	wire runs	1.00	37.00
Mid-life Refurbishment	wire runs	-	-
Structure Renewals	No.	-	-
Conductor rail			
Renewals	km	-	-
AC distribution			
HV Switchgear Renewal	No.	-	-
Booster Transformers	No.	-	-
DC distribution			
HV Switchgear Renewal	No.	-	-
HV Cables	km	-	-
LV Switchgear Renewal	No.	-	-
LV Cables	km	-	-
Transformer Rectifiers	No.	-	-
Fixed plant			
Signalling Power Cable Renewal	km	27.00	-
Principle Supply Point Renewal	No.	-	10.00
Rail Heating			
Points Heating Renewal	Point End	-	-

Table 10.90: Electrification and plant renewal volumes – Anglia

		2014/15 Target	2014/15 Actual
Contact Systems			
OLE Re-wiring	wire runs	10.00	16.00
Mid-life Refurbishment	wire runs	-	-
Structure Renewals	No.	100.00	78.00
Conductor rail			
Renewals	km	-	-
AC distribution			
HV Switchgear Renewal	No.	-	-
Booster Transformers	No.	3.00	-
DC distribution			
HV Switchgear Renewal	No.	-	-
HV Cables	km	-	4.10
LV Switchgear Renewal	No.	-	-
LV Cables	km	-	-
Transformer Rectifiers	No.	-	-
Fixed plant			
Signalling Power Cable Renewal	km	18.00	-
Principle Supply Point Renewal	No.	9.00	2.00
Rail Heating			
Points Heating Renewal	Point End	9.00	32.00

Table 10.91: Electrification and plant renewal volumes – East Midlands

		2014/15 Target	2014/15 Actual
Contact Systems			
OLE Re-wiring	wire runs	-	-
Mid-life Refurbishment	wire runs	56.00	-
Structure Renewals	No.	7.00	-
Conductor rail			
Renewals	km	-	-
AC distribution			
HV Switchgear Renewal	No.	-	-
Booster Transformers	No.	1.00	-
DC distribution			
HV Switchgear Renewal	No.	-	-
HV Cables	km	-	-
LV Switchgear Renewal	No.	-	-
LV Cables	km	-	-
Transformer Rectifiers	No.	-	-
Fixed plant			
Signalling Power Cable Renewal	km	10.00	-
Principle Supply Point Renewal	No.	-	-
Rail Heating			
Points Heating Renewal	Point End	16.00	-

Table 10.92: Electrification and plant renewal volumes – Kent

		2014/15 Target	2014/15 Actual
Contact Systems			
OLE Re-wiring	wire runs	-	-
Mid-life Refurbishment	wire runs	-	-
Structure Renewals	No.	-	-
Conductor rail			
Renewals	km	16.00	-
AC distribution			
HV Switchgear Renewal	No.	-	-
Booster Transformers	No.	-	-
DC distribution			
HV Switchgear Renewal	No.	2.00	-
HV Cables	km	18.00	-
LV Switchgear Renewal	No.	36.00	8.00
LV Cables	km	10.00	6.53
Transformer Rectifiers	No.	2.00	1.00
Fixed plant			
Signalling Power Cable Renewal	km	9.00	-
Principle Supply Point Renewal	No.	-	-
Rail Heating			
Points Heating Renewal	Point End	21.00	-

Table 10.93: Electrification and plant renewal volumes – LNE

		2014/15 Target	2014/15 Actual
Contact Systems			
OLE Re-wiring	wire runs	26.00	5.00
Mid-life Refurbishment	wire runs	-	-
Structure Renewals	No.	21.00	2.00
Conductor rail			
Renewals	km	-	-
AC distribution			
HV Switchgear Renewal	No.	-	4.00
Booster Transformers	No.	-	-
DC distribution			
HV Switchgear Renewal	No.	-	2.00
HV Cables	km	-	-
LV Switchgear Renewal	No.	-	-
LV Cables	km	-	-
Transformer Rectifiers	No.	-	4.00
Fixed plant			
Signalling Power Cable Renewal	km	31.00	-
Principle Supply Point Renewal	No.	-	8.00
Rail Heating			
Points Heating Renewal	Point End	65.00	4.00

Table 10.94: Electrification and plant renewal volumes – LNW

		2014/15 Target	2014/15 Actual
Contact Systems			
OLE Re-wiring	wire runs	-	-
Mid-life Refurbishment	wire runs	-	-
Structure Renewals	No.	4.00	3.00
Conductor rail			
Renewals	km	-	-
AC distribution			
HV Switchgear Renewal	No.	16.00	17.00
Booster Transformers	No.	17.00	-
DC distribution			
HV Switchgear Renewal	No.	-	-
HV Cables	km	2.00	-
LV Switchgear Renewal	No.	-	-
LV Cables	km	1.00	2.62
Transformer Rectifiers	No.	-	-
Fixed plant			
Signalling Power Cable Renewal	km	78.00	-
Principle Supply Point Renewal	No.	4.00	2.00
Rail Heating			
Points Heating Renewal	Point End	62.00	-

Table 10.95: Electrification and plant renewal volumes – Sussex

		2014/15 Target	2014/15 Actual
Contact Systems			
OLE Re-wiring	wire runs	-	-
Mid-life Refurbishment	wire runs	-	-
Structure Renewals	No.	-	-
Conductor rail			
Renewals	km	7.00	17.28
AC distribution			
HV Switchgear Renewal	No.	-	-
Booster Transformers	No.	-	-
DC distribution			
HV Switchgear Renewal	No.	-	-
HV Cables	km	18.00	2.39
LV Switchgear Renewal	No.	33.00	59.00
LV Cables	km	3.00	-
Transformer Rectifiers	No.	-	3.00
Fixed plant			
Signalling Power Cable Renewal	km	40.00	-
Principle Supply Point Renewal	No.	4.00	-
Rail Heating			
Points Heating Renewal	Point End	18.00	-

Table 10.96: Electrification and plant renewal volumes – Wales

		2014/15 Target	2014/15 Actual
Contact Systems			
OLE Re-wiring	wire runs	-	-
Mid-life Refurbishment	wire runs	-	-
Structure Renewals	No.	-	-
Conductor rail			
Renewals	km	-	-
AC distribution			
HV Switchgear Renewal	No.	-	-
Booster Transformers	No.	-	-
DC distribution			
HV Switchgear Renewal	No.	-	-
HV Cables	km	-	-
LV Switchgear Renewal	No.	-	-
LV Cables	km	-	-
Transformer Rectifiers	No.	-	-
Fixed plant			
Signalling Power Cable Renewal	km	-	-
Principle Supply Point Reneal	No.	3.00	-
Rail Heating			
Points Heating Renewal	Point End	6.00	4.00

Table 10.97: Electrification and plant renewal volumes – Wessex

		2014/15 Target	2014/15 Actual
Contact Systems			
OLE Re-wiring	wire runs	-	-
Mid-life Refurbishment	wire runs	-	-
Structure Renewals	No.	-	-
Conductor rail			
Renewals	km	12.00	8.55
AC distribution			
HV Switchgear Renewal	No.	-	-
Booster Transformers	No.	-	-
DC distribution			
HV Switchgear Renewal	No.	-	-
HV Cables	km	2.00	-
LV Switchgear Renewal	No.	9.00	-
LV Cables	km	6.00	13.04
Transformer Rectifiers	No.	-	-
Fixed plant			
Signalling Power Cable Renewal	km	6.00	9.63
Principle Supply Point Renewal	No.	-	-
Rail Heating			
Points Heating Renewal	Point End	120.00	31.00

Table 10.98: Electrification and plant renewal volumes – Western

		2014/15 Target	2014/15 Actual
Contact Systems			
OLE Re-wiring	wire runs	-	-
Mid-life Refurbishment	wire runs	-	-
Structure Renewals	No.	-	-
Conductor rail			
Renewals	km	-	-
AC distribution			
HV Switchgear Renewal	No.	-	-
Booster Transformers	No.	-	-
DC distribution			
HV Switchgear Renewal	No.	-	-
HV Cables	km	-	-
LV Switchgear Renewal	No.	-	-
LV Cables	km	-	-
Transformer Rectifiers	No.	-	-
Fixed plant			
Signalling Power Cable Renewal	km	55.00	12.46
Principle Supply Point Renewal	No.	-	-
Rail Heating			
Points Heating Renewal	Point End	17.00	-

Telecoms renewals

Telecom renewal volumes are covered by two programme areas:

- Operational Communications
- Station Information and Surveillance Systems (SISS).

Commentary

Telecoms delivered a total of 1,182.5 reportable volumes in 2014/15 against the Delivery Plan target of 5,077.55 (there have also been a number of volumes delivered which are non-reportable, such as Transmission Nodes). These have not been included in the totals provided but have been noted for information only. The reduction in volumes was a result of accelerations into CP4 and re-profiling into subsequent years of CP5. Two projects were delivered ahead of schedule at the end of CP4 which were planned as part of CP5. These were delivered a few months after our baseline was submitted to ORR and agreed. The key reasons for the programme movements are detailed below.

Operational Communications

Nationally, Private Automatic Branch Exchange (PABX) Concentrators, Driver Only Operation Mirrors and Large Human Machine Interfaces have not delivered any renewal volumes in 2014/15. There has been positive delivery of Public Emergency Telephone Systems (PETS) and Power Systems, with minor delivery across the remainder of the programme.

No PABX Concentrator volumes were delivered against the target of 1,929, because most PABX Concentrator projects are dependent on larger renewal projects. Where work on these projects has been deferred for delivery later in CP5, it has had a direct impact on the number of PABX Concentrator volumes able to be delivered in 2014/15. This has been the case for Anglia where 1,300 volumes have been re-profiled within CP5 where the CP5 plan was to transfer control from Liverpool Street Integrated Electronic Control Centre (IECC) and migrate in to Romford ROC in line with the Network Operating Strategy (NOS). Due to delays in NOS programme, Network Rail Telecoms (NRT) is now pursuing a tactical solution to simplify the future migration to Romford ROC

A further 629 volumes have been re-profiled within CP5 to align and where possible combine scope delivery with other projects such as re-signalling schemes, this alignment has been done to promote delivery efficiencies. For instance, in Scotland, Yoker Concentrator renewal (115 volumes) has been re-prioritised and rescheduled for delivery later in CP5, as Scotland has re-prioritised its concentrator projects.

In 2014/15 21 Processor Controlled Concentrator volumes were delivered against our target of 142 due to commissioning dates moving from the latter periods of 14/15 to 15/16. 72 volumes were negated as a result of a change to the intervention strategy to not renewing concentrators due to the impact of the NOS.

62 volumes have been re-profiled to 2015/16 due to delivery resource issues. Two volumes were accelerated into CP4 as these were achieved ahead of schedule at the end of CP4 after our CP5 Delivery Plan had been finalised. Three volumes have been re-profiled within CP5. These reductions are partly offset by the delivery of 18 CP4 volumes due to the lack of availability of possession opportunities required to complete commissioning testing and dependencies on BT as a service provider.

Anglia is the only route to have planned delivery of Driver-Only Operation: CCTV in 2014/15, where nine volumes were delivered against a target of 67. 58 volumes have been re-profiled to 2015/16 due to protracted TOC discussions and possession constraints for platform extensions at three sites resulting in the commissioning being delayed.

For Driver-Only Operation: Mirrors, zero volumes were delivered against a target of 26. The volumes have been re-profiled (11 avoided, 15 re-scheduled) to 2015/16 following the identification of operational requirements of Anglia route.

There have been 21.5 Public Emergency Telephone System volumes delivered against a target of one in 2014/15. The volume that was planned for 2014/15 was accelerated into CP4 as commissioning was achieved ahead of schedule. This reduction is offset by 14.5 volumes accelerated from 2015/16 following a change in scope and delivery mechanism. Seven volumes slipped from CP4 due to asset faults during renewal works additional time required to rectify the faults before commission could be completed.

No Large Human Machine Interface volumes were delivered against the target of five for 2014/15. The volumes have been re-profiled within CP5 due to delivery dependency with the NOS, signalling the lead project to transfer control from Liverpool St IECC to Romford ROC.

Zero Small Human Machine Interface volumes were delivered against the target of one. The volume was negated as a result of a change to the intervention strategy to not renewing concentrators due to the impact of the Network Operating Strategy.

Radio Systems have not delivered any volumes in 2014/15 against a target of three. Project scope is now going to be delivered as part of the East Coast Station Information and Surveillance Systems (SISS) scheme later in CP5.

Although there were no power system volumes in the Delivery Plan for 2014/15, seven volumes have been delivered this year. This is because of the delivery of seven CP4 volumes which were delayed due to asset faults during renewal works, requiring additional time to rectify the faults before commission could be completed.

Station Information and Surveillance Systems

There are a number of new SISS schemes where delivery was planned for 2014/15 which have been delayed by the on-going review of the SISS strategy. This has led to significant volumes movement (1,124) out of this year and into later years of CP5. This is partially offset by the acceleration of CCTV volumes for London Midland stations following detailed contract negotiations to accelerate programme and delivery of CP4 schemes for LNE SISS (340 CIS and Public Announcement).

112 Customer Information Systems volumes were delivered against our target of 188. All of our target volumes have been re-profiled within CP5 following the production of the Telecoms National SISS Strategy. This reduction is partly offset by slippage of 112 volumes from CP4 as a result of delays and requirements for Listed Buildings Consent to be granted.

807 Public Address volumes were delivered against our target of 2,385. 1,292 volumes were commissioned ahead of schedule at the end of CP4 after our CP5 Delivery Plan had been finalised. 593 volumes have been re-profiled within CP5 following the production of the Telecoms National SISS Strategy. These reductions are partly offset by slippage of 246 volumes from CP4 as a result of delays obtaining Listed Buildings Consent to be granted. 20 volumes have slipped due to a project being re-tendered to enable a cost efficiency to be achieved. There was also an increase in scope of 41 volumes over three projects in response to performance issues and network expansion.

CCTV volumes have underdelivered by 68 volumes, renewing a total of 205 CCTVs against a target of 273. This is primarily due to two reasons; the London Managed Stations CCTV renewal project has reduced due to a change from full to partial renewal, and has slipped to future years as a result of delays in stakeholder approval of the requirements specification. Volumes have been re-profiled within CP5 following a production of the Telecoms National SISS Strategy, to enable an efficient staged transition towards IP based technology. These reductions are partly offset by acceleration of 151 volumes following detailed stakeholder engagement with London Midland and agreement of an accelerated programme delivery. 34 additional volumes have been identified as part of the completion of the project detailed design activities.

Zero clock volumes were delivered against our target of 57. The volumes have been re-profiled within CP5 following production of the Telecoms National SISS Strategy.

The Telecoms Asset sustainability measure is not significantly impacted by the delays in the 2014/15 Delivery Plan and is still ahead of the agreed CP5 target.

Telecoms Renewal Volumes

Table 10.99: Telecoms renewal volumes – network-wide

	2014/15 Target	2014/15 Actual
Station Information and Surveillance Systems		
Customer Information Systems	188	112
Public Address	2,385	807
CCTV	273	205
Clocks	57	0
Operational Comms		
PABX Concentrator	1,929	0
Processor Controlled Concentrator	142	21
Driver-Only Operation: CCTV	67	9
Driver-Only Operation: Mirrors	26	0
Public Emergency Telephone System	1	21.5
Human Machine Interface Large	5	0
Human Machine Interface Small	1	0
Radio System	3	0
Power Systems	0	7

Table 10.100: Telecoms renewal volumes – England & Wales

	2014/15 Target	2014/15 Actual
Station Information and Surveillance Systems		
Customer Information Systems	174	112
Public Address	975	296
CCTV	253	151
Clocks	57	0
Operational Comms		
PABX Concentrator	1,300	0
Processor Controlled Concentrator	141	21
Driver-Only Operation: CCTV	67	9
Driver-Only Operation: Mirrors	26	0
Public Emergency Telephone System	1	21.5
Human Machine Interface Large	5	0
Human Machine Interface Small	1	0
Radio System	3	0
Power Systems	0	7

Table 10.101: Telecoms renewal volumes – Scotland

	2014/15 Target	2014/15 Actual
Station Information and Surveillance Systems		
Customer Information Systems	14	0
Public Address	1,410	511
CCTV	20	54
Clocks	0	0
Operational Comms		
PABX Concentrator	629	0
Processor Controlled Concentrator	1	0
Driver-Only Operation: CCTV	0	0
Driver-Only Operation: Mirrors	0	0
Public Emergency Telephone System	0	0
Human Machine Interface Large	0	0
Human Machine Interface Small	0	0
Radio System	0	0
Power Systems	0	0

Table 10.102: Telecoms renewal volumes – Anglia

	2014/15 Target	2014/15 Actual
Station Information and Surveillance Systems		
Customer Information Systems	0	0
Public Address	0	0
CCTV	0	0
Clocks	0	0
Operational Comms		
PABX Concentrator	1,300	0
Processor Controlled Concentrator	0	0
Driver-Only Operation: CCTV	67	9
Driver-Only Operation: Mirrors	26	0
Public Emergency Telephone System	0	0
Human Machine Interface Large	5	0
Human Machine Interface Small	0	0
Radio System	0	0
Power Systems	0	0

Table 10.103: Telecoms renewal volumes – East Midlands

	2014/15 Target	2014/15 Actual
Station Information and Surveillance Systems		
Customer Information Systems	0	94
Public Address	0	246
CCTV	0	0
Clocks	0	0
Operational Comms		
PABX Concentrator	0	0
Processor Controlled Concentrator	0	0
Driver-Only Operation: CCTV	0	0
Driver-Only Operation: Mirrors	0	0
Public Emergency Telephone System	0	3.9
Human Machine Interface Large	0	0
Human Machine Interface Small	0	0
Radio System	0	0
Power Systems	0	0

Table 10.104: Telecoms renewal volumes – Kent

	2014/15 Target	2014/15 Actual
Station Information and Surveillance Systems		
Customer Information Systems	0	0
Public Address	0	0
CCTV	0	0
Clocks	0	0
Operational Comms		
PABX Concentrator	0	0
Processor Controlled Concentrator	0	0
Driver-Only Operation: CCTV	0	0
Driver-Only Operation: Mirrors	0	0
Public Emergency Telephone System	0	0
Human Machine Interface Large	0	0
Human Machine Interface Small	0	0
Radio System	0	0
Power Systems	0	0

Table 10.105: Telecoms renewal volumes – LNE

	2014/15 Target	2014/15 Actual
Station Information and Surveillance Systems		
Customer Information Systems	174	0
Public Address	593	20
CCTV	0	0
Clocks	57	0
Operational Comms		
PABX Concentrator	0	0
Processor Controlled Concentrator	79	7
Driver-Only Operation: CCTV	0	0
Driver-Only Operation: Mirrors	0	0
Public Emergency Telephone System	1	10.6
Human Machine Interface Large	0	0
Human Machine Interface Small	1	0
Radio System	3	0
Power Systems	0	0

Table 10.106: Telecoms renewal volumes – LNW

	2014/15 Target	2014/15 Actual
Station Information and Surveillance Systems		
Customer Information Systems	0	0
Public Address	0	0
CCTV	0	151
Clocks	0	0
Operational Comms		
PABX Concentrator	0	0
Processor Controlled Concentrator	0	0
Driver-Only Operation: CCTV	0	0
Driver-Only Operation: Mirrors	0	0
Public Emergency Telephone System	0	0
Human Machine Interface Large	0	0
Human Machine Interface Small	0	0
Radio System	0	0
Power Systems	0	0

Table 10.107: Telecoms renewal volumes – Sussex

	2014/15 Target	2014/15 Actual
Station Information and Surveillance Systems		
Customer Information Systems	128	0
Public Address	864	0
CCTV	648	0
Clocks	0	0
Operational Comms		
PABX Concentrator	767	0
Processor Controlled Concentrator	0	0
Driver-Only Operation: CCTV	0	0
Driver-Only Operation: Mirrors	0	0
Public Emergency Telephone System	0	0
Human Machine Interface Large	12	0
Human Machine Interface Small	0	0
Radio System	0	0
Power Systems	0	0

Table 10.108: Telecoms renewal volumes – Wales

	2014/15 Target	2014/15 Actual
Station Information and Surveillance Systems		
Customer Information Systems	0	0
Public Address	0	14
CCTV	0	0
Clocks	0	0
Operational Comms		
PABX Concentrator	0	0
Processor Controlled Concentrator	0	0
Driver-Only Operation: CCTV	0	0
Driver-Only Operation: Mirrors	0	0
Public Emergency Telephone System	0	0
Human Machine Interface Large	0	0
Human Machine Interface Small	0	0
Radio System	0	0
Power Systems	0	0

Table 10.109: Telecoms renewal volumes – Wessex

	2014/15 Target	2014/15 Actual
Station Information and Surveillance Systems		
Customer Information Systems	0	0
Public Address	0	0
CCTV	0	0
Clocks	0	0
Operational Comms		
PABX Concentrator	0	0
Processor Controlled Concentrator	0	0
Driver-Only Operation: CCTV	0	0
Driver-Only Operation: Mirrors	0	0
Public Emergency Telephone System	0	0
Human Machine Interface Large	0	0
Human Machine Interface Small	0	0
Radio System	0	0
Power Systems	0	0

Table 10.110: Telecoms renewal volumes – Western

	2014/15 Target	2014/15 Actual
Station Information and Surveillance Systems		
Customer Information Systems	0	18
Public Address	382	16
CCTV	253	0
Clocks	0	0
Operational Comms		
PABX Concentrator	0	0
Processor Controlled Concentrator	0	14
Driver-Only Operation: CCTV	0	0
Driver-Only Operation: Mirrors	0	0
Public Emergency Telephone System	0	7
Human Machine Interface Large	0	0
Human Machine Interface Small	0	0
Radio System	0	0
Power Systems	0	7

Maintenance Volumes

CP5 maintenance volumes are covered in the following section, split by discipline in the following order; track, off track, electrical power, civils and buildings.

Track

Track maintenance volumes are assessed over 18 metrics.

- Plain Line Tamping
- Plain Line Stoneblowing
- Manual Wet Bed removal (bay)
- Mechanical Wet bed removal (bay)
- S&C Tamping (point end)
- Rail Changing - Al-Thermic Weld - Standard Gap (weld)
- Rail Changing - CWR - Renew (Defects) (rail yard)
- Mechanical Reprofiling of Ballast (Mile)
- Manual Reprofiling of Ballast (rail yard)
- Replace Pads and Insulators (sleeper)
- Manual Correction of PL Track Geometry (CWR) (track yard)
- Manual Correction of PL Track Geometry (Jointed) (track yard)
- S&C Renew Crossing (crossing)
- S&C Maintenance (point end)
- S&C Renew half set of Switches (H/S Switch)
- S&C Stoneblowing (point end)
- Rail grinding plain line (Mile)
- Rail grinding S&C (point end).

Commentary

Broadly, the 2014/15 Track maintenance programme has been delivered in line with our Delivery Plan. However, there are two key areas of under-delivery; Plain Line Stoneblowing (48 per cent) and Stoneblowing S&C (70 per cent).

Plain Line Stoneblowing has out-turned below target across all routes with the exception of Sussex, Wales and Western where targets have been exceeded by 15 per cent, 38 per cent and 19 per cent respectively. In the remaining routes, performance was below target by between 40 per cent and 75 per cent. Within Anglia (53 per cent under target), reduced activity has been the result of favourable good track geometry. Within LNW and Kent under-delivery has been the result of difficulties in correlating machine and access availability. This has led to work being delivered on a more targeted basis around prioritised sites. In LNE, plant availability has also been a constraint alongside the prioritisation of the High Output Ballast Cleaning programme.

At the end of 2014/15 S&C Stoneblowing was below target across every route except LNW. Kent, LNE, Scotland, Wales and Wessex have faced constrained resource around the availability of machinery. This has been the key limiting delivery factor in completing work of this nature. Work is on-going to support the future delivery of S&C heavy refurbishment and to re-prioritise the work bank.

Plain Line Tamping is nationally above target by three per cent with performance much stronger and closer aligned to plan across the board despite similar challenges around deliverability of baseline volume.

There has been significant over-delivery of Manual Reprofiling of Ballast by 78 per cent nationally. This is predominantly due to volumes in Anglia and LNW, which have been driven by additional hot weather preparatory works and the introduction of Plain Line Pattern Recognition. These increases have been off-set partially by reduced activity, most notably, in Kent due to current resource levels and, in LNE, due to a shift towards more mechanised treatment methods.

Manual Correction of Plain Line Track Geometry has also outperformed target by 88 per cent and 169 per cent respectively for Continuously Welded Rail and Joined corrections. The most significant out-performance across the two is largely a response to repeat intervention faults and level two faults, which have prompted additional targeted works on a reactive basis.

Off track

Off track maintenance volumes are assessed over seven metrics:

- Fences and Boundary Walls (yard)
- Drainage (yard)
- Level Crossing Management - Off Track (each)
- Vegetation Removal of Boundary Trees (no.)
- Vegetation Management by Train (mile)
- Vegetation Management (Manual) (sq. yard)
- Vegetation Management (Mechanised) (mile).

Commentary

Key off-track variations from our Delivery Plan relate to Fencing and Boundary Walls (27 per cent shortfall), Drainage (54 per cent shortfall from plan) and across vegetation management.. Achievements in overall vegetation activity are encouraging and all routes have been encouraged to keep up the momentum in this key area.

The national variance on Fencing is primarily driven by LNE and East Midlands where the CP5 renewals programme has been accelerated within the first three years of CP5, which has driven a reduced maintenance requirement versus plan.

The reduction in drainage activity is prevalent across a number of routes and, whilst traditional resource constraints and bad weather are cited in some instances, several routes (LNE, LNW and Western included) are now undertaking additional capital refurbishment works e.g. through the use of Drain Train technology. This improves track drainage through using a high-powered drain jetting and vacuum system. The Drain Train has also helps to raise sustainable line speeds, reduce delays and lower overall maintenance costs.

Vegetation management is an important part of the overall earthworks programme for CP5. Although there has been underdelivery in vegetation management by train, we have significantly overdelivered mechanised vegetation management, as there has been a substantive shift towards mechanised treatment.

Increased delivery of maintenance volumes has been offset by a reduction in refurbishment works due to flexes in the mix between the two across a number of routes which reflects deviations in work bank, scope and intervention approaches. Maintenance works for Rock Cuttings are below plan however works are above plan for both Embankments and Soil Cuttings. This is partly as a result of mitigation works undertaken to sustain priority assets in the interim until more substantive renewals and refurbishment activity can be re-planned.

Asset condition is being managed locally with individual routes tailoring their own recovery plans respectively to prioritise effectively and pragmatically.

Electrical Power

Electrical Power maintenance volumes are assessed over five metrics:

- Maintain Conductor Rail (Various)
- Maintain DC Traction Power Supplies (Each)
- Maintain Over Head Line (OHL) Components (Various)
- Maintain Points Heating (Each)
- Maintain Signalling Power supplies (No.).

Commentary

The overall picture presented in terms of Electrification and Plant maintenance performance is positive. Maintenance volumes have delivered above target for 2014/15. However, much of the over-performance is due to unplanned volumes of work arising and ad-hoc jobs that are constituents of the maintenance (MNT) composite measures. The maintenance measures are relatively new and the targets were assessed on a top down basis. The most notable being the maintenance of OHL Components (Various), where an additional 334,231 components have been delivered, outperforming by 175 per cent. The increased volume outturn in relation to OHL Components is as a result of reactive works as well as increased OHL and additional inspections across predominantly Anglia, LNE, Western and LNW. The Shortfall in East Midlands can be mainly attributed to resourcing constraints and affordability.

However, concerns remain over the increasing back log of OLE high level inspection, the lack of availability of dynamic monitoring measurements and the lack of resource provision in the routes to fulfil the signalling power maintenance.

Improvement Actions to address this include:

- deep dives initiated by the routes to improve asset register reporting processes and data quality.
- the Asset Management Maintenance Objectives (AMMO)/Route Asset Management Plan (RAMP) reporting initiatives are to be started in 2015/16 to address various issues.
- the Offering Rail Better Information Services (ORBIS) programme continues to deliver a number of workstreams aimed at improving Asset Information.

Nationally, Conductor Rail maintenance has achieved 56 per cent above target. The increased levels of Conductor Rail maintenance from a route perspective is predominantly driven by Kent who have doubled the level of activity, outperforming the target by 102 per cent. This is as a result of undertaking a significant amount of emerging works in addition the standard planned works. Furthermore, more accurate numbers are now being reported as a result of data cleansing within the Ellipse system. However, Kent has delivered shortfall in signalling power maintenance this year due to a shortage of available resource. An action plan has been developed as part of the Time Bound Action Plan on Signalling Power Supplies which has been provided to the ORR. Sussex has also experienced the same issues affecting delivery of signalling power supplies.

Delivery in Sussex regarding conductor rail and points heating has been affected by realising a flaw in the method of measurement, as it combines cyclical planned work activities and work arising in a single measure. Points heating can vary considerably from year to year, meaning that target volumes are at best a view on current asset condition and existing problems. The current variation is not a concern as it is within the thresholds expected for work arising. This has been reviewed at delivery unit level, where an action plan has now been produced to correct any errors.

There has been an under delivery of 80 per cent in Wessex for signalling power supplies This is due to an error in the preparation of the target volumes. The maintenance volume concerned only appears in one delivery unit and the maintenance work on the asset is carried out under a separate MST using a different MNT code so the volume with the discrepancy is a duplicated item. This duplicate work volume has been deactivated so as not to produce duplicate work orders in Ellipse, but was not removed from the plan hence leading to the reduction in volume delivered against the plan.

Civils

Civils maintenance volumes are assessed over seven metrics:

- Visual Examinations (Civils) (No.)
- Tunnel Examinations (No. minor elements)
- Detailed Examinations (No.)
- Underwater Examination (No.)
- Ancillary Structure examination (No. detailed)
- Hidden critical element examinations (No.)
- Load carrying assessment (No. spans).

Commentary

Across the seven volume metrics, other than the number of detailed ancillary structure examinations, the remaining six metrics have underdelivered against target. The negative deviations to plan are as a result of the delivery programme across many routes undergoing substantive flex due to CP4 assessment backlog and other transitional issues.

Network Rail's two primary controls for management of structures assets are examination and assessment. The examination regime comprises four types of examination; detailed examinations, visual examinations, hidden critical element examination and under water examination.

During the course of 2014/15, there has been under-delivery of all types of examinations for both England & Wales and Scotland, resulting in a level of non-compliance to management process. A number of factors have influenced this including, a transition to new examination contract that went live on 1 April 2014, in-year change to workbanks and misalignment of enabling works required to facilitate examination activity. Each operating route has developed a recovery plan, including streamlining of processes and resource review to bring about improvement in this area. Where examinations have not been completed to the required timescale, routes have undertaken risk assessment and implemented interim control measures where required.

During development of Network Rail's Delivery Plan, Network Rail planned to undertake new load carrying assessments for bridges on an 18 year cycle. It was also proposed to move towards a new operating model whereby existing load carrying assessments would be reviewed as part of Detailed Examinations using a new Decision Support Tool. Typically this would be on a six yearly cycle. The published volumes of load carrying assessments reflect both of these activities.

The underdelivery of load carrying assessments is primarily a result of phased uptake of the assessment reviews as part of Detailed Examinations. This is a result of limitations of the Decision Support Tools for certain structure types and delayed delivery of the new Structures Asset Management System, which is due to be rolled out in 2016. As these issues are addressed it is anticipated further uptake of the Decision Support Tool will be more widely adopted where appropriate.

In terms of completion of 'new' load carrying assessments on 18 year cycle, Network Rail completed the year broadly on target.

The number of Ancillary Structure Examinations has increased substantively throughout 2014/15, delivering 833 against the planned target of 788. This is as a result of greater clarity and better reporting alignment throughout 2014/15.

Buildings

Buildings maintenance volumes are assessed over two metrics:

- Visual Examinations Buildings (each)
- 5-yearly examinations (each)

Commentary

In 2014/15 we planned to undertake 14,133 visual examinations and 1,047 detailed examinations network-wide. During the year a total 12,454 visual examinations and 1,040 detailed examinations were completed representing 88 per cent completion for visual examinations and 99 per cent completion for five-yearly examinations nationwide.

In Scotland, a 32 per cent over performance to target in the number of visual examinations and a 44 percent over performance to target in the number 5-yearly examinations were identified in 2014/15. This was due to an increase in the volume of visual inspections of retaining walls. This only became apparent upon completion of the additional structures identification exercise. Scotland workbank has also been smoothed since the Delivery Plan resulting in more 5-yearly examinations being programmed and completed prior to their due date to avoid a large spike in numbers.

For England & Wales, a 16 per cent underdelivery of the visual examinations and a 22 per cent underdelivery for the 5-yearly examinations compared to the Delivery Plan have been reported.

The underdelivery examinations was due to delayed commencement of the CEFA surveys in 2014/15 and also the process for development of the in-house examination team within London North West route.

Of the outstanding visual examination assets, a large percentage (95 per cent) of all lineside buildings has now been visually inspected as part of the Asset Data Improvement Programme (ADIP). The phased process for updating this data onto the Operational Property Asset System (OPAS) is currently in progress. This will increase the visual survey compliance significantly.

In addition to this, a number of buildings asset in the Anglia route have also been transferred to the C2C TOC under a 99 year lease. The removal of Network Rail's responsibility to undertake the examination of these assets in Year 1 reflects the reduction in maintenance volume from final Delivery Plan. Anglia route maintenance volumes for Years 2-5 have been revised to reflect this.

Whist this reports presents a new measure introduced in CP5, it is expected that the accuracy and reporting process for the visual and 5-yearly inspections will be improved in Years 2-5.

Table 10.111: Maintenance volumes – network-wide

			2014/15 Target	2014/15 Actual
Track	Plain Line Tamping (km)	MNT004	6,623.00	6,804.68
	Plain Line Stoneblowing (km)	MNT005	3,485.00	1,808.75
	Manual Wet bed removal (bay)	MNT006	19,316.00	28,897.56
	Mechanical Wet bed remover (bay)	MNT012	10,458.00	13,968.00
	S&C Tamping (point end)	MNT007	4,546.00	4,835.52
	Rail Changing - AI-Thermic Weld - Standard Gap (weld)	MNT044	15,940.00	20,660.40
	Rail Changing - CWR - Renew (Defects) (rail yard)	MNT045	90,381.00	116,725.44
	Mechanical reprofiling of Ballast (Mile)	MNT017	2,903.00	5,623.50
	Manual reprofiling of Ballast (rail yard)	MNT020	1,668,566.00	2,965,103.34
	Replace Pads & Insulators (sleeper)	MNT029	467,838.00	595,523.51
	Manual Correction of PL Track Geometry (CWR) (track yard)	MNT036	1,163,289	2,187,243.13
	Manual Correction of PL Track Geometry (Jointed) (track yard)	MNT037	258,893	696,311.15
	S&C Renew Crossing (crossing)	MNT120	682.00	815.00
	S&C Maintenance (point end)	MNT122	434,251.00	562,149.14
	S&C Renew half set of Switches (H/S Switch)	MNT123	782.00	736.00
	S&C Stoneblowing (point end)	MNT124	891.00	271.37
	Rail grinding plain line (Mile)	MNT309	10,057.00	4,568.00
	Rail grinding S&C (point end)	MNT310	3,002.00	1,310.03
Off Track	Fences & Boundary Walls (yard)	MNT072	984,458.00	719,434.11
	Drainage (Yard)	MNT073	947,126.00	431,835.10
	LX Management - Off Track (Each)	MNT075	17,642.00	19,365.74
	Vegetation Removal of Boundary Trees (No.)	MNT081	41,441.00	48,740.70
	Vegetation Management by Train (Mile)	MNT082	9,143.00	2,272.34
	Vegetation Management Manual (Sq yard)	MNT170	4,483,211.00	7,162,792.29
	Vegetation Management Mechanised (Mile)	MNT171	2,276.00	19,030.35
Electrical Power	Maintain Conductor Rail (Various)	MNT206	47,641.00	74,259.00
	Maintain DC Traction Power Supplies (Each)	MNT209	33,773.00	50,670.55
	Maintain OHL Components (Various)	MNT211	191,345.00	525,576.36
	Maintain Points Heating (Each)	MNT212	132,792.00	163,791.77
	Maintain Signalling Power supplies (No.)	MNT213	39,319.00	43,446.08
Civils	Visual Examinations (Civils) (No.)	MNT226a	65,814.00	60,146.00
	Tunnel Examinations (No. minor elements)	MNT220	119,277.00	117,400.00
	Detailed Examinations (No.)	MNT221	11,038.00	9,001.00
	Underwater Examination (No.)	MNT222	1,661.00	1,490.00
	Ancillary Structure examination (No. detailed)	MNT223	788.00	833.00
	Hidden critical element examinations (No.)	MNT224	1,285.00	831.00
	Load carrying assessment (No. spans)	MNT225	12,377.00	6,886.00
Buildings	Visual examinations Buildings (each)	MNT226	14,133.00	8,143.00
	5 yearly examinations (each)	MNT227	1,047.00	935.00

Table 10.112: Maintenance volumes – England & Wales

			2014/15 Target	2014/15 Actual
Track	Plain Line Tamping (km)	MNT004	6,011.00	6,353.83
	Plain Line Stoneblowing (km)	MNT005	3,102.00	1,654.80
	Manual Wet bed removal (bay)	MNT006	17,318.00	27,590.51
	Mechanical Wet bed remover (bay)	MNT012	9,766.00	12,896.00
	S&C Tamping (point end)	MNT007	4,147.00	4,515.52
	Rail Changing - AI-Thermic Weld - Standard Gap (weld)	MNT044	13,258.00	19,130.40
	Rail Changing - CWR - Renew (Defects) (rail yard)	MNT045	78,676.00	106,985.44
	Mechanical reprofiling of Ballast (Mile)	MNT017	2,724.00	3,827.80
	Manual reprofiling of Ballast (rail yard)	MNT020	1,547,015.00	2,869,143.76
	Replace Pads & Insulators (sleeper)	MNT029	379,838.00	548,313.51
	Manual Correction of PL Track Geometry (CWR) (track yard)	MNT036	1,072,244.00	2,106,107.73
	Manual Correction of PL Track Geometry (Jointed) (track yard)	MNT037	213,893.00	595,427.69
	S&C Renew Crossing (crossing)	MNT120	607.00	745.00
	S&C Maintenance (point end)	MNT122	399,408.00	485,112.79
	S&C Renew half set of Switches (H/S Switch)	MNT123	703.00	710.00
	S&C Stoneblowing (point end)	MNT124	822.00	271.37
	Rail grinding plain line (Mile)	MNT309	8,801.00	4,497.00
	Rail grinding S&C (point end)	MNT310	2,786.00	1,098.03
Off Track	Fences & Boundary Walls (yard)	MNT072	794,702.00	606,591.53
	Drainage (Yard)	MNT073	795,220.00	361,878.24
	LX Management - Off Track (Each)	MNT075	14,793.00	17,202.07
	Vegetation Removal of Boundary Trees (No.)	MNT081	28,294.00	42,586.70
	Vegetation Management by Train (Mile)	MNT082	7,965.00	2,271.16
	Vegetation Management Manual (Sq yard)	MNT170	4,311,911.00	6,694,403.47
	Vegetation Management Mechanised (Mile)	MNT171	2,249.00	18,823.70
Electrical Power	Maintain Conductor Rail (Various)	MNT206	47,641.00	74,259.00
	Maintain DC Traction Power Supplies (Each)	MNT209	33,773.00	49,457.55
	Maintain OHL Components (Various)	MNT211	149,345.00	505,985.36
	Maintain Points Heating (Each)	MNT212	124,245.00	157,397.47
	Maintain Signalling Power supplies (No.)	MNT213	33,004.00	38,877.08
Civils	Visual Examinations (Civils) (No.)	MNT226a	54,400.00	49,611.00
	Tunnel Examinations (No. minor elements)	MNT220	110,193.00	108,567.00
	Detailed Examinations (No.)	MNT221	9,271.00	7,700.00
	Underwater Examination (No.)	MNT222	1,509.00	1,396.00
	Ancillary Structure examination (No. detailed)	MNT223	542.00	634.00
	Hidden critical element examinations (No.)	MNT224	1,088.00	739.00
	Load carrying assessment (No. spans)	MNT225	10,967.00	6,775.00
Buildings	Visual examinations Buildings (each)	MNT226	12,814.00	7,791.00
	5 yearly examinations (each)	MNT227	709.00	753.00

Table 10.113: Maintenance volumes – Scotland

			2014/15 Target	2014/15 Actual
Track	Plain Line Tamping (km)	MNT004	612.00	450.85
	Plain Line Stoneblowing (km)	MNT005	382.00	153.95
	Manual Wet bed removal (bay)	MNT006	1,998.00	1,307.05
	Mechanical Wet bed remover (bay)	MNT012	692.00	1,072.00
	S&C Tamping (point end)	MNT007	399.00	320.00
	Rail Changing - AI-Thermic Weld - Standard Gap (weld)	MNT044	2,682.00	1,530.00
	Rail Changing - CWR - Renew (Defects) (rail yard)	MNT045	11,705.00	9,740.00
	Mechanical reprofiling of Ballast (Mile)	MNT017	179.00	1,795.70
	Manual reprofiling of Ballast (rail yard)	MNT020	121,551.00	95,959.58
	Replace Pads & Insulators (sleeper)	MNT029	88,000.00	47,210.00
	Manual Correction of PL Track Geometry (CWR) (track yard)	MNT036	91,045.00	81,135.40
	Manual Correction of PL Track Geometry (Jointed) (track yard)	MNT037	45,000.00	100,883.46
	S&C Renew Crossing (crossing)	MNT120	76.00	70.00
	S&C Maintenance (point end)	MNT122	34,843.00	77,036.35
	S&C Renew half set of Switches (H/S Switch)	MNT123	79.00	26.00
	S&C Stoneblowing (point end)	MNT124	69.00	-
	Rail grinding plain line (Mile)	MNT309	1,256.00	71.00
	Rail grinding S&C (point end)	MNT310	216.00	212.00
Off Track	Fences & Boundary Walls (yard)	MNT072	189,756.00	112,842.58
	Drainage (Yard)	MNT073	151,906.00	69,956.86
	LX Management - Off Track (Each)	MNT075	2,849.00	2,163.67
	Vegetation Removal of Boundary Trees (No.)	MNT081	13,147.00	6,154.00
	Vegetation Management by Train (Mile)	MNT082	1,178.00	1.18
	Vegetation Management Manual (Sq yard)	MNT170	171,300.00	468,388.82
	Vegetation Management Mechanised (Mile)	MNT171	26.00	206.65
Electrical Power	Maintain Conductor Rail (Various)	MNT206	-	-
	Maintain DC Traction Power Supplies (Each)	MNT209	-	1,213.00
	Maintain OHL Components (Various)	MNT211	42,000.00	19,591.00
	Maintain Points Heating (Each)	MNT212	8,546.00	6,394.30
	Maintain Signalling Power supplies (No.)	MNT213	6,316.00	4,569.00
Civils	Visual Examinations (Civils) (No.)	MNT226a	11,414.00	10,535.00
	Tunnel Examinations (No. minor elements)	MNT220	9,084.00	8,833.00
	Detailed Examinations (No.)	MNT221	1,767.00	1,301.00
	Underwater Examination (No.)	MNT222	152.00	94.00
	Ancillary Structure examination (No. detailed)	MNT223	246.00	199.00
	Hidden critical element examinations (No.)	MNT224	197.00	92.0
	Load carrying assessment (No. spans)	MNT225	1,410.00	111.00
Buildings	Visual examinations Buildings (each)	MNT226	1,319.00	352.00
	5 yearly examinations (each)	MNT227	338.00	182.00

Table 10.114: Maintenance volumes – Anglia

			2014/15 Target	2014/15 Actual
Track	Plain Line Tamping (km)	MNT004	669.00	630.15
	Plain Line Stoneblowing (km)	MNT005	319.00	148.85
	Manual Wet bed removal (bay)	MNT006	582.00	2,325.50
	Mechanical Wet bed remover (bay)	MNT012	895.00	580.00
	S&C Tamping (point end)	MNT007	219.00	125.54
	Rail Changing - AI-Thermic Weld - Standard Gap (weld)	MNT044	755.00	2,211.30
	Rail Changing - CWR - Renew (Defects) (rail yard)	MNT045	3,988.00	11,363.33
	Mechanical reprofiling of Ballast (Mile)	MNT017	151.00	247.62
	Manual reprofiling of Ballast (rail yard)	MNT020	55,224.00	345,677.00
	Replace Pads & Insulators (sleeper)	MNT029	58,849.00	36,195.30
	Manual Correction of PL Track Geometry (CWR) (track yard)	MNT036	56,495.00	129,686.00
	Manual Correction of PL Track Geometry (Jointed) (track yard)	MNT037	18,682.00	29,033.11
	S&C Renew Crossing (crossing)	MNT120	30.00	52.00
	S&C Maintenance (point end)	MNT122	31,347.00	35,408.56
	S&C Renew half set of Switches (H/S Switch)	MNT123	39.00	49.00
	S&C Stoneblowing (point end)	MNT124	119.00	43.00
	Rail grinding plain line (Mile)	MNT309	849.00	-
	Rail grinding S&C (point end)	MNT310	415.00	-
Off Track	Fences & Boundary Walls (yard)	MNT072	23,393.00	35,402.40
	Drainage (Yard)	MNT073	145,084.00	50,144.20
	LX Management - Off Track (Each)	MNT075	1,118.00	3,753.00
	Vegetation Removal of Boundary Trees (No.)	MNT081	1,417.00	8,146.50
	Vegetation Management by Train (Mile)	MNT082	1,273.00	11.00
	Vegetation Management Manual (Sq yard)	MNT170	160,127.00	1,588,841.32
	Vegetation Management Mechanised (Mile)	MNT171	329.00	724.88
Electrical Power	Maintain Conductor Rail (Various)	MNT206	40.00	-
	Maintain DC Traction Power Supplies (Each)	MNT209	35.00	2,242.45
	Maintain OHL Components (Various)	MNT211	32,400.00	90,016.32
	Maintain Points Heating (Each)	MNT212	14,454.00	13,264.48
	Maintain Signalling Power supplies (No.)	MNT213	1,542.00	2,211.96
Civils	Visual Examinations (Civils) (No.)	MNT226a	3,461.00	3,963.00
	Tunnel Examinations (No. minor elements)	MNT220	1,641.00	1,418.00
	Detailed Examinations (No.)	MNT221	696.00	663.00
	Underwater Examination (No.)	MNT222	265.00	335.00
	Ancillary Structure examination (No. detailed)	MNT223	9.00	10.00
	Hidden critical element examinations (No.)	MNT224	76.00	56.00
	Load carrying assessment (No. spans)	MNT225	1,161.00	700.00
Buildings	Visual examinations Buildings (each)	MNT226	789.00	751.00
	5 yearly examinations (each)	MNT227	136.00	122.00

Table 10.115: Maintenance volumes – East Midlands

			2014/15 Target	2014/15 Actual
Track	Plain Line Tamping (km)	MNT004	425.00	360.53
	Plain Line Stoneblowing (km)	MNT005	215.00	91.28
	Manual Wet bed removal (bay)	MNT006	1,450.00	1,442.50
	Mechanical Wet bed remover (bay)	MNT012	650.00	321.00
	S&C Tamping (point end)	MNT007	230.00	150.90
	Rail Changing - AI-Thermic Weld - Standard Gap (weld)	MNT044	1,100.00	936.00
	Rail Changing - CWR - Renew (Defects) (rail yard)	MNT045	4,200.00	3,734.20
	Mechanical reprofiling of Ballast (Mile)	MNT017	300.00	115.57
	Manual reprofiling of Ballast (rail yard)	MNT020	110,000.00	127,942.40
	Replace Pads & Insulators (sleeper)	MNT029	15,000.00	22,574.00
	Manual Correction of PL Track Geometry (CWR) (track yard)	MNT036	88,875.00	120,325.95
	Manual Correction of PL Track Geometry (Jointed) (track yard)	MNT037	7,500.00	27,091.70
	S&C Renew Crossing (crossing)	MNT120	40.00	16.00
	S&C Maintenance (point end)	MNT122	25,000.00	18,004.82
	S&C Renew half set of Switches (H/S Switch)	MNT123	35.00	16.00
	S&C Stoneblowing (point end)	MNT124	80.00	21.37
	Rail grinding plain line (Mile)	MNT309	795.00	749.00
	Rail grinding S&C (point end)	MNT310	380.00	160.00
Off Track	Fences & Boundary Walls (yard)	MNT072	66,440.00	15,477.00
	Drainage (Yard)	MNT073	40,000.00	12,300.80
	LX Management - Off Track (Each)	MNT075	966.00	751.50
	Vegetation Removal of Boundary Trees (No.)	MNT081	500.00	1,005.00
	Vegetation Management by Train (Mile)	MNT082	1,500.00	-
	Vegetation Management Manual (Sq yard)	MNT170	176,000.00	236,326.65
	Vegetation Management Mechanised (Mile)	MNT171	160.00	251.27
Electrical Power	Maintain Conductor Rail (Various)	MNT206	-	2.00
	Maintain DC Traction Power Supplies (Each)	MNT209	-	110.00
	Maintain OHL Components (Various)	MNT211	5,708.00	2,746.55
	Maintain Points Heating (Each)	MNT212	8,670.00	8,876.00
	Maintain Signalling Power supplies (No.)	MNT213	1,542.00	1,257.02
Civils	Visual Examinations (Civils) (No.)	MNT226a	2,545.00	2,227.00
	Tunnel Examinations (No. minor elements)	MNT220	8,091.00	8,608.00
	Detailed Examinations (No.)	MNT221	397.00	324.00
	Underwater Examination (No.)	MNT222	102.00	46.00
	Ancillary Structure examination (No. detailed)	MNT223	76.00	37.00
	Hidden critical element examinations (No.)	MNT224	44.00	44.00
	Load carrying assessment (No. spans)	MNT225	550.00	550.00
Buildings	Visual examinations Buildings (each)	MNT226	879.00	879.00
	5 yearly examinations (each)	MNT227	24.00	26.00

Table 10.116: Maintenance volumes – Kent

			2014/15 Target	2014/15 Actual
Track	Plain Line Tamping (km)	MNT004	560.00	270.86
	Plain Line Stoneblowing (km)	MNT005	238.00	84.83
	Manual Wet bed removal (bay)	MNT006	856.00	1,572.00
	Mechanical Wet bed remover (bay)	MNT012	640.00	635.00
	S&C Tamping (point end)	MNT007	218.00	138.94
	Rail Changing - AI-Thermic Weld - Standard Gap (weld)	MNT044	1,610.00	1,281.00
	Rail Changing - CWR - Renew (Defects) (rail yard)	MNT045	7,515.00	6,569.00
	Mechanical reprofiling of Ballast (Mile)	MNT017	89.00	19.28
	Manual reprofiling of Ballast (rail yard)	MNT020	284,000.00	167,578.00
	Replace Pads & Insulators (sleeper)	MNT029	10,400.00	23,574.00
	Manual Correction of PL Track Geometry (CWR) (track yard)	MNT036	94,584.00	134,329.80
	Manual Correction of PL Track Geometry (Jointed) (track yard)	MNT037	5,600.00	4,161.50
	S&C Renew Crossing (crossing)	MNT120	70.00	66.00
	S&C Maintenance (point end)	MNT122	24,344.00	10,278.07
	S&C Renew half set of Switches (H/S Switch)	MNT123	67.00	54.00
	S&C Stoneblowing (point end)	MNT124	46.00	6.00
	Rail grinding plain line (Mile)	MNT309	518.00	333.00
	Rail grinding S&C (point end)	MNT310	180.00	147.00
Off Track	Fences & Boundary Walls (yard)	MNT072	24,449.00	19,955.30
	Drainage (Yard)	MNT073	27,046.00	13,734.80
	LX Management - Off Track (Each)	MNT075	730.00	586.30
	Vegetation Removal of Boundary Trees (No.)	MNT081	1,636.00	817.00
	Vegetation Management by Train (Mile)	MNT082	2,208.00	-
	Vegetation Management Manual (Sq yard)	MNT170	209,703.00	273,939.90
	Vegetation Management Mechanised (Mile)	MNT171	107.00	-
Electrical Power	Maintain Conductor Rail (Various)	MNT206	15,281.00	30,941.00
	Maintain DC Traction Power Supplies (Each)	MNT209	4,575.00	5,591.00
	Maintain OHL Components (Various)	MNT211	123.00	12.00
	Maintain Points Heating (Each)	MNT212	7,753.00	9,465.00
	Maintain Signalling Power supplies (No.)	MNT213	4,186.00	340.00
Civils	Visual Examinations (Civils) (No.)	MNT226a	4,808.00	4,603.00
	Tunnel Examinations (No. minor elements)	MNT220	11,250.00	10,631.00
	Detailed Examinations (No.)	MNT221	650.00	486.00
	Underwater Examination (No.)	MNT222	34.00	113.00
	Ancillary Structure examination (No. detailed)	MNT223	13.00	6.00
	Hidden critical element examinations (No.)	MNT224	142.00	53.00
	Load carrying assessment (No. spans)	MNT225	1,213.00	712.00
Buildings	Visual examinations Buildings (each)	MNT226	162.00	41.00
	5 yearly examinations (each)	MNT227	57.00	156.00

Table 10.117: Maintenance volumes – LNE

			2014/15 Target	2014/15 Actual
Track	Plain Line Tamping (km)	MNT004	1,280.00	991.10
	Plain Line Stoneblowing (km)	MNT005	909.00	246.73
	Manual Wet bed removal (bay)	MNT006	4,500.00	4,877.00
	Mechanical Wet bed remover (bay)	MNT012	2,500.00	3,096.00
	S&C Tamping (point end)	MNT007	870.00	689.00
	Rail Changing - AI-Thermic Weld - Standard Gap (weld)	MNT044	3,500.00	3,114.00
	Rail Changing - CWR - Renew (Defects) (rail yard)	MNT045	23,000.00	17,283.78
	Mechanical reprofiling of Ballast (Mile)	MNT017	444.00	624.24
	Manual reprofiling of Ballast (rail yard)	MNT020	300,000.00	197,433.33
	Replace Pads & Insulators (sleeper)	MNT029	47,359.00	118,133.11
	Manual Correction of PL Track Geometry (CWR) (track yard)	MNT036	250,000.00	342,163.50
	Manual Correction of PL Track Geometry (Jointed) (track yard)	MNT037	25,000.00	64,514.90
	S&C Renew Crossing (crossing)	MNT120	123.00	101.00
	S&C Maintenance (point end)	MNT122	75,000.00	49,319.88
	S&C Renew half set of Switches (H/S Switch)	MNT123	120.00	113.00
	S&C Stoneblowing (point end)	MNT124	50.00	-
	Rail grinding plain line (Mile)	MNT309	2,567.00	1,730.00
	Rail grinding S&C (point end)	MNT310	256.00	134.00
Off Track	Fences & Boundary Walls (yard)	MNT072	250,000.00	64,660.30
	Drainage (Yard)	MNT073	140,000.00	64,364.80
	LX Management - Off Track (Each)	MNT075	4,100.00	3,454.00
	Vegetation Removal of Boundary Trees (No.)	MNT081	1,500.00	1,130.00
	Vegetation Management by Train (Mile)	MNT082	50.00	6.10
	Vegetation Management Manual (Sq yard)	MNT170	800,000.00	602,244.50
	Vegetation Management Mechanised (Mile)	MNT171	369.00	399.16
Electrical Power	Maintain Conductor Rail (Various)	MNT206	50.00	5.00
	Maintain DC Traction Power Supplies (Each)	MNT209	-	1,122.00
	Maintain OHL Components (Various)	MNT211	45,300.00	68,568.78
	Maintain Points Heating (Each)	MNT212	29,500.00	29,498.00
	Maintain Signalling Power supplies (No.)	MNT213	6,500.00	4,348.00
Civils	Visual Examinations (Civils) (No.)	MNT226a	8,600.00	6,998.00
	Tunnel Examinations (No. minor elements)	MNT220	27,895.00	29,352.00
	Detailed Examinations (No.)	MNT221	1,335.00	1,551.00
	Underwater Examination (No.)	MNT222	174.00	40.00
	Ancillary Structure examination (No. detailed)	MNT223	61.00	56.00
	Hidden critical element examinations (No.)	MNT224	153.00	153.00
	Load carrying assessment (No. spans)	MNT225	1,727.00	1,727.00
Buildings	Visual examinations Buildings (each)	MNT226	3,537.00	3,536.00
	5 yearly examinations (each)	MNT227	93.00	96.00

Table 10.118: Maintenance volumes – LNW

			2014/15 Target	2014/15 Actual
Track	Plain Line Tamping (km)	MNT004	1,625.00	2,755.57
	Plain Line Stoneblowing (km)	MNT005	771.00	447.01
	Manual Wet bed removal (bay)	MNT006	5,023.00	7,670.00
	Mechanical Wet bed remover (bay)	MNT012	1,895.00	2,954.00
	S&C Tamping (point end)	MNT007	1,131.00	1,936.92
	Rail Changing - AI-Thermic Weld - Standard Gap (weld)	MNT044	2,042.00	6,207.00
	Rail Changing - CWR - Renew (Defects) (rail yard)	MNT045	13,553.00	28,055.72
	Mechanical reprofiling of Ballast (Mile)	MNT017	890.00	2,170.00
	Manual reprofiling of Ballast (rail yard)	MNT020	371,354.00	1,369,599.91
	Replace Pads & Insulators (sleeper)	MNT029	98,086.00	205,301.00
	Manual Correction of PL Track Geometry (CWR) (track yard)	MNT036	317,068.00	721,711.63
	Manual Correction of PL Track Geometry (Jointed) (track yard)	MNT037	-	256,478.93
	S&C Renew Crossing (crossing)	MNT120	178.00	296.00
	S&C Maintenance (point end)	MNT122	135,341.00	262,652.96
	S&C Renew half set of Switches (H/S Switch)	MNT123	225.00	181.00
	S&C Stoneblowing (point end)	MNT124	63.00	73.00
	Rail grinding plain line (Mile)	MNT309	2,374.00	-
	Rail grinding S&C (point end)	MNT310	257.00	-
Off Track	Fences & Boundary Walls (yard)	MNT072	202,038.00	253,869.00
	Drainage (Yard)	MNT073	182,138.00	104,889.24
	LX Management - Off Track (Each)	MNT075	2,348.00	4,292.00
	Vegetation Removal of Boundary Trees (No.)	MNT081	7,398.00	21,407.00
	Vegetation Management by Train (Mile)	MNT082	5.00	1,052.51
	Vegetation Management Manual (Sq yard)	MNT170	631,656.00	2,058,616.94
	Vegetation Management Mechanised (Mile)	MNT171	158.00	12,143.76
Electrical Power	Maintain Conductor Rail (Various)	MNT206	2,048.00	12,636.00
	Maintain DC Traction Power Supplies (Each)	MNT209	17,539.00	23,970.50
	Maintain OHL Components (Various)	MNT211	65,445.00	339,380.71
	Maintain Points Heating (Each)	MNT212	23,453.00	63,886.60
	Maintain Signalling Power supplies (No.)	MNT213	10,072.00	19,394.10
Civils	Visual Examinations (Civils) (No.)	MNT226a	13,042.00	13,130.00
	Tunnel Examinations (No. minor elements)	MNT220	31,111.00	27,714.00
	Detailed Examinations (No.)	MNT221	1,797.00	1,940.00
	Underwater Examination (No.)	MNT222	356.00	245.00
	Ancillary Structure examination (No. detailed)	MNT223	139.00	272.00
	Hidden critical element examinations (No.)	MNT224	304.00	283.00
	Load carrying assessment (No. spans)	MNT225	3,452.00	1,699.00
Buildings	Visual examinations Buildings (each)	MNT226	3,239.00	366.00
	5 yearly examinations (each)	MNT227	155.00	97.00

Table 10.119: Maintenance volumes – Sussex

			2014/15 Target	2014/15 Actual
Track	Plain Line Tamping (km)	MNT004	267.00	300.80
	Plain Line Stoneblowing (km)	MNT005	160.00	184.11
	Manual Wet bed removal (bay)	MNT006	180.00	1,379.00
	Mechanical Wet bed remover (bay)	MNT012	606.00	957.00
	S&C Tamping (point end)	MNT007	282.00	240.59
	Rail Changing - AI-Thermic Weld - Standard Gap (weld)	MNT044	759.00	1,712.00
	Rail Changing - CWR - Renew (Defects) (rail yard)	MNT045	5,295.00	9,944.00
	Mechanical reprofiling of Ballast (Mile)	MNT017	92.00	22.20
	Manual reprofiling of Ballast (rail yard)	MNT020	85,000.00	183,593.22
	Replace Pads & Insulators (sleeper)	MNT029	52,000.00	29,655.00
	Manual Correction of PL Track Geometry (CWR) (track yard)	MNT036	85,100.00	107,594.55
	Manual Correction of PL Track Geometry (Jointed) (track yard)	MNT037	2,000.00	2,977.15
	S&C Renew Crossing (crossing)	MNT120	38.00	48.00
	S&C Maintenance (point end)	MNT122	2,871.00	10,925.83
	S&C Renew half set of Switches (H/S Switch)	MNT123	40.00	106.00
	S&C Stoneblowing (point end)	MNT124	50.00	14.00
	Rail grinding plain line (Mile)	MNT309	266.00	310.00
	Rail grinding S&C (point end)	MNT310	168.00	136.00
Off Track	Fences & Boundary Walls (yard)	MNT072	33,091.00	25,366.58
	Drainage (Yard)	MNT073	20,000.00	32,708.00
	LX Management - Off Track (Each)	MNT075	749.00	1,174.00
	Vegetation Removal of Boundary Trees (No.)	MNT081	700.00	426.00
	Vegetation Management by Train (Mile)	MNT082	700.00	119.00
	Vegetation Management Manual (Sq yard)	MNT170	220,000.00	171,687.00
	Vegetation Management Mechanised (Mile)	MNT171	70.00	-
Electrical Power	Maintain Conductor Rail (Various)	MNT206	15,222.00	10,100.00
	Maintain DC Traction Power Supplies (Each)	MNT209	4,064.00	6,116.00
	Maintain OHL Components (Various)	MNT211	-	28.00
	Maintain Points Heating (Each)	MNT212	9,370.00	4,832.00
	Maintain Signalling Power supplies (No.)	MNT213	1,618.00	596.00
Civils	Visual Examinations (Civils) (No.)	MNT226a	1,710.00	2,523.00
	Tunnel Examinations (No. minor elements)	MNT220	6,088.00	5,824.00
	Detailed Examinations (No.)	MNT221	375.00	380.00
	Underwater Examination (No.)	MNT222	25.00	24.00
	Ancillary Structure examination (No. detailed)	MNT223	14.00	4.00
	Hidden critical element examinations (No.)	MNT224	34.00	31.00
	Load carrying assessment (No. spans)	MNT225	365.00	153.00
Buildings	Visual examinations Buildings (each)	MNT226	887.00	58.00
	5 yearly examinations (each)	MNT227	37.00	148.00

Table 10.120: Maintenance volumes – Wales

			2014/15 Target	2014/15 Actual
Track	Plain Line Tamping (km)	MNT004	130.00	152.42
	Plain Line Stoneblowing (km)	MNT005	127.00	175.61
	Manual Wet bed removal (bay)	MNT006	1,584.00	3,524.51
	Mechanical Wet bed remover (bay)	MNT012	-	553.00
	S&C Tamping (point end)	MNT007	265.00	184.00
	Rail Changing - AI-Thermic Weld - Standard Gap (weld)	MNT044	838.00	892.00
	Rail Changing - CWR - Renew (Defects) (rail yard)	MNT045	4,041.00	4,197.08
	Mechanical reprofiling of Ballast (Mile)	MNT017	179.00	143.24
	Manual reprofiling of Ballast (rail yard)	MNT020	59,039.00	102,670.90
	Replace Pads & Insulators (sleeper)	MNT029	18,144.00	18,303.10
	Manual Correction of PL Track Geometry (CWR) (track yard)	MNT036	25,540.00	83,830.55
	Manual Correction of PL Track Geometry (Jointed) (track yard)	MNT037	52,800.00	54,724.00
	S&C Renew Crossing (crossing)	MNT120	-	21.00
	S&C Maintenance (point end)	MNT122	37,793.00	36,099.98
	S&C Renew half set of Switches (H/S Switch)	MNT123	21.00	10.00
	S&C Stoneblowing (point end)	MNT124	116.00	12.00
	Rail grinding plain line (Mile)	MNT309	230.00	115.00
	Rail grinding S&C (point end)	MNT310	300.00	150.00
Off Track	Fences & Boundary Walls (yard)	MNT072	67,000.00	96,314.05
	Drainage (Yard)	MNT073	20,427.00	12,000.70
	LX Management - Off Track (Each)	MNT075	1,493.00	1,808.27
	Vegetation Removal of Boundary Trees (No.)	MNT081	2,000.00	3,558.20
	Vegetation Management by Train (Mile)	MNT082	-	80.70
	Vegetation Management Manual (Sq yard)	MNT170	336,010.00	300,003.50
	Vegetation Management Mechanised (Mile)	MNT171	751.00	353.16
Electrical Power	Maintain Conductor Rail (Various)	MNT206	-	-
	Maintain DC Traction Power Supplies (Each)	MNT209	-	-
	Maintain OHL Components (Various)	MNT211	-	2.00
	Maintain Points Heating (Each)	MNT212	-	7,610.00
	Maintain Signalling Power supplies (No.)	MNT213	-	2,456.00
Civils	Visual Examinations (Civils) (No.)	MNT226a	7,905.00	5,611.00
	Tunnel Examinations (No. minor elements)	MNT220	8,016.00	8,535.00
	Detailed Examinations (No.)	MNT221	1,862.00	815.00
	Underwater Examination (No.)	MNT222	235.00	164.00
	Ancillary Structure examination (No. detailed)	MNT223	20.00	49.00
	Hidden critical element examinations (No.)	MNT224	147.00	45.00
	Load carrying assessment (No. spans)	MNT225	915.00	310.00
Buildings	Visual examinations Buildings (each)	MNT226	345.00	169.00
	5 yearly examinations (each)	MNT227	65.00	23.00

Table 10.121: Maintenance volumes – Wessex

			2014/15 Target	2014/15 Actual
Track	Plain Line Tamping (km)	MNT004	753.00	399.00
	Plain Line Stoneblowing (km)	MNT005	168.00	44.00
	Manual Wet bed removal (bay)	MNT006	725.00	1,040.00
	Mechanical Wet bed remover (bay)	MNT012	1,430.00	2,294.00
	S&C Tamping (point end)	MNT007	396.00	430.00
	Rail Changing - AI-Thermic Weld - Standard Gap (weld)	MNT044	1,104.00	988.00
	Rail Changing - CWR - Renew (Defects) (rail yard)	MNT045	8,685.00	14,667.00
	Mechanical reprofiling of Ballast (Mile)	MNT017	253.00	175.00
	Manual reprofiling of Ballast (rail yard)	MNT020	127,000.00	144,993.00
	Replace Pads & Insulators (sleeper)	MNT029	80,000.00	24,742.00
	Manual Correction of PL Track Geometry (CWR) (track yard)	MNT036	79,982.00	274,606.00
	Manual Correction of PL Track Geometry (Jointed) (track yard)	MNT037	36,300.00	23,095.00
	S&C Renew Crossing (crossing)	MNT120	79.00	82.00
	S&C Maintenance (point end)	MNT122	25,312.00	18,127.00
	S&C Renew half set of Switches (H/S Switch)	MNT123	88.00	95.00
	S&C Stoneblowing (point end)	MNT124	120.00	27.00
	Rail grinding plain line (Mile)	MNT309	420.00	120.00
	Rail grinding S&C (point end)	MNT310	230.00	60.03
Off Track	Fences & Boundary Walls (yard)	MNT072	55,245.00	48,741.00
	Drainage (Yard)	MNT073	144,085.00	54,186.10
	LX Management - Off Track (Each)	MNT075	1,399.00	466.00
	Vegetation Removal of Boundary Trees (No.)	MNT081	9,888.00	4,728.00
	Vegetation Management by Train (Mile)	MNT082	2,204.00	1.85
	Vegetation Management Manual (Sq yard)	MNT170	361,388.00	872,906.00
	Vegetation Management Mechanised (Mile)	MNT171	47.00	4,272.06
Electrical Power	Maintain Conductor Rail (Various)	MNT206	15,000.00	20,573.00
	Maintain DC Traction Power Supplies (Each)	MNT209	7,560.00	8,712.85
	Maintain OHL Components (Various)	MNT211	-	111.00
	Maintain Points Heating (Each)	MNT212	13,205.00	11,580.39
	Maintain Signalling Power supplies (No.)	MNT213	1,199.00	233.00
Civils	Visual Examinations (Civils) (No.)	MNT226a	4,130.00	3,505.00
	Tunnel Examinations (No. minor elements)	MNT220	3,605.00	3,329.00
	Detailed Examinations (No.)	MNT221	614.00	444.00
	Underwater Examination (No.)	MNT222	85.00	238.00
	Ancillary Structure examination (No. detailed)	MNT223	3.00	9.00
	Hidden critical element examinations (No.)	MNT224	102.00	0.00
	Load carrying assessment (No. spans)	MNT225	729.00	729.00
Buildings	Visual examinations Buildings (each)	MNT226	1,173.00	177.00
	5 yearly examinations (each)	MNT227	74.00	49.00

Table 10.122: Maintenance volumes – Western

			2014/15 Target	2014/15 Actual
Track	Plain Line Tamping (km)	MNT004	402.00	493.40
	Plain Line Stoneblowing (km)	MNT005	196.00	232.38
	Manual Wet bed removal (bay)	MNT006	2,419.00	3,760.00
	Mechanical Wet bed remover (bay)	MNT012	1,150.00	1,506.00
	S&C Tamping (point end)	MNT007	536.00	619.63
	Rail Changing - AI-Thermic Weld - Standard Gap (weld)	MNT044	1,550.00	1,789.10
	Rail Changing - CWR - Renew (Defects) (rail yard)	MNT045	8,400.00	11,171.33
	Mechanical reprofiling of Ballast (Mile)	MNT017	325.00	310.65
	Manual reprofiling of Ballast (rail yard)	MNT020	155,398.00	229,656.00
	Replace Pads & Insulators (sleeper)	MNT029	-	69,836.00
	Manual Correction of PL Track Geometry (CWR) (track yard)	MNT036	74,600.00	191,859.75
	Manual Correction of PL Track Geometry (Jointed) (track yard)	MNT037	66,011.00	133,351.40
	S&C Renew Crossing (crossing)	MNT120	49.00	63.00
	S&C Maintenance (point end)	MNT122	42,400.00	44,295.69
	S&C Renew half set of Switches (H/S Switch)	MNT123	68.00	86.00
	S&C Stoneblowing (point end)	MNT124	178.00	75.00
	Rail grinding plain line (Mile)	MNT309	782.00	1,140.00
	Rail grinding S&C (point end)	MNT310	600.00	311.00
Off Track	Fences & Boundary Walls (yard)	MNT072	73,046.00	46,805.90
	Drainage (Yard)	MNT073	76,440.00	17,549.60
	LX Management - Off Track (Each)	MNT075	1,889.00	917.00
	Vegetation Removal of Boundary Trees (No.)	MNT081	3,255.00	1,369.00
	Vegetation Management by Train (Mile)	MNT082	25.00	1,000.00
	Vegetation Management Manual (Sq yard)	MNT170	1,417,027.00	589,837.66
	Vegetation Management Mechanised (Mile)	MNT171	258.00	679.41
Electrical Power	Maintain Conductor Rail (Various)	MNT206	-	2.00
	Maintain DC Traction Power Supplies (Each)	MNT209	-	636.75
	Maintain OHL Components (Various)	MNT211	369.00	5,120.00
	Maintain Points Heating (Each)	MNT212	17,840.00	8,385.00
	Maintain Signalling Power supplies (No.)	MNT213	6,344.00	8,041.00
Civils	Visual Examinations (Civils) (No.)	MNT226a	8,199.00	7,051.00
	Tunnel Examinations (No. minor elements)	MNT220	12,496.00	13,156.00
	Detailed Examinations (No.)	MNT221	1,545.00	1,097.00
	Underwater Examination (No.)	MNT222	233.00	191.00
	Ancillary Structure examination (No. detailed)	MNT223	207.00	191.00
	Hidden critical element examinations (No.)	MNT224	89.00	74.00
	Load carrying assessment (No. spans)	MNT225	855.00	195.00
Buildings	Visual examinations Buildings (each)	MNT226	1,803.00	1,814.00
	5 yearly examinations (each)	MNT227	68.00	36.00

Section 11 – Enhancements

Introduction and summary of progress in the year

In 2014/15, Network Rail delivered £3.4 billion of work on projects to upgrade the railway across England & Wales and Scotland. Substantial progress was made on major projects such as Crossrail and Thameslink, as well as many hundreds of other smaller projects, all of which will ultimately make a difference to the people and businesses that rely on the railway every single day with more seats, faster journeys, or better connections. This document provides some sense of the scale of our capital programme, and the progress we made during the year.

Highlights of 2014/15 include:

- completion of all key project outputs as part of the Reading Station redevelopment, which delivered major improvements to the capacity and capability of this historic bottleneck, as well as driving better punctuality for passengers
- operational use of four new platforms at London Bridge and the completion of signalling works as part of the Thameslink Programme
- delivery of key project milestones on Crossrail including bringing the Stockley flyover into use
- a modernised station delivered at Edinburgh Haymarket
- completion of the Phase 2 electrification works of our North of England Programme.

Delivering a capital programme of this size and scale is an extremely significant undertaking. We agreed 84 milestones for 2014/15 with the ORR. Of these, we failed to meet the scheduled completion of 30, though these included some relatively minor delays which will have little overall impact on delivery of the relevant projects. The ORR is investigating whether Network Rail is doing everything reasonably practicable to meet its obligations in relation to its regulated outputs for CP5. Following an announcement by the Secretary of State for Transport on 25 June 2015, some of our enhancement projects will be paused while a full affordability review is carried out through the summer.

In addition, we remain acutely conscious of the impact on passengers when we do not get it right. Overruns at King's Cross and Paddington over Christmas were followed by disruption at London Bridge which, while not wholly caused by the continuing development at the station, was heightened in intensity as a result of the programme. We are working to minimise disruption. The situation at London Bridge has improved, though it continues to be an issue of the highest focus for us; and we successfully applied the lessons of Christmas to our work over Easter and the May Bank Holidays, when there were no significant hand back issues and passengers were able to travel without disruption.

Guide to Railways Investment Projects (GRIP)

Within this section we frequently refer to GRIP. GRIP describes how Network Rail manages and controls projects that enhance or renew the national rail network. There are eight stages in the GRIP lifecycle reflecting significant business and technical milestones within investments as follows:

- **GRIP 1 – output definition** – this stage follows the project's validation and securing the authority to initiate. This stage is about identifying what the outputs of the project will be and how they may be achieved
- **GRIP 2 – pre-feasibility** – this stage follows the formal appointment of a project manager and addresses the detailed strategy of how to deliver the project outputs
- **GRIP 3 – option selection** – this stage examines the different engineering options available for delivering the project and selects a single option to be developed
- **GRIP 4 – single option development** – this stage follows the selection of a single design / engineering option, develops it at a high level and initiates the tendering process to procure suppliers
- **GRIP 5 – detailed design** – this stage awards contracts and develops a detailed design and implementation plan
- **GRIP 6 – constructing, testing and commissioning** – this stage focusses in the physical work associated with delivering a project, and ends with completion / commissioning
- **GRIP 7 – scheme hand back** – this stage follows commission and concerns handing back the asset to the asset owner, operator or maintainer
- **GRIP 8 – project closeout** – this stage follows the successful commissioning / completion of all work packages to meet the client's requirements and the project's success criteria. It covers a controlled closeout, which is achieved by updating, finalising and archiving all project documentation and capturing the lessons learned.

CP5 Enhancements Delivery Plan

The CP5 Enhancements Delivery Plan sets out the outputs, scope and milestones that we are committed to deliver in CP5. It has an entry for every project and ring-fenced fund funded through CP5 and includes details of any agreed changes. It provides visibility of our plans to customers and funders and enables us to be held to account for delivery of our plans. The most recent CP5 Enhancements Delivery Plan can be found here:

http://www.networkrail.co.uk/publications/delivery-plans/control-period-5/cp5-delivery-plan/

Summary

England and Wales
Ring-fenced funds Level Crossing Risk Reduction Fund, National Stations Improvement Programme (NSIP), Access for All (AfA), East Coast Connectivity Fund, CP6 Development Fund, Network Rail Discretionary Fund (NRDF), Strategic Freight Network (SFN), Passenger Journey Improvement Fund (PJIF), High Speed 2, Innovation Fund
Funding allowances Research and development matched funding, Depots and Stabling, ETCS in-cab fitment and infrastructure, ERTMS infrastructure
Non-periodic review funds New Stations Fund, CP4 Station Commercial Project Facility (SCPF), LSE Weather Resilience Fund
Cross route projects Crossrail, Reading station area redevelopment, East West Rail, Thameslink Programme, Northern Hub, Mobile maintenance system, Acton (Great Western Main Line) to Willesden (WCML) electrification, Station security, FTN/GSM-R inclusion of freight-only branch lines
The Electric Spine Midland Main Line electrification, Derby station area remodelling, Electric Spine Development Programme
Anglia Ely North Junction capacity improvement, Anglia traction power supply upgrade, West Anglia main line capacity increase, Great Eastern Main Line capacity improvement (Bow Junction), Gospel Oak to Barking electrification
Kent Kent traction power supply upgrade, Route 1 – power supply enhancements, East Kent resignalling phase 2:enhancements, New Cross Grid, Gravesend train lengthening
Sussex Sussex traction power supply upgrade, Redhill additional platform, Uckfield line train lengthening, London Victoria station capacity improvements, Balcombe to Copyhold bi-directional signalling upgrade
Wessex Waterloo, South London HV Grid (Wimbledon) upgrade, Reading, Ascot to London Waterloo train lengthening, Wessex traction power supply upgrade, ten-car south west suburban railway, Wessex ASDO, DC regeneration, Route 3 - power supply enhancements
Western Great Western electrification, South-West mainline electrification, Intercity Express Programme: Western capability, Intercity Express Programme: specific GWML capacity schemes, Thames Valley branch lines electrification, Thames Valley electric multiple unit capability works, Western rail access to Heathrow, Oxford corridor capacity improvements, Dr Days Junction to Filton Abbey Wood capacity improvements, Bristol Temple Meads station capacity, West of England diesel multiple unit capability works, Swindon to Kemble redoubling (non-periodic review), Westerleigh Junction to Barnt Green linespeed increase
Wales Welsh Valley Lines electrification, Barry – Cardiff Queen Street corridor
London North East Northern Programme (Yorkshire), Intercity Express Programme: East Coast capability, Intercity Express Programme: East Coast power supply upgrade, LNE routes traction power supply upgrade, Stevenage and Gordon Hill turnbacks, Capacity relief to the ECML (GN/GE joint line), North Doncaster chord, Tram Train pilot, ECML Overhead Line Electrification
East Midlands MML long distance high speed services train lengthening, St Pancras to Sheffield linespeed improvements
London North West Stafford area improvement, West Coast power supply upgrade, Birmingham New Street Gateway, Walsall-Rugeley Trent Valley electrification, Chiltern Main Line train lengthening, NW train lengthening, Bromsgrove electrification, Redditch branch enhancement

Scotland
Funds to deliver specific outcomes Scottish Stations Fund, Scottish Strategic Rail Freight Investment Fund, Scottish Network Improvement Fund, Future Network Development Fund, Scotland Level Crossings Fund
Committed projects EGIP Electrification of Springburn to Cumbernauld, EGIP: Initial Phase Key Output 1, EGIP: Initial Phase Key Outputs 2, 3 & 4, EGIP – Edinburgh Gateway intermodal transport interchange (advance works), EGIP: Haymarket station capacity project, Borders Railway
Other Scottish projects 2013 advance route clearance programme (other routes), Rolling programme of electrification, Aberdeen to Inverness improvements phase 1, Highland Main Line journey time improvements phase 2, Motherwell area stabling, Motherwell resignalling enhancements, ECML (North) – WCML (Carstairs) gauge enhancement, Rutherglen and Coatbridge (R&C) electrification

England and Wales

F001 Level crossings Risk Reduction Fund

Objective

The objective of the Level Crossing Risk Reduction Programme (LCRRP) is to reduce the risk of accidents at level crossings.

Crossing closures form the most permanent and effective means of reducing level crossing risk. As such, 255 crossings that offer excellent risk reduction opportunities through closure have been accepted into scope. The closures programme will deliver feasibility studies and liabilities negotiations with the aim of achieving the crossings' legal closure by March 2017.

Progress in 2014/15

During 2014/15, the LCRRP successfully achieved permanent closure of 24 level crossings, out of a total of 118 closed in 2014/15 by Network Rail. A further 17 crossings were temporarily closed, minimising risk at the crossings whilst permanent closure solutions are developed. Subject to the favourable outcome of feasibility studies and liabilities negotiations, 84 crossings are targeted for closure as part of the LCRRP in 2015/16.

To supplement the programme of level crossing closures, during 2015/16 we will create a number of level crossing enhancement projects within the LCRRP. These will include the development, product approval and rollout of Covtec and VaMoS, (two systems that warn users of approaching trains at passive crossings), together with the delivery of additional Red Light Safety Equipment (RLSE), Ebigate and Power Operated Gate Openers installations.

F002a Stations – National Stations Improvement Programme (NSIP)

Objective

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

This objective is underpinned by the NSIP programme which sets out to achieve a noticeable improvement to the passenger perception of stations by focusing on high footfall, low passenger satisfaction stations. A wider aim of the programme is to develop a more effective, coordinated approach for the planning and delivery of activities at stations by all stakeholders, thereby improving efficiency and value for money in station investments.

Progress in 2014/15

The first schemes have been completed at Baglan, Britton Ferry, Llansamlet, and Skewen in Wales. These works consisted of the installation of new waiting shelters.

Table 11.1: Completed NSIP schemes

Completed schemes
Baglan Bay, Britton Ferry, Llansamlet, Skewen

Table 11.2: NSIP schemes under development

Schemes under development
Longbridge, Beaconsfield, Blackburn, Twickenham, Shrewsbury, Ainsdale, Bebington, Green Lane, Hall Road, James Street, Waterloo, West Kirby, Durham, Bristol Parkway, Cheltenham Spa, Dawlish Didcot Parkway, Exmouth, St Erth, Swindon, Taunton, Farnborough, Deansgate, St Helens Junction, Whitton, Durham, Doncaster, Newark Northgate, Grantham, Broadbottom, Castleton, Eccles, Ascot, Fleet, Portsmouth & Southsea station, Bradford Interchange, Beverley, Harrogate, Huddersfield, Lewisham, Woolwich Arsenal, Snodland, West Malling, Ramsgate, Leatherhead, Eastbourne, Bognor Regis, Three Bridges, Southampton Central, Leamington Spa, Lincoln, Newark Castle, Fleet, Portsmouth Harbour, Putney, Meadowhall, Conisbrough, Adwick, Congleton, Hatfield Forecourt, Letchworth Garden City, Long Eaton, Virginia Water, Hinchley Wood, Bournemouth, Rose Grove, Enfield Chase, Knebworth, Birchwood, Manchester Piccadilly, Manchester Airport, Wickford, Bishops Stortford, Broxbourne, Ipswich, Norwich, Colchester, Chelmsford, Bushey, Carpenders Park, Hatch End, Headstone Lane, Kilburn High Road, Watford High Street, Charlbury, Newbury, Langley, Westbury Kingham, Marlow, Bourne End, Cookham, Hungerford, Newbury Racecourse, Culham, Parsons Street, Bedminster, Keynsham, Dorking, Deepdene, Bath Spa, Taplow, Tilehurst, Kemble, Goring & Streatley, Romsey, Iver, Bedwyn, Stroud, Trowbridge, Swindon, Stratford upon Avon, Alfreton, St Albans, Llanelli, Bridgend, Neath, Bushey, Herne Hill, Arundel, Chatham, Chesterfield, Coventry, Flitwick, Gainsborough, Lea Road, Horsham, Chichester, Amberley, Kettering, Kidsgrove, Luton, ATOC Customer Information Strategy, Pulborough, Strood, Sutton, Three Bridges, Torre, Torbay, Exeter St Thomas, Tulse Hill, University (Birmingham).

F002b Stations – Access for All (AfA)

Objective

The DfT Access for All Programme Consultation (Spring 2005) targeted a five per cent (125 stations) increase in accessible stations across the network by March 2015. In March 2014 Network Rail's projected output suggested six per cent (151 stations) of the network will be made accessible as a result of the programme. The CP5 Programme from 2015 - 2019 is an extension to this.

Station-specific outputs

The main output from this programme is, for each station in scope, to achieve an unobstructed and obstacle free 'accessible route' within Network Rail controlled infrastructure, from at least one station entrance (usually the main one) and all drop-off points associated with that entrance, to each platform and between platforms served by passenger trains.

An accessible route is defined as:

- meeting all applicable areas of 'Accessible Train and Station Design for Disabled People Code of Practice' technical standards, except where dispensations have been agreed
- a distance, ideally not exceeding 400 metres, from station entrance (or drop off point if further) to the appropriate point of entry / exit of trains at platforms
- a route for a manually self-propelled wheelchair user to negotiate.

Scope of works

The specific infrastructure required to achieve the output is determined on a station by station basis. In the majority of cases the scope will be the provision of lifts or ramps to an existing, or new, footbridge / subway. In addition to new works, existing infrastructure on the accessible route will, as far as is practical, be upgraded to comply with the DfT's 'Accessible Train Station Design for Disabled People: A Code of Practice'. Examples of such upgrades include provision of colour contrasting compliant handrails to existing stairs; non slip surfacing to footbridges / stairs; and extended Customer Information System (CIS) and CCTV coverage on the accessible route.

Progress in 2014/15

Table 11.3: AfA Main Programme – completion April 2014 – March 2015 (funded from CP4)

England and Wales
Berkhamstead, Brockenhurst, Brockley, Billericay, Elstree & Borehamwood, Fleet, Hemel Hampstead, Hereford, Hitchin, Honor Oak Park, Leighton Buzzard, Letchworth Garden City, New Cross, New Eltham, New Malden, Putney, Strood

Scotland additional schemes – completion September 2014
Dunblane

Table 11.4: AfA Mid-Tier schemes – completion April 2014 – March 2015

Schemes planned for delivery by March 2015
Acocks Green, Bearstead, Bexleyheath, Blackhorse Road (only to design stage), Chirk, Edmonton Green, Keynsham, Paddock Wood, South Tottenham, St Austell, Stratford upon Avon, Theale (only to design stage)

F003 East Coast Connectivity

Objective

The objective of this scheme is to improve capacity and reduce journey times on the East Coast Main Line, including suitable efficient capacity for the crossing flows of passenger and freight traffic at Peterborough.

Progress in 2014/15

The candidate schemes that have been approved for draw down of funds by the East Coast Programmes Board are shown below (current GRIP stage shown in brackets).

- funding contribution to King's Cross Track Remodelling (GRIP 2)
- Woodwalton to Huntingdon four tracking (GRIP 2)
- Peterborough – upgrade the Down slow line between Fletton to Peterborough (GRIP 3)
- Peterborough – grade separated access to the GN/GE line at Werrington (GRIP 3)
- Doncaster – east side enhancements (GRIP 3)
- Doncaster – additional platform (GRIP 3)
- York – station north throat enhancements (GRIP 2)
- Northallerton to Newcastle – additional freight loops (GRIP 3).

The withdrawal of the Peterborough station layout enhancements scheme from the East Coast Connectivity fund was approved by East Coast Programmes Board following confirmation that, based on the latest version of the indicative train service, the scheme is a low priority and represents low value for money.

The Doncaster enhancement scheme achieved GRIP 3 completion in June 2015 for the additional platform and is on schedule to complete GRIP 3 by August 2015 for east side enhancements.

The total value drawn down from the East Connectivity fund for the candidate schemes is currently above the funds available. Opportunities to close this gap will be investigated and further prioritisation of schemes at the end of GRIP 3 may be necessary.

F004 CP6 Development Fund

Objective

The fund will be used to:

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

Progress in 2014/15

The main work carried out in 2014/15 has been the option development work stream required for the Route Studies and other strategies as part of the Long Term Planning Process. In addition, we have authorised the first phase of development work on the Brighton Main Line Programme and the Western Capacity Programme. A complete programme of work to draw down from the fund is in development and we expect to authorise a number of high priority schemes in the early part of 2015/16.

F005 Network Rail Discretionary Fund (NRDF)

Objective

The fund is a mechanism for supporting small schemes for which funding is not available elsewhere and that have a positive whole-industry business case. It is primarily aimed at schemes that will result in an increase in the capacity or capability of the network. The budget holder will approve the use of funds and authorisation will be made at the appropriate investment panel as set out in Network Rail's Investment Regulations.

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

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

The net cost of the scheme (i.e. the amount that will be drawn down from the NRDF) must not exceed £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 to ensure the draw down on the NRDF is within this limit.

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

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

It is expected that eligible schemes will exploit opportunities incremental to asset renewals or other works. All schemes taken forward for implementation are subject to a value for money (VfM) assessment including the economic case.

Progress in 2014/15

In 2014/15, funding was designated to over twenty schemes. The most significant funding expenditures went to the following projects:

- West London Line train lengthening
- London Overground Capacity Improvement Programme (LOCIP)
- Independently Powered Electric Mutilple Unit (IPEMU)
- accelerated Waterloo International Terminal (WIT) platform reopening
- Hackney Junction
- Hereford Station Junction enhancement
- On-train metering (OTM)
- Fenchurch Street congestion relief
- Tattenham Corner, Redhill sidings and Dorking points machines
- Birmingham New Street area re-signalling
- Wolverhampton Power Signal Box (PSB) resignalling

F006 Strategic Freight Network (SFN)

Objective

This fund will deliver improvements identified by the industry to continue rail freight expansion in England and Wales whilst stimulating wider economic growth and environmental benefits.

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

Peak Forest and Hope Valley to London and the South East Train Lengthening

Current Project Stage: GRIP 6

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

The remaining scope to be delivered in CP5 comprises:

- Sundon Loop – A new Up Loop between Bedford and Luton on the Midland Main Line enabling freight trains to be regulated amongst slow line passenger services.

Progress in 2014/15

In 2014/15, the following was delivered:

- the sets of points at either end of the loop were installed in December 2014
- the initial delay to the scheme that occurred in CP4, was due to issues establishing network change
- signalling commissioning has been delayed due to the implementation of lessons learnt from the King's Cross overrun. Signalling commissioning is now scheduled for August 2015.

Table 11.5: Milestones for ID F006: Peak Forest London Train Lengthening

Activity/Output	Date	Date Met / Expected
GRIP 6 Completion (infrastructure taken into use)	November 2014	August 2015

Ipswich Yard (Felixstowe to Nuneaton via London Train Lengthening)

Current Project Stage: Project Complete

The project delivers infrastructure interventions to enable the operation of 662 metre long intermodal trains between Felixstowe Port and Nuneaton via London.

The scope and outputs of the project have been confirmed as modifications to the layout of Ipswich Yard.

Progress in 2014/15

During delivery, it was discovered that increased complexity with the signalling system required additional project works, resulting in an extension to the previous delivery milestone.

Infrastructure was taken into use in November 2014.

Table 11.6: Milestones for ID F006: Ipswich Yard (Felixstowe via London Train Lengthening)

Activity/Output	Date	Date Met / Expected
GRIP 6 Completion (infrastructure taken into use)	August 2014	November 2014

Southampton to West Coast Main Line Freight Train Lengthening

Current Project Stage: GRIP 4-8

Objective

This project will deliver an increase in freight train lengths up to 775 metres for intermodal services from the Port of Southampton to the West Midlands and West Coast Main Line.

The remaining scope to be delivered in CP5 is:

- Southampton Western Docks: Extend Up/Down docks branch
- Southampton Maritime – Redbridge: Extend depot reception sidings
- Eastleigh: Provide 775 metre Up Loop
- Fenny Compton: Increase speed of entry / exit to 40mph
- Hatton: Increase of loop entry
- Milverton: Re-site signal.

Progress in 2014/15

Southampton Western Docks/Southampton Maritime – Redbridge: The project is nearing completion of GRIP 4. The project team is undertaking a design and implementation resource review for modifications to track layout and, in particular, the computer based signal interlocking. Negotiations are progressing with Southampton City Council regarding land acquisition and planning application.

Eastleigh – Site works have completed, however at commissioning a number of data issues were discovered within the existing interlocking. This will require either further software optimisation or a hardware upgrade. Work is continuing to identify the preferred solution.

Fenny Compton – Completion has moved to July 2016, re-planned to align with Banbury and avoid work in the Sheffield area

Hatton – due to track geometry it has not proved possible to achieve the remitted 40mph linespeed increase. The project team is therefore proceeding with a lower linespeed increase to 25mph.

Milverton – Delivery may be delayed due to the interface with the Coventry – Leamington works. The project team is currently investigating.

Milestones

Completion of the project is to be confirmed following SFN Steering Group CP5 funding and confirmation of design and delivery resources

Table 11.7: Milestones for ID F006: Peak Forest London Train Lengthening

Activity/Output	Date	Date Met / Expected
GRIP 6 Completion (Infrastructure taken into use)	January 2016	Will be missed*

Notes: Revised milestone to be confirmed in the September 2015 Enhancements Delivery Plan update

F007 Passenger Journey Improvement Fund (PJIF)

Current Project Stage: Various

Objective

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

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

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

Progress in 2014/15

We have agreed with the DfT that the fund should be used, primarily, to enhance franchise value on three key corridors – London to Norwich, Midland Main Line and Manchester to York - by delivering material journey time reductions on these routes. Some early development work in relation to these schemes is already underway.

We are also undertaking analysis to underpin the case for retaining a portion of the funds available for carrying out smaller journey time improvement schemes on other routes.

F008 High Speed 2

Objective

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

Activities in support of these goals include clienting, sponsorship and management of the design, delivery, integration and operation of HS2 interfaces with Network Rail.

This is separate to the Third Party funding for HS2 enabling works on the existing rail network.

Scope of works

This fund covers Network Rail's Clienting and Sponsorship to HS2 Ltd and the DfT in the development and delivery of the HS2 Project, particularly at the interfaces and the integration of HS2 with the existing rail network. These roles take the form of client management, stakeholder engagement, project development, timetable development, design feedback, facilitation of access by HS2 Ltd to the existing rail network, protection of assets on the existing rail network and the development and design of On Network Works (aligned to the Protective Provisions Agreement).

Progress in 2014/15

Phase 1 - Euston

- collaborative and constructive liaison with HS2 Ltd on the hybrid Bill, including the proposed design, construction phasing and operational impacts on the 'classic' railway of the HS2 works at Euston station
- review and feedback on the proposed amendments to the hybrid Bill, Additional Provision 2 (AP2)
- development and leadership of the Euston Masterplan project to undertake option selection to achieve a compelling vision for Euston station and consideration of the wider Euston area, including potential over site development opportunities (aligned to the Euston Options Agreement)
- leading the AP2 cost and programme challenge to establish a preferred option for Euston station
- following the Government decision to remove the Euston elements from AP2, collaborative and constructive liaison with the Joint Euston Team (DfT, HS2 Ltd and Network Rail) established by the DfT to identify the way forward for the proposed design, construction phasing and impacts on the 'classic' railway of the HS2 works at Euston station
- leadership of the extensive industry liaison required to develop the plans for Euston
- development of the future timetable to maintain the current level of train service whilst delivering Euston and facilitating extensive operational analysis to understand the resultant impact on performance
- development of a programme of work to consider the redevelopment of the 'classic' rail elements of Euston station.

Phase 1 – Old Oak Common and other Phase 1 interfaces

- timetable analysis to support HS2 Ltd develop its excavated material movement strategy
- reviewed the existing infrastructure of the West Coast Main Line (WCML) and identified what potential interventions are required to support HS2 trains running on the WCML to Glasgow
- supported HS2 Ltd with the development of the WCML to Crossrail link proposal
- developed a number of layout and construction staging scenarios in conjunction with HS2 Ltd regarding the HS2 interface with the East West Rail project at Calvert
- supported HS2 Ltd with a study to identify broad options for High Speed and upgraded railways to the North Of England and Scotland
- supported TfL with the development of their proposal for a new London Overground station at Old Oak Common to promote an integrated transport solution at Old Oak Common
- engaged with the Greater London Authority (GLA) and other stakeholders to support the wider regeneration proposals for Old Oak Common
- led the development of an integrated design and construction programme for all proposed works at Old Oak Common
- supported and advised First Great Western (FGW), the DfT and HS2 Ltd with regards to the options around how FGW will vacate their depot at Old Oak Common
- in conjunction with our TOCs and FOCs, led Network Rail's involvement in the HS1 to HS2 link proposal.

Phase 2

The Phase 2 team has supported HS2 Ltd, local authorities and the DfT in developing exciting new opportunities to build on full HS2 Y route and provide benefits integrated with the existing and expanded network. Two major projects, Crewe and TransNorth, have been developed that will build on the wider benefits of HS2 and transform how our main lines and major stations work. Crewe and TransNorth were presented as core recommendations of Sir David Higgins' aspirations for the way in which transport, and in particular rail, could support the rebalancing of the British economy in his report 'Rebalancing Britain; from HS2 towards a national transport strategy'. Subsequently both of these projects are being funded for further development directly by the DfT.

The HS2 Phase 2 route continues to evolve and the team has supported the development of the route using our expertise to consider and present further benefits from the route being integrated with the existing network and presenting alternative options which must be considered as part of the route and business case development for HS2. The wider consideration and integrated development of Leeds station was recommended in Sir David Higgins' report and commissioned by the Secretary of State as a result of this engagement.

F009a Innovation Fund

Objective

The objective of the Innovation Fund is to support delivery of the Rail Technical Strategy (RTS) which sets out the rail industry's vision for the future railway. It supports industry to develop, demonstrate and introduce new technologies and innovation including technical, business model, operational, process and supply chain innovation to improve the performance and economic value of the railway and railway industry.

Progress in 2014/15

Programme development and investment authorisation for over £13 million of activity is on track but funds have not yet been transferred and therefore further progress is now on hold.

Other innovation activity led by RSSB is supported by DfT funding of £16 million plus innovator co-funding which together with prior years funding are supporting activities including:

- the Sustainable Rail Vehicle Programme has funded £12 million of competitions (including £3 million planned from the Innovation Fund) addressing tomorrow's train design, powertrains for self-powered trains and predictable and optimised braking
- DfT funding has supported two major competitions aimed at train operators with a total investment of £9.5 million which is likely to be doubled through co-funding
- a customer experience challenge competition in collaboration with Innovate UK - this joint investment of £6 million (including £1.65 million planned from the Innovation Fund) is also likely to be doubled through co-funding
- projects funded in prior years by DfT are now reaching physical demonstrator stage notably the Independently Powered EMU colloquially known as the 'battery-powered train' which offers the possibility of reducing the cost of electrification schemes on less intensively used lines.

Further details of progress at project level, including anticipated benefits, are set out in a separate report showing proposed investment in 2014/15 from this fund and the Strategic R&D Fund.

F009b Strategic R&D Fund

Objective

The objective of the Strategic Research and Development Fund is to support delivery of the Network Rail Technical Strategy (NRTS) which sets out Network Rail's contribution to realising the industry's Rail Technical Strategy. It supports the research, development, demonstration and introduction of new technologies and innovation, working closely with industry, to improve the performance and economic value of the railway.

Progress in 2014/15

Programme development and investment is on target. Value from the fund in CP5 is achieved by bringing new technologies towards readiness for deployment; benefits from the fund will be realised through more efficient outputs in CP6. Particular areas of progress to deliver efficient and effective use of the fund:

- established integrated governance for Technology and Innovation between Network Rail and industry using a single agreed set of R&D portfolios
- secured Founder Member status for Network Rail in €920 million Shift2Rail EU Public Private Partnership - Shift2Rail is the primary European public R&D investment dedicated to rail in the period to 2020
- authorised R&D projects accounting for £11.7 million of the £50 million fund, together with ring-fencing an estimated £8.4 million contribution during CP5
- undertaken a first annual review of investment allocation against refreshed challenges and an indicative evaluation of benefits
- £3.6 million allocated to projects deferred from 2014/15 are now being reviewed in the light of the refreshed priority challenges
- sourced external funding such that a 4:1 leverage is now forecast against the Network Rail Strategic R&D Fund such that for every £1 invested by the fund, we expect £4 to be sourced externally. This forecast is an indicative position based on live partnerships and agreements.

Further details of progress at project level, including anticipated benefits, are set out in a separate report showing proposed investment in 2014/15 from this fund and the Innovation Fund.

F010 Depots and Stabling Fund (DSF)

Current Project Stage: Various

Objective

The fund's primary objective is to enhance depots and stabling facilities for the High Level Output Specification (HLOS) capacity metric schemes, the CP5 electrification programme and for associated gauge, platform and electric compatibility works.

The fund budget holder will approve the use of funds and authorisation will be made at the appropriate investment panel as set out in Network Rail's Investment Regulations. Schemes are selected through agreement with the DfT.

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

Progress in 2014/15

A number of schemes are in development including schemes to better understand the depots and stabling requirements in the North West, West Midlands, the South East, Wessex, and at Kettering, Exeter and Banbury. We are continuing to develop the forward programme of investments to be made from the available funding and anticipate a number of other schemes, including gauge clearance schemes, to be approved in 2015/16.

F011 ETCS Cab Fitment Fund

Objective

Network Rail's obligation is to work with all train operators to ensure there are appropriate plans in place for them to introduce European Train Control System (ETCS) on-board equipment to their fleets so that there are no barriers or interruption to operating services on ETCS equipped infrastructure. A Programme Board constituting industry stakeholders oversees the funding and prioritisation of activities related to this work and the wider European Rail Traffic Management System (ERTMS) programme.

Progress in 2014/15

The scope of the Passenger ETCS programme is currently being re-assessed in light of changes to the infrastructure implementation plan with a view to constraining expenditure within the available funding. As a result the future milestones for work related to Passenger First in Class and the NDS (National Delivery Service) Engineering vehicles and On Track Machines are also being reviewed. Progress on existing milestones to date and current milestones for the Freight and Passenger work are as follows:

Table 11.8: Milestones for ID F011: ETCS Cab Fitment Fund

Activity/Output	Date	Date Met
Freight on-board ETCS invitation to tender (ITT) issued	November 2014	November 2014
Tender return	July 2015	
Contract award	October 2015	

Table 11.9: Passenger First in Class

Activity/Output	Date	Date Met
First in Class (Class 43) on-board ETCS ITT issued	October 2013	October 2013
Tranche 2 on-board ETCS ITT issued	January 2014	January 2014

F011 ERTMS infrastructure

Objective

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

East Coast Main Line

Current Project Stage: GRIP 3

Progress in 2014/15

ECML ERTMS Phase 1 and 2 are authorised up to the completion of GRIP 3. During 2014/15 Phase 1 of the King's Cross to South Peterborough invitation to tender (ITT) was issued and the King's Cross new layout was endorsed by ECML operators and DfT. In addition ECML is now included under the Digital Railway Phase 2 works.

Work on the ECML ERTMS Entry into Service (EiS) integrated plan continues. This will bring together the development work streams of the Digital Railway and the implementation work by Infrastructure Projects and include other critical path EiS activities (e.g. train fitment and driver training requirements). The output of this work may lead to a formal change control process that may amend the EiS activities.

Western Main Line

Paddington to Heathrow ETCS for Crossrail (phase 1) Current Project Stage: GRIP 4

Paddington to Bristol ETCS Current Project Stage: GRIP 3

Progress in 2014/15

During 2014/15 the GRIP 4 to 8 financial authority for ETCS Level 2 overlay between Paddington and Heathrow was authorised which will enable the Phase 1 part of the Crossrail services. In addition the financial authority was granted for ETCS development work between Paddington and Bristol.

An experienced Infrastructure Projects ETCS delivery team from the Thameslink Programme has recently been appointed to deliver the Paddington to Heathrow works as well as the ETCS Route Sponsor. This work is also now included under the Digital Railway Phase 1 works.

The Paddington to Bristol key milestones are yet to be confirmed. The Paddington to Heathrow milestones are future milestones which will be reported on in next year's Annual Return.

F012 New Stations Fund

Objective

The fund will be used to enable a funding contribution to be made to the provision of new stations promoted by third parties in England and Wales. This funding will be distributed through a competition to ensure that all promoters of new stations which meet the conditions have an equal opportunity of securing a funding contribution.

Progress in 2014/15

A list of schemes authorised to draw down from the fund is shown below and will be updated as we progress through CP5. The schemes will have a stage gate review before they are authorised to construct and deliver the station (GRIP 6 to 8).

Table 11.10: Schemes authorised to draw down from the New Stations Fund

Station	Applicant	Progress
Ilkeston	Derbyshire County Council - delivery by Network Rail	Design phase
Newcourt	Devon County Council – delivery by Devon CC	Station complete, due to open.
Lea Bridge	London Borough of Waltham Forest - delivery by Network Rail	Construction under way due for completion Spring 2016 delivered by Network Rail
Pye Corner	Welsh Government – delivery by the Welsh Government	Station complete and open for business
Kenilworth	Warwickshire County Council - deliverer to be agreed.	Design phase

F013 CP4 Station Commercial Project Facility (SCPF)

Objective

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

Scope of works

The fund has supported schemes by Network Rail, train operators or third parties in England and Wales and was awarded on a competitive basis in CP4. It would also be available for projects in Scotland where a return would accrue to the DfT.

It should be noted that Network Rail cannot be a promoter for schemes under SCPF 2.

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

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

Progress in 2014/15

Table 11.11: Schemes supported by CP4 Station Commercial Project Facility

Project	Delivery agent	Date Met
Hatfield car park and station enhancements	First Capital Connect	July 2014
Manchester Victoria station re-development, retail, and ticket barriers	Network Rail	February 2015*
Tonbridge car park enhancement	Southeastern	December 2014
Orpington car park enhancement	Southeastern	December 2014
Folkestone West car park expansion	Southeastern	June 2014

Notes: *linked to much larger re-development scheme which is due to complete at a later date

F014 LSE Weather Resilience Fund

Objective

This fund will be used to introduce projects that are over and above Network Rail's activities to improve the resilience of the infrastructure to adverse and extreme weather, delivering PPM and CaSL benefits to London and South East services. Working with the ORR, the DfT, rail industry bodies and passenger groups a list of 14 schemes was proposed to, and subsequently agreed by, the ORR. The short list of schemes was derived from the long list formed by the routes' submissions for the Weather Resilience and Climate Change (WRCCA) workstream.

Progress in 2014/15

The schemes have been placed into five groups based on the weather risk that is being mitigated; flooding, lightning, high wind, cold, and coastal.

All 14 projects have been undergoing planning and funding approval during 2014/15.

Table 11.12: Schemes to improve flooding resilience

Route	Scheme	GRIP 6 Start (physical work)	GRIP 6 complete (physical work)
South East	Flooding Mitigation at Shalmesford Street	February 2016	March 2017
South East	Flooding Mitigation at Balcombe Tunnel	May 2015	March 2017
South East	Raise HV Room off Flood site at Pangdean	June 2016	June 2017
South East	Sussex Enhanced Drainage	May 2015	March 2017
Western	Hinksey Flood Resilience works	May 2016	October 2016
LNE	Elstree Tunnel (south end) drainage improvements	June 2016	March 2017
LNW	Kenton station drainage improvements	October 2016	June 2017
South Western Railway	Flooding resilience Chard Jn to Axminster	April 2017	October 2017

Table 11.13: Schemes to improve lightning resilience

Route	Scheme	GRIP 6 Start (physical work)	GRIP 6 complete (physical work)
South Western Railway	Lightning Impact Mitigation Waterloo to Clapham	March 2015	September 2016
Anglia	Lightning Impact Mitigation GEML and East Suffolk	April 2015	March 2016

Table 11.14: Schemes to improve high wind resilience

Route	Scheme	GRIP 6 Start (physical work)	GRIP 6 complete (physical work)
Anglia	OHL resilience (blow of mitigation)	April 2015	March 2017
LNE	OHL resilience (installing light weight portals)	June 2015	March 2017

Table 11.15: Schemes to improve cold resilience

Route	Scheme	GRIP 6 Start (physical work)	GRIP 6 complete (physical work)
Anglia	Anglia Route - Improved structures drainage to mitigate Icicle formation causing OHL tripping	April 2016	March 2017

Table 11.16: Schemes to improve coastal resilience

Route	Scheme	GRIP 6 Start (physical work)	GRIP 6 complete (physical work)
South East	Enhanced coastal defences at Folkestone Warren	April 2016	March 2017

CR001 Crossrail

Current Project Stage: GRIP 5 for majority of projects

Objective

Crossrail, which is partly funded by Network Rail, links Maidenhead and Heathrow Airport in the West with Shenfield and Abbey Wood in the East. It includes 23 kilometres of sub-surface railway tunnelled beneath the centre of London.

Network Rail is delivering the on network works (ONW) for Crossrail Limited (CRL), who in turn is delivering the project for the joint sponsors, TfL and the 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.

Scope of works

The ONW comprise the following infrastructure enhancements along 76 kilometres of existing railway:

- platform extensions at a number of stations from Maidenhead to Abbey Wood and Shenfield to cater for 205 metre long electric trains
- improvements at stations to cater for the increased numbers of passengers as well as step free access at a number of stations
- a new station building to be constructed at Abbey Wood
- installing new modular station buildings at Acton Main Line, West Ealing, Southall and Hayes and Harlington
- Ealing Broadway, Ilford, Romford, Slough and Maidenhead stations will be refurbished.
- doubling the capacity of Stockley Viaduct at Airport Junction to improve access to Heathrow Airport
- providing a grade separated junction at Acton
- other operational improvements including freight loops and turn back sidings to support the timetable
- upgraded traction power supply
- new overhead line electrification between Stockley and Maidenhead
- various signalling and telecoms system improvements.

The Crossrail Programme is currently assessing the impact of extending the Crossrail services from Maidenhead to Reading and this is expected to be officially instructed once that assessment is completed. Potentially abortive works have been put on hold and redesigned to maximise any efficiencies from the change.

Progress in 2014/15

In 2014/15, the following works were delivered:

- all major work packages are now in GRIP 5 or GRIP 6 except for the redesign of Maidenhead track and platforms which has now commenced, and the enhancements of GSM-R required to support Crossrail
- some telecoms packages have not completed GRIP 4 as they are all being integrated with CRL System wide telecoms requirements and interfacing train design
- in the Old Oak Common area significant volumes of track, OLE and retaining wall works are continuing and were coordinated with the successful installation of neighbouring works at North Pole depot
- Acton dive-under works are continuing with all piles installed and bulk excavations complete
- at Stockley the western flyover is now operational with the new track and signalling work commissioned at Christmas 2014; Heathrow Connect trains to and from Heathrow Airport are now using this part of the new flyover. Works continue on the eastern flyover and ramp
- a number of site set ups have commenced in Anglia. Mobilisation and vegetation clearance works have commenced at Shenfield and Harold Wood
- an interim station at Abbey Wood has been completed and opened for use whilst demolition works are well underway on the main station
- the traction power supply works continue to plan with Distribution Network Operator (DNO) installation complete and commissioned successfully at Slough and mobilisation commenced at the first two substation sites, Slough and Maidenhead, with physical construction works starting in March 2015.

A range of works have been completed in order to facilitate the installation of OLE between Stockley and Maidenhead, including:

- canopy cutbacks at Maidenhead, Burnham, Taplow and West Drayton
- the demolition of existing bridges at Stoke Poges and Thorney Lane
- track lowering at Leigh Road, St Marys Road, Wexham Road and Farnham Road.

An extensive programme of works was carried out during Christmas 2014, all of which were completed:

- the works on the West included bringing the Stockley Flyover into use with the commissioning of the Up Airport Relief at Stockley; bridge demolitions at Thorney Lane and Stoke Poges, the S&C and Subway works at West Drayton all of which were completed on schedule. Old Oak Common's track works, bridge strengthening, OLE and signalling works were all completed. Acton's OLE works were also finished, as were track lowering and structure alterations in the outer area, and dozens of other smaller jobs on the programme
- on the East the first physical works took place with 1,000 tonnes of ballast delivered to Abbey Wood and the turn back facility at Chadwell Heath was installed, including the points and associated plain line and signalling works on the up and down electric lines
- signalling works being undertaken in the Old Oak Common area overran on 27 December 2014. The necessary construction works to the infrastructure were complete in time to allow passenger services to commence as planned but it took longer than anticipated to complete the safety validation, testing and sign-off of the new signalling system. A detailed investigation was carried out and the findings were used to improve Delivery Plans for the Easter 2015 blockade.

The biggest signalling commissioning in one possession took place during Easter 2015, along with some other works and all of these were completed on time:

- re-signalling of the West Outer section – Slough relock / recontrol including data change for West Drayton and Slough
- at Stoke Poges Bridge a new bridge deck was installed
- at West Drayton new signalling gantry and cantilever structures, S&C relay of 8,284 a/b points and a new station footbridge were installed
- civils works on the Stockley Eastern flyover and ramp including the installation of Section E flyover gantry, as well as installation of a number of sheet piles and sewer protections works
- signalling enabling works with associated testing and commissioning at West Ealing
- removal of Acton Middle Junction and connection with the new Up and Down Poplar Lines
- preparation works at Brentwood and Harold Wood stations.

A further three contracts have been let:

- West Signalling GRIP 5-8 deliverables for 2014 through to Easter 2015 only
- West Telecoms IP WAN and SCADA GRIP 4
- Northeast Signalling GRIP 5-8.

Milestones in the year

The procurement of the majority of GRIP 5-8 contracts has now been completed with the remaining planned to be let in several stages between April 2015 and April 2016.

Table 11.17: Milestones for ID13.01

Activity / Output	Date	Date Met / Expected
Award of remaining GRIP 5-8 Contracts	April 2015	Two met with remaining by April 2016
GRIP 4 full completion	September 2014	Full completion of the major work packages - November 2014 Completion of remaining telecoms packages by December 2015

CR002 Reading Station Area Redevelopment

Objective

Located at the crossroads between the West and London and between the North and South, Reading station is the major bottleneck on the Great Western Main Line (GWML) restricting capacity and constraining performance. Funded through the CP4 and CP5 periodic reviews, the programme of work delivers a major capacity, capability and performance enhancement across the Reading station area and its approaches. All key outputs have been completed. The final stage, which includes completion of the last connection to the depot, functionality commissioning of all lines and hand back to maintenance is on target for completion in August 2015.

Progress in 2014/15

- the Reading West Grade separation was completed over the Christmas and New Year blockade
- the West Country grade separation (Eastern Chord) was completed in April 2015 finalised over Easter 2015.

CR003 East West Rail

Objective

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

Phase 1 will cover rebuilding the line between Oxford and Bicester as double-track 100mph railway, rebuilding current stations and introducing a new Oxford Parkway station. All but one level crossing between Oxford and Bicester will be closed, together with resignalling and improved freight facilities.

Phase 2 will provide infrastructure for passenger train and freight train services. This involves extensive infrastructure works such as reconstructing the partially disused railway between Bicester and Bletchley as a 100mph twin-track line, removing level crossings, remodelling junctions and upgrading the lightly-used lines from Princes Risborough through Aylesbury to Claydon Junction. Other works include making required improvements to the Bedford to Bletchley line, constructing a new station at Winslow and additional platforms at Bletchley.

Network Rail is currently working with the rail industry and the East West Rail Consortium to develop the proposition for the extension of the East West Rail Western Section, Oxford to Bedford, on to Cambridge, referred to as the East West Rail Central Section. This is being progressed under the Long Term Planning Process looking at options that support development of the strategic rail network and the interface with regional and local routes. The development of options for the East West Rail Central Section will require close liaison with the East West Rail Western Section and the development activity is being progressed with a view to including the scheme as a proposal within the Initial Industry Plan in September 2016.

Progress in 2014/15

Phase 1:

To deliver Phase 1, a blockade of the line between Bicester and Oxford North junction was implemented in February 2014 and the main construction works commenced. A rail replacement bus service will continue to provide a passenger service between Oxford, Islip and Bicester Town until the line is re-opened. Special operating arrangements allow freight access to the Banbury Road and Bicester MoD sites during the blockade.

Works have progressed in all asset disciplines: earthworks; track laying; under and over-bridge construction; signalling and telecoms; accommodation works to allow crossing closures; and significant environmental mitigation measures including noise and vibration assessments and protection of endangered species. Rebuilding Bicester Town and Islip stations is under way, together with construction of the new Oxford Parkway station.

This phase of the project from Oxford City to Oxford Parkway (Water Eaton) is subject to Oxford City Council (OCC) accepting conditions included in the Transport and Works Act Order granted for the project. The primary condition relates to Network Rail's Noise and Vibration Schemes of Assessment. This has involved changes to the design of the original scheme and includes trials of innovative noise reduction techniques in order to address local opposition.

Table 11.18: Phase 1 milestones

Milestone	Description	Date
GRIP 6 start (excluding Oxford)	Start on site	May 2013
Oxford GRIP 6 start	Start on site	September 2015

Phase 2:

Option/Feasibility studies for each section of route have been drafted and are in discussion with stakeholders. Vegetation clearance and ground investigation works have taken place on the disused section of route. An initial structural assessment of Bletchley flyover has been undertaken. Timetable modelling has commenced, particularly at key interfaces with existing routes. Regular liaison with HS2 and other interfacing programmes has been set up.

CR004 Thameslink Programme

Current Project Stage: Implementation (GRIP 5-8)

Objective

The Thameslink Programme will provide the stations and railway system infrastructure 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 the infrastructure works to achieve this are grouped into three key outputs:

- Key Output Zero (KO0) delivered infrastructure that enabled a consistent train service throughout the Thameslink Programme construction period and was completed in March 2009
- Key Output One (KO1) delivered infrastructure that enabled the operation of 12-car trains between Bedford and Brighton. An improved infrastructure capacity enabled up to 16 train paths per hour between St Pancras International (low level) and Blackfriars stations. The functionality was introduced in phases ahead of the December 2011 and May 2012 timetable changes
- Key Output Two (KO2) delivers a rebuilt station at London Bridge and the headline Thameslink Programme infrastructure capability that enables up to 24 train paths per hour between St Pancras International (low level) and Blackfriars stations by December 2018.

Progress in 2014/15

KO2 London Bridge station and Bermondsey Dive-under:

All six of the new terminating platforms at London Bridge have been brought into use. Two new platforms were commissioned in August 2014, followed by the final two in January 2015 augmenting the two already commissioned in March 2014.

Work has continued on opening up the new street level concourse and building the approach structures for the first of the new through platforms.

At Bermondsey the first new structures for the dive-under have been built and old track layouts removed.

KO2 London Bridge Rail Systems:

The project is part way through a complex, multi-staged sequence of works that has initially focused on the approaches to the terminating platforms. The track layout has been remodelled and re-signalled. The signalling has been re-controlled, moving from the 1970's London Bridge Signalling Centre to the new Three Bridges Rail Operating Centre. This new system was brought into use in January 2015.

Work has started on the layout serving the through platforms. Trains to and from Charing Cross are not stopping at the station whilst the first of the tracks serving the through platforms are remodelled and re-signalled.

KO2 Canal Tunnels:

Tunnel fit out has been completed, track connections have been installed at both ends and the signalling commissioned in March 2015. Final electrical system commissioning is planned for July 2015.

KO2 Infrastructure works to accommodate the New Train Fleet:

Brighton stabling is now in use. At Cricklewood, construction has moved to the new south sidings. Work commenced on the construction of new stabling at Peterborough and Horsham.

At Three Bridges a major new substation was commissioned in November 2014 providing both AC and DC traction supplies to the new depot. The Down (Eastern) side of the depot was commissioned in February 2015. Connections into the Up (Western) side have been completed with commissioning planned for July 2015.

At Hornsey the traction supply has been commissioned and all enabling works completed.

KO2 High Capacity Infrastructure:

In March 2015 the Class 313 test train started running on a test track near Hertford as part of the proving trials for the train and infrastructure equipment and software.

The signalling control for the core was reconfigured and rationalised in March 2015 and is now controlled from Three Bridges Rail Operating Centre.

CR005 North of England Programme

Objective

This programme is a combination of the North West Electrification Programme (delivers AC electrification at 25 kV OLE of various routes in North West England) and the Northern Hub (a series of journey time improvement projects on radial routes from Manchester and capacity schemes at various locations across the North of England). The two programmes were combined to deliver outputs more efficiently in the same geographical area.

Progress in 2014/15

Electrification

In April 2015 the final stage of Phase 2 Electrification was completed. This concluded electrification works between Edge Hill to Earlestown, Huyton to Wigan and Ordsall Lane to Manchester Victoria.

Phase 3 Electrification (Preston to Blackpool) has completed the majority of advanced civil works with the phase due for completion in 2017. Phase 4 Electrification (Manchester to Preston) has been combined with a journey time improvement scheme. Major works on this phase have started at Farnworth Tunnel in preparation for the electrification due to be completed in 2016.

Other Works

A Transport & Works Act (TWA) application for Huyton has been approved, with additional platforms at Huyton, Roby and Manchester Airport completed. In March 2015 the Secretary of State for Transport also approved the TWA application for Ordsall Chord. This decision is currently subject to a legal challenge, the outcome of which is expected later in 2015. Following completion of consultations, an application for a TWA Order has been submitted for Northern Hub works in central Manchester at Oxford Road and Piccadilly stations, another TWA application will be submitted later in the year for capacity works on the Hope Valley line between Stockport and Sheffield.

CR006 Mobile Maintenance System (MMS)

Objective

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

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

Progress in 2014/15

The programme has progressed to plan during 2014/15. The first four trains are at various stages of production and the forecast dates for delivery of the systems to the routes is on schedule.

The first MMS is currently undergoing testing and commissioning and is scheduled to enter operational use at the end of July 2015 on the LNE / EM Route.

National consultations have concluded and area consultations are staged in accordance with the delivery schedule.

This project involves the introduction of new rolling stock onto GB infrastructure. A key element of the safety assurance activities will involve demonstrating the compatibility of the Robel MMS with both existing GB rolling stock and infrastructure assets. The majority of the compatibility issues relevant to the MMS are assured through compliance with Railway Group Standards.

Interfleet Technology Limited (ITL) has been engaged by Robel to facilitate the safety and assurance activities associated with introducing the machine onto GB infrastructure.

Network Rail, as infrastructure manager, is the main affected party and application for product acceptance has been made to Network Rail Acceptance Panel (NRAP). A MMT System Review Panel has been established to assess compatibility on behalf of NRAP and provide assurance to Network Rail on product acceptance.

CR007 Acton (Great Western Main Line) to Willesden (West Coast Main Line) electrification

Objective

The project provides capability for electric passenger and freight train operation between the Great Western Main Line and the West Coast Main Line for timetabled and diverted services The scheme will electrify the link from the Great Western Main Line (GWML) to West Coast Main Line (WCML) including the Acton Bank and adjacent sidings; thus enabling electrified freight traffic and passenger empty stock movements following completion of GWML electrification.

Progress in 2014/15

The scheme is in GRIP 1-3 design development. Ground investigations, structures and lineside survey investigations have been undertaken during 2014/15 with Outline Design (GRIP 3 and Approval in Principle) programmed for completion in December 2015.

Table 11.19: Milestones for Acton to Willesden electrification

Milestone	Date	Date Met/Expected
GRIP 3 completion (Acton West to Acton Wells)	September 2015	March 2016
GRIP 3 completion (Acton Wells to WCML)	December 2015	June 2016
GRIP 6 completion (Acton West to Acton Wells)	December 2016 (indicative)	TBA
GRIP 6 completion (Acton Wells to WCML)	April 2018 (indicative)	TBA

CR008 Station Security

Objective

The project will improve security at a number of franchised stations. It will not implement the measures at all stations due to other projects being undertaken, but will ensure the coordination of the project interfaces where major works are planned to ensure they deliver the measures in a consistent way.

Any measures will be implemented to ensure the station operations can continue to function as key interchanges.

Progress in 2014/15

Phase 3 remaining franchised schemes are complete apart from four schemes at: Cambridge, Brighton, Sheffield and Newcastle

- works at Croydon station are being implemented over the coming months as part of the wider programme of works on going at East Croydon
- the remainder of schemes to be delivered are associated with complex third party schemes for which a design is in the process of being agreed for. The DfT continues to support the schemes and funding has been rolled over.

CR009 FTN/GSM-R Inclusion of Freight-Only Branch Lines

Current Project Stage: Project Completion

Objective

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

Progress in 2014/15

The main GSM-R (Global system for mobile communications systems for railways) Programme is now substantially complete with GSM-R coverage of the Merseyrail Area brought into operational service on 28 July 2014 and the completion of works on the freight only lines also being undertaken in 2014.

GSM-R coverage of the freight only lines was completed in three phases. The majority of work on freight branch lines was undertaken by 29 May with the remaining works completed on 26 June and 11 September 2014. The live system provides, as a minimum, a level and quality of driver-signaller communication equivalent to the National Radio Network service being replaced by GSM-R.

ES001 Midland Main Line electrification

Objective

In line with the aspirational Industry Key Output dates the core scheme will involve the provision of Overhead Line Electrification (OLE) at 25kV AC for the following sections of the route:

- Bedford to Kettering and Corby - December 2017
- Kettering to Nottingham - December 2019
- Trent Junction to Derby - December 2019
- Derby to Sheffield - December 2020.

This will include route clearance works for different types of rolling stock, installation of OLE and provision of connections to the National Grid and other associated works. The connections to the National Grid will also facilitate further electrification proposals in CP6. Additionally the project will enhance the gauge of the sections of route listed above to W6a, W7, W8, W9, W10 and W12.0

The project has now been paused pending the outcome of the review announced by the Secretary of State on 25 June 2015 and milestone dates are now dependent on the outcome of this review.

Progress in 2014/15

GRIP 3 option selection was achieved in June 2014. By April 2015, 20 bridge reconstructions had been completed out of circa 100 planned in CP5. Vegetation clearance works have commenced in preparation for the first foundations planned in April 2015 for Phase 1 works (Bedford Kettering/Corby).

ES002 Derby Station area remodelling

Current Project Stage: GRIP 3

Objective

The project will deliver journey time reduction for passenger and freight services travelling to and through Derby station. The project aligns the requirement for signalling and track renewals with the DfT's requirement for reduced journey time.

Progress in 2014/15

The scheme has been developed to GRIP 3 single option selection with demonstrable journey time, performance and reliability benefits. The project is an important element of the Midland Main Line business case and has been submitted to the ORR ECAM (Enhancements Cost Adjustment Mechanism) process to ensure the option selected offers value for money. Feedback received from stakeholder engagement is positive.

Table 11.20: Derby station area remodelling milestones

Milestone	Description	Start	Finish
GRIP 2	Pre-feasibility	March 2011	July 2011
GRIP 3	Option selection	September 2011	February 2015
GRIP 4	Single option development	March 2015	January 2016
GRIP 6	Implementation	February 2016	March 2019
GRIP 8	Project close-out	October 2018	January 2021

The project's current commissioning milestone is October 2018 after a period of disruption to train services in the station and surrounding area. The works will be aligned to Midland Main Line Electrification works where possible.

ES003 Electric Spine Development Programme

Objective

The development programme will establish a scope and programme for implementation of schemes to meet the Government's objectives to improve regional and national connectivity and links to ports and airports for both passengers and freight to support economic development. A key element of this is increasing the amount of the network to be electrified to create a 'critical mass' that facilitates the operation of electric, rather than diesel trains. The High Level Output Specification (HLOS) for CP5 requests the development of a major north-south rail electrification and capacity enhancement referred to as the 'Electric Spine'.

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

Leicester Capacity

The projects that make up the Leicester Capacity Programme are currently in GRIP 2 development, working towards GRIP 2 completion planned for December 2015. The delivery of the specific outputs enabling increased growth and capacity are planned for completion by September 2022.

MML capacity (Kettering - Corby)

Current Project Stage: GRIP 4-6

This project will carry out infrastructure works required to enable an increase in capacity between Kettering and Corby, from December 2017.

GRIP 3 stage of project completed with Approval in Principle designs prepared.

Progress made in 2014/15

Works have been commenced with site set up including vegetation removal works and track works.

Table 11.21: Electric Spine: MML capacity (Kettering – Corby) milestones

Milestone	Description	Date	Date Met/Expected
GRIP 3 Completion	Single option selection	September 2014	September 2014
GRIP 5 Completion	Detailed design	February 2015	August 2016

For diesel rolling stock only. Electrification will be complete in line with MMLe (ES001) delivery plan.

MML capacity (Bedford - Kettering)

This project will carry out infrastructure works required to enable an increase in capacity between Bedford and Kettering from December 2017.

Progress made in 2014/15:

- Site survey and inspection works carried out
- GRIP 3 Option Selection process commenced.

Table 11.22: Electric Spine: MML (Bedford – Kettering) milestones

Milestone	Description	Date	Date Met/Expected
GRIP 2 Completion	Feasibility complete	March 2014	March 2014

Sheffield to ECML electrification

Progress in 2014/15

During the past year, the project has been developed through GRIP 1 and 2 and is about to seek GRIP 3 authority.

The project has undertaken surveys to identify all of the structure clearance interventions required on the route, with the current expectation that priority will be given to those in the proximity of Sheffield station. Where appropriate, work-scopes have been integrated with the Midland Main Line Electrification and Tram-Train projects to facilitate efficient delivery over the coming years.

The project has also undertaken level crossing risk assessments to understand the impact that electrification will have on their users and neighbours and is looking to take forward a number of proposed closures during project development.

The project has now been paused at the start of GRIP 3 pending the outcome of the review announced by the Secretary of State on 25 June 2015.

Table 11.23: Electric Spine: Sheffield to ECML electrification milestones

Milestone	Description	Date	Date Met/Expected
GRIP 3 Completion	Single option selection	May 2016	TBD

A001 Ely North Junction Capacity Improvement

Objective

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

Progress in 2014/15

The Ely North Junction development work has been held at option selection stage to allow for analysis to be undertaken to establish the effect that changes to level crossings safety guidance has on the options developed so far. Analysis is necessary owing to the immediate proximity of this scheme to four level crossings and the guidance around Automatic Half Barrier crossings being changed after the commencement of this project. This has been communicated to the DfT and the ORR.

Up until September the project was on track to meet the agreed milestones and was just short of agreeing a single option at GRIP 3. Upon completion of the analysis, as described above, an updated set of milestone dates will be provided through the change control process.

A002 Anglia Traction Power Supply Upgrade

Current project stage: GRIP 3

Objective

The aim of the project is to provide enhancements to the existing traction power infrastructure required to support the forecast increase in electrically operated rolling stock for CP5. The project will develop the requirements for electric traction power to provide additional power to support the capacity increases into London Liverpool Street.

Progress in 2014/15

GRIP 3 works have been carried out which include feasibility studies performed and initial outline designed, power load simulations and proposed projects have been discussed with local planning authorities to understand how they fit within any wider schemes and liaison with power generation and distribution companies for new energy supply substations.

A003 West Anglia Mainline Capacity Increase

Objective

The aim of this project is to relieve overcrowding and absorb additional forecast growth on the West Anglia Main Line. It will develop a scheme targeted at increasing the frequency of Lea Valley line services to Stratford.

Progress in 2014/15

In May 2014, Investment Authority approval was obtained to carry out GRIP 3 (Option Selection) and was concluded in January 2015. Investment Authority approval was obtained in March 2014 to carry out GRIP Stage 3 Engineering Approval in Principle (AIP). Full AIP is scheduled for end of November 2015, and the ECAM process starts December 2015.

The overall project AFC has risen. However additional scope has been included into the scheme which has been driven, and funded by third party funders such as TfL, Greater London Authority, and Enfield Council which will see extension of the new third line northwards from Tottenham Hale up to Angel Road.

The scheme remains on track for overall completion in April 2018 ready for a new timetable change of May 2018.

A004 Great Eastern Main Line Capacity Improvement (Bow Junction)

Objective

The project is to provide optimum use of capacity released on the Electric Lines into Liverpool Street station following diversion of most peak suburban services through the Crossrail tunnel (due to open in 2019). Works will provide the infrastructure to support an additional two trains per hour operating from Southend Victoria to utilise the capacity ‘freed up’ by Crossrail. Significant interfaces will be made with the ongoing Crossrail Project and the new town / station development at Beaulieu Park in Chelmsford.

Progress in 2014/15

The project is currently at the Option Selection stage and although there are no issues meeting the projected milestone dates below, there is little float in the programme through the current stage. The construction and delivery programme will be further developed through Option Selection to remove conflict with other works, with the current target for an October 2018 commissioning. It should be noted that the commissioning date shall be dependent on the completion of the Crossrail Pudding Mill Lane works, with an overlap for the requirement of signalling source records and signalling data design between the schemes.

Table 11.24: Great Eastern Main Line Capacity Improvement GRIP milestones

Delivery Plan Milestone	Description	Date	Date Met/Expected
GRIP 3 completion	Single option selection	August 2015	August 2015
GRIP 4 Completion	Single	March 2016	March 2016

A005 Gospel Oak to Barking Electrification

Objective

The core scheme will electrify the lines between Gospel Oak and Barking, a total of 24 single track miles. More efficient electric passenger services can replace diesel traction and freight operators will have the option to utilise electric traction.

Progress in 2014/15

The entire project met its GRIP 3 milestone in March 2015. Vegetation clearance has begun along the line of route and a pedestrian footbridge was replaced at Junction Road.

K001 Kent traction power supply upgrade

Objective

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

Gravesend - Gillingham 12-car

The scope is to upgrade traction power supply to enable 12-car 465/466 services.

Progress in 2014/15

The implementation phase was completed during May 2014. The GRIP 7 process is substantially complete, and GRIP 8 has commenced. Framework contractor has been engaged to complete works to enable timetable as per the milestone of GRIP 6 completion in December 2015.

Outer Kent resilience

In this package the scope is to upgrade Grove Hill and High Brooms substations, and enable 12-car services between Canterbury and the Thanet area.

Work is being carried out on this scheme to progress it to single option selection, GRIP 3 stage.

K002 Route 1 - Power Supply Enhancement

Objective

This project is required in order to provide the necessary infrastructure to facilitate the operational plan assumed with train operators to deliver the CP4 HLOS (High Level Output Specification) capacity metrics. 12-car formation of existing Class 465 units are to be operated on the following routes between London terminuses, and Kent and the South East. This scheme is split up into a three phase scope to align with the differing completion dates.

- Phase 1 works were completed in CP4, enabling six extra 12-car Class 465 diagrams in the morning peak
- Phase 2 will grant flexibility in the timetable during the London Bridge high level construction works
- Phase 3 will enable 12-car operations when the Kent and Sussex timetable is recast when Thameslink is implemented.

Progress in 2014/15

Phase 2:

The delivery of Phase 2 was successfully achieved on 1 December 2014 to meet Southeastern's requirements for flexibility whilst construction works are underway at London Bridge.

Phase 3:

The design and build contracts for the implementation of Phase 3 are underway and are currently progressing to plan.

K003 East Kent resignalling Phase 2 – enhancements

Objective

The key driver for the enhancements is the provision of capability and capacity to facilitate the future timetable (December 2018) through the Medway towns, operational cost reduction and improved integration of the railway with other forms of public transport.

Progress in 2014/15

- signalling installation works have been completed on the main line (Meopham to Faversham)
- the new station at Rochester is being built and is on programme for opening in December 2015
- the development of the Medway valley signalling scheme, moving into implementation of platform extension at Sole Street completed and in use
- the platform extension at Strood and the new bay platform at Rainham have been completed but cannot be brought into use until signalling has been commissioned.

K004 New Cross Grid

Objective

This project will provide enhanced traction supply capacity to support the train lengthening and frequency requirements of train services in CP5 and beyond. This project sees the completion of the first phase of the major supply point reinforcement in the South East.

Progress in 2014/15

- design of the cable route tunnel has been completed
- major equipment items have been procured.

K005 Package 4 - Gravesend Train Lengthening

Objective

This scheme will facilitate the operational plan assumed with train operators to deliver the CP4 HLOS capacity metric of supporting 12-car operations on specific services between Gillingham and Gravesend. The scope of this scheme is to lengthen Gravesend station Platforms 1, 2 and new Platform 3, to support 12-car Class 465 operations.

Progress in 2014/15

- the implementation phase was completed during May 2014
- the GRIP 7 process is substantially complete, and GRIP 8 has commenced.

S001 Sussex Traction Power Supply Upgrade

Objective

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

Progress in 2014/15

The project has progressed through GRIP 3 and is in the process of preparing a revised single option selection report. Estimate and business case in readiness for the ECAM review is set for November and delivery completion of the programme is planned for 2018.

S002 Redhill additional platform

Objective

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

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

Scope of works

- provision of an additional 12-car 270 metre platform scheme at Redhill
- provision of canopy (90 metres), waiting shelter, stairs / lift connection to the existing subway and ticket hall
- alterations to track and signalling infrastructure required for parallel move functionality
- the existing Westpac Mk4A interlocking will not be successfully modified for the needs of this project and will be replaced with a new Computer Based Solid State Interlocking system (SSI)
- rationalisation of the switches and crossings (S&C) at the London end of Redhill station.

Progress in 2014/15

Table 11.25: Redhill additional platform milestones

Milestone	Description	Date	Date Met/Expected
GRIP 3 completion	Single option selection	June 2014	June 2014
GRIP 4 completion	Single option scope defined	September 2015	October 2015

S003 Uckfield Line Train Lengthening

Current GRIP stage: GRIP 4

Objective

This scheme intends to implement a scheme allowing ten-car Class 170/171 rolling stock to serve up to eight station locations between Edenbridge and Uckfield.

Progress in 2014/15

In the past year the following activities were completed:

- completion of GRIP 3, including intrusive site surveys and ecological surveys
- ECAM submission made and funding confirmed by the ORR
- finalised scope details with TOC
- a test train with new longer train length has been run
- held first signal sighting meeting on site.

S004 London Victoria Station Capacity Improvements

Objective

The project will increase passenger capacity at London Victoria station. The scope of works includes:

- removal of retail units, realign and extend gatelines to Kent (Platforms 1-7) and Sussex (Platforms 9-12) sides
- widen Platform 8
- reconstruct fire exits, provide new fire escape stairs and install a goods lift in the Left Luggage building
- remove retail units next to the escalators on Sussex concourse
- construct a Gatwick Express ticket office behind the escalators on the Sussex concourse
- relocate the gateline and Customer Information System (CIS) on the Sussex concourse (Platforms 15-19)
- relocate the switch room and spiral staircase access to CIS for Platforms 1-7
- relocate Platform 7 screen, vehicle gate and seating, and displace the adjacent retail units.

2014/15 progress

Re-authority was required to revisit 2012 GRIP 3 stage; this was due to certain scope items not being agreed by all involved parties. The new scope has buy-in from the multiple operators of Victoria station.

S005 Balcombe to Copyhold Bi-directional Signalling Upgrade

Objective

This project provides infrastructure to enable improved engineering access, and reduced disruption when access is taken, on the Brighton Mainline between Haywards Heath and Three Bridges through the provision of an improved bi-directional signalling functionality.

The scheme is developed to GRIP 4, and the following scope of works has been identified and agreed with key internal stakeholders:

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

Progress in 2014/15

Commissioning of the upgrade was successfully completed at the end of 2014/15. The enhancement is now fully functional and entered into service with the project now in GRIP 8 close out stage.

WX001 Waterloo

Objective

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

Progress in 2014/15

During 2014/15, the following was delivered:

- GRIP Stage 3 was completed, for the Windsor 20 trains per hour and Suburban ten-car with agreement reached with South West Trains regarding the options
- agreement has been reached on the delivery strategy focusing on a significant possession in August 2017 at Waterloo
- development of plans for the future commercial structure of Waterloo International with London and Continental Railways together with a focus on the impact on London Underground
- GRIP 2 was completed for the remaining outputs:
  - Windsor Outlying
  - Stations portfolio

Programme milestone Regulated output – GRIP 3 Single Option Complete milestone proposed change from June 2015 to September 2015

The overall programme GRIP 3 completion milestone is being pushed back by two months to develop and design the non-Waterloo works through a contractor alliance. This revised procurement strategy engages the final delivery contractor earlier to maximise efficiencies. This does not affect forecast completion dates as the tendering activities have just been brought forward. A second provisional ECAM date of October 2015 has been agreed for these.

Table 11.26: Waterloo milestones

Milestone	Description	Date	Date Met/Expected
GRIP 2 completion	Feasibility complete	June 2014	June 2014
GRIP 3 completion	Single option selection	June 2015	September 2015
GRIP 4 completion	Single option scope defined	December 2015	March 2017

Suburban ten-car railway forecast output – GRIP 6 Start on site proposed change from July 2015 to January 2017

We are proposing moving this date back to align with the overall Wessex Integrated plan that has been agreed with the South Western Railway and the DfT. The proposed ECAM date for these works is March 2015.

Table 11.27: Waterloo GRIP 6 milestones

Milestone	Description	Date	Date Met/Expected
GRIP 6 start	Start on site	July 2015	January 2017
GRIP 6 completion	Infrastructure ready for use	May 2017	December 2017

Mainline enabling works (Woking Area)

We are proposing to align the outputs following the completion of GRIP 2. The GRIP 2 study was taken forward to identify the intervention required to the mainline at Woking and to understand if the project could be funded in CP5. Following the completion of GRIP 2 the delivery of the mainline enabling works will now fall into CP6 and the following changes are proposed to the Strategic Business Plan (SBP) and the Delivery Plan.

The completion of GRIP 3 will be undertaken in CP5 with the completion date of March 2019.

WX002 South London HV Grid (Wimbledon) upgrade

Current Project Stage: GRIP 2

Objective

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

Progress in 2014/15

Power supply modelling of the whole inner-London area, along with some sections of Wessex, Sussex and Kent, has been undertaken to test the anticipated train service level in Control Periods 5, 6 and 10. This has shown that upgrades are required to strengthen Wimbledon Grid Supply Point, alongside National Grid's own enhancement proposals for the site. Early engagement with National Grid has commenced to ensure Network Rail and National Grid's proposed enhancements to the Wimbledon Grid site are aligned. The project will progress to GRIP 3 later in 2015

WX003 Reading, Ascot to London Waterloo train lengthening

Current Project Stage: GRIP 3

Objective

The project scope is to carry out all infrastructure works, excluding traction power supply upgrades, required to permit the operation of ten-car trains on the London Waterloo to Reading and Aldershot via Ascot routes.

Progress in 2014/15

During 2014/15, the following was delivered:

- GRIP 2 was completed, with agreement reached with South West Trains regarding which platforms required extension
- option selection has been completed with single options defined - platforms to be extended at ten stations with Automatic Selective Door Opening (ASDO) being employed elsewhere
- significant engagement with London Borough of Hounslow regarding the potential closure of Feltham West Level Crossing (the third highest risk level crossing on the Wessex route)
- interface management process has been agreed with Feltham resignalling project, permitting the development of an integrated design avoiding the need for rework in the future
- the project will also close the barrow crossing at Ascot station and provide an alternative accessible route between the platforms.

Table 11.28: Reading, Ascot to London Waterloo train lengthening milestones

Milestone	Description	Date	Date Met/Expected
GRIP 3 completion	Single option selection	June 2015	June 2015
GRIP 4 completion	Single option scope defined	September 2015	November 2015

WX004 Wessex traction power supply upgrade

Current Project Stage: GRIP 5

Objective

The project is remitted to carry out works to the traction power supply system required to permit the operation of ten-car trains on the London Waterloo to Reading and Aldershot via Ascot routes.

Progress in 2014/15

During 2014/15, the following was delivered:

- option selection has been completed with single options defined - conversion of four-track paralleling huts to substations, upgrade of two substations, seven high voltage feeder cable upgrades, and increase of fixed service capacity at two grid supply points
- outline designs have been approved and signed off
- the project has secured funding via the ECAM process
- network change has been established for the works.

Table 11.29: Wessex traction power supply upgrade milestones

Milestone	Description	Date	Date Met/Expected
GRIP 3 completion	Single option selection	September 2014	September 2014
GRIP 4 completion	Single option scope defined	February 2015	February 2015
GRIP 6 start	Start on site	June 2015	July 2015

WX005 Package 7, Ten-Car South West Suburban Railway

Objective

This project will upon completion allows ten-car operation on suburban services on the Wessex route into Waterloo, but with the exception of Waterloo itself which is included within project WX001. The scope of the project involves extensions and lengthening remaining platforms and sidings in CP5.

Progress in 2014/15

Platform extension and sidings works were carried out at a number of stations on the Wessex suburban lines. The following routes were completed over the course of the year.

Table 11.30: Package 7 completed routes

Route	Completion Date
Raynes Park to Dorking	April 2014
Kingston Loop and Shepperton	October 2014
Hampton Court branch	April 2014
Guildford via Cobham	October 2014

WX006 Wessex ASDO

Objective

There are some locations on the Windsor suburban routes where the cost of extending platforms to allow ten-car trains to call would be prohibitive or offer poor value for money. Increasing the use of manual selective door opening (SDO) is discouraged and so, in agreement with South West Trains (SWT), an automatic SDO system (ASDO) is to be introduced.

Operation of the system will require the installation of radio frequency identification tags (RFID) in each platform used by South West Trains at 168 stations across the Wessex route. SWT is responsible for the approval of the ASDO system, the fitment of train borne equipment and specification of trackside equipment (RFID). Network Rail will procure, install and maintain the trackside equipment.

Progress in 2014/15

Installation of trackside equipment at 168 stations across the network was completed by Network Rail in the past year. This milestone was reached in April 2014.

WX007 DC regeneration

Objective

DC regenerative braking is now in use within Wessex, Sussex and Kent routes and no further work is required to meet this obligation. Segregation of 660V DC traction supplies to the LUL Waterloo & City line from Network Rail Infrastructure will be completed to enable the increase of Network Rail system voltage without risk to LUL rolling stock and systems.

The project will also modify circuit breakers and raise traction supply outputs on all inner London routes to 750V DC nominal in Wessex, Sussex and Kent. This will be completed in two parts.

Progress in 2014/15

Phase 1

All inner-London traction supply outputs other than the areas surrounding the LUL District line interfaces at Richmond and Wimbledon achieved GRIP 6 in March 2014.

Phase 2

The remaining inner London traction supply outputs will be increased once the LUL District line rolling stock change programme has completed in December 2016. The project works will be completed once the older rolling stock is removed from service and the power can then be increased.

WX008 Route 3 - power supply enhancements

Current GRIP Stage: GRIP 6

Objective

This scheme will provide the necessary infrastructure to facilitate ten-car operation on both the Wessex Main Suburban and Windsor Lines to deliver the CP4 HLOS capacity metrics.

Progress in 2014/15

The scheme has been completed, with the power supply enhancements live and in service. This milestone was achieved in July 2014.

W001a Great Western electrification

Project status: GRIP 3

Objective

The core works will involve electrifying the lines to provide electric traction power from London Paddington to Swansea, and a number of branches; capacity projects at Reading, Oxford, Bristol Parkway and Bristol Temple Meads; works to

facilitate the introduction of four new fleets of electric trains; and the cascade of diesel rolling stock. The overhead line equipment (OLE) will employ 'Series 1' infrastructure, not previously used in the UK and set to offer much greater reliability than the existing systems.

Progress in 2014/15

This is a very complex programme of works involving major reconstruction across a wide variety of environments, and this is reflected in the varied GRIP stages of individual elements. Significant progress was made with the division of the area into four directorates, covering the Thames Valley, the West of England, Wales and the Line of Route, which covers the installation of the infrastructure. During the year, the High-Output Plant System (HOPS) train was delivered and brought into use, enabling faster installation of OLE equipment.

As the Western Route has no existing OLE beyond Stockley, the programme presents a significant impact, notably in the two Areas of Outstanding Natural Beauty it crosses. The route clearance effort has been the focus of considerable public concern over access and heritage issues, and the installation of piling has not yet achieved its potential level of productivity. These and other factors have put pressure on delivery timetables, which remain under review.

Seven bridges in the Thames Valley Area and 44 in the West of England Area have seen major reconstructions or other interventions during the year. These works have ranged from single-weekend possessions to major extended programmes, and innovative approaches have been used in a number of instances to expedite completion. 1,687 OLE piles and 567 OLE masts have been installed.

London to Newbury, Oxford and Bristol

In both Oxford and Bristol, the project has interfaces with other enhancement activity, both ongoing and planned, and much planning is going into this process. Both cities have extensive plans for urban transport improvement, and Oxford marks one end of East-West Rail while Bristol Temple Meads sits at the heart of an Enterprise Quarter set to completely transform the area.

Bristol Temple Meads is a Grade 1 Listed building, which typifies the heritage issues faced on this line. These are most challenging in Bath, a World Heritage Site, where substantial engagement with local stakeholders has been necessary to achieve the necessary planning consents.

The bulk supply point at Melksham has now been built and the connection provided to Thingley Junction. Didcot, Imperial Park and Melksham 400kV transformers have been installed within the National Grid HV substation.

Bristol to Cardiff

In addition to the main project works, complex tunnels such as Severn, Newport and Patchway present significant challenges to the successful delivery of the electrification remit and require very careful design studies to be carried out, to deliver the best whole life cost solution. GRIP 3 for these tunnels has purposefully been re-scheduled to September 2015 to enable sufficiently robust decision making.

Table 11.31: Great Western Electrification milestones

Milestone	Locations	Description	Date	Date Met/Expected
GRIP 3 completion	Maidenhead to Newbury, Oxford, Chippenham, Bristol Parkway	Single option selection	July 2014	July 2014
GRIP 3 completion	Chippenham to Bristol Temple Meads	Single option selection	July 2014	July 2014
GRIP 3 Completion – complex issues	Bristol Temple Meads and Bristol Parkway to Cardiff	Single option selection and fully integrated AIP	September 2015*	April 2016

Notes: * GRIP 3 has been missed for Bristol Temple Meads and Bristol Parkway to Cardiff Central. The new date is subject to change until the programme has been re-examined, revised and communicated to the stakeholders. It is acknowledged that this section of the main line includes relatively complex locations that require further and greater study to deliver the best whole-life cost solution. The locations agreed in this category – and required to complete GRIP 3 Single Option Selection and fully signed-off Integrated AIP – is limited to Bristol Temple Meads station and Bristol Parkway station.

W001b South Wales main line electrification

Objective

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

Progress in 2014/15

Cardiff to Swansea electrification is currently being developed with completion of GRIP 3 planned for September 2015. This follows agreed revision to the CP5 Enhancements Delivery Plan deferring GRIP 3 from April. Resource pressures, particularly with availability of OLE designers and prioritising Route Sections 1 -9, made a revision to this regulated milestone necessary.

Table 11.32: South Wales main line electrification GRIP 3 milestone

Milestone	Date	Date Met/Expected
GRIP 3	September 2015	September 2015

W002a Intercity Express Programme (IEP) Western Capability

Current Project Stage: Various

Objective

To provide infrastructure capability enhancements to enable improved journey times and seating capacity across the Western route with significant environmental benefits (see Great Western Electrification).

Progress in 2014/15

The various projects within the programme have nearly all reached the end of GRIP 3. One Gauge Clearance and the Acton to Stockley OLE Upgrade projects have yet to fully complete this stage.

For CP5 it was agreed that the Western IEP works would be split into two programmes of work; W002a Capability and W002b Capacity.

During 2014/15 there were some minor changes to the Delivery Plan to better define the two programmes of work.

Capability works will continue to be implemented in phases from early 2015 through to late 2017 in line with the train delivery schedule. This takes account of testing from 2015/16 onwards and the introduction into passenger service from June 2017.

The majority of the work in 2014/15 continued to be focused on; gauging and technical interfaces between the train design and the infrastructure and development of the stations portfolio.

Gauge clearance GRIP 3 work is continuing and the first route from London to Bristol Parkway is expected to be cleared for train testing in late spring 2015 – a slight delay caused by some GPS data errors. GRIP 3 for the remaining sites on the route will complete in the summer of 2015.

Platform extension GRIP 3 Approval in Principle (AIP) for the extra stations started in 2014/15 and completes in summer 2015. Joint surveys with FGW for the revised stopping positions were completed in 2014/15. Platform extension schemes at Didcot, Swindon and Cheltenham are now moving into the design and build phase and the aim is to complete all station works by December 2016. However, the final dates will be driven by the integrated GWRM Delivery Plan.

During 2014/5 the IEP works in the Paddington area have been focused on the Hitachi North Pole Depot connection works and these were completed in March 2015. However, a design contract was let and during 2015/16 the detailed design and initial implementation works on Platform 14 will conclude.

The development of the AIPs necessary for the OLE upgrade between Acton and Stockley continues and GRIP 3 will conclude at the end of May 2015.

Network Rail continues to provide technical support to the train design, testing and compatibility work streams. The estimated completion date of this work is now March 2016. These cover aspects including: wheel and rail interface, acceleration curve, bridge resonance, and traction power changes on the move.

The bridge resonance programme has moved into the detailed design and implementation phase. The two bridges that required work were both on the Western route and implementation is planned for summer 2015 on the Swindon to Bristol Parkway route and 2016/17 on the Berkshire and Hampshire route.

W002b Intercity Express Programme (IEP) Western Capacity

Objective

To provide infrastructure capacity to enable the operation of the proposed enhanced timetable on the Great Western Main Line (GWML) from May / December 2018 onwards. The scope of this Programme is now focused on just two schemes; Bristol Parkway and Worcester Henwick. Both schemes will be in place for the enhanced timetables in December 2018.

Progress in 2014/15

The Bristol Parkway project completed GRIP 3 in late summer 2014 and went through the ECAM process in early 2015. Delivery in 2018 will become a regulated milestone. During 2015/16 the project will complete Network Change and will be fully integrated into the West of England delivery programme segment of the Great Western Route Modernisation.

The Worcester Henwick capacity also completed GRIP 3 in late summer 2014 and went through the ECAM process in early 2015. Delivery currently targeted for Christmas 2016.

W003 Thames Valley branch lines electrification

Current GRIP Stage: GRIP 1-3

Objective

The scheme will electrify the branch lines between Maidenhead Bourne End and Marlow; Twyford to Henley-on-Thames; and Slough to Windsor and Eton Central and Southcote Junction to Basingstoke. Branch line electrification will provide the necessary integration with electrification of the Great Western Main Line to enable a full Electric Multiple Unit (EMU) service in the Thames Valley.

Progress in 2014/15

The scheme is in GRIP 1-3 design development. Ground investigations, structures and lineside survey investigations having been undertaken during 2014/15 with GRIP 3 programmed for completion in December 2015.

W004 Thames Valley EMU capability works

Objective

The Thames Valley EMU Capability Project formally started in 2014/15 following discussions with the DfT and the Greater Western Franchisee (First Great Western (FGW)) over the exact scope and required timescales for the project.

As outlined in the Enhancement Delivery Plan FGW are planning to cascade EMUs onto the routes in the Thames Valley from mid-2016 onwards once the electrification starts to go live. Therefore the work scope is focused on three main areas; gauge clearance, platform extensions and driver-only operation (DOO) equipment modifications

Progress in 2014/15

Gauge clearance

Network Rail and FGW have decided that the gauge clearance for specified EMUs will be undertaken by the IEP Gauge clearance team and the volume of work is expected to be very low as the kinematic envelope of the proposed EMUs sits inside that of the class 165/166 units that they replace and inside of the class 800/801 Hitachi Super Express Trains.

Station works

Following discussions with FGW and the DfT in 2013/14 the maximum train lengths on a service group by service group were agreed. This resulted in a defined output for each platform face. Joint surveys have been undertaken and during 2014/15 the single options have been developed for each platform. The joint surveys have resulted in DOO equipment modifications being required at the majority of platforms and platform extension work scope being required on about 40 platforms. This work is a mix of platform resurfacing and extensions.

The GRIP 3 regulated output of April 2015 was achieved and during 2015/16 the project will move into the detailed design and build phase.

W005 Western Rail Link to Heathrow

Objective

This scheme aims to construct a new direct rail link connecting the West of England to Heathrow to the Great Western Mainline (GWML). It will improve journeys to the UK's busiest airport and help increase economic productivity across the Thames valley.

The new rail tunnel would leave the Great Western main line between Langley and Iver and connect to London Heathrow Terminal 5, allowing passengers to travel to the airport from Reading without going into Paddington station.

The specific stopping pattern for the service is still being defined, however it is expected that the new tunnel will provide capacity for four trains per hour between Reading and Heathrow Terminal 5, two of these calling at Twyford and Slough and two calling at Maidenhead and Slough.

Progress in 2014/15

Informal public consultations have taken place, with proposed construction locations being presented to the public.

W006 Oxford Corridor capacity improvements

Objective

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

Work completed in 2014/15

Work towards development of the single option for Oxford has continued. GRIP 3 completion is expected in April 2015.

W007 Dr Days Junction to Filton Abbey Wood capacity improvements

Objective

The scheme provides the infrastructure to support up to four additional train paths an hour in each direction between the two major stations in Bristol. As well as contributing to reducing end to end journey times for cross-country and Bristol to London Paddington services and the HLOS capacity metrics for both Bristol and London Paddington.

Progress in 2014/15

The project achieved GRIP 3 AIP in September 2013 and received GRIP 4-8 authority and ECAM award in November 2013. The project is currently delivering detailed designs and undertaking on site enabling works and compound set up. The project team is also integrating the OLE design and build contract into the scheme for a consolidated delivery.

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

Objective

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

Progress in 2014/15

The GRIP 2 pre-feasibility study was completed in April 2014. Works are currently being undertaken to consider how both the W008 scheme and the Bristol Temple Meads master plan can be better aligned, given the synergy between them.

W009 West of England DMU (Diesel Multiple Unit) capability works

Objective

The West of England DMU Capability Project formally started in 2014/15 following discussions with the DfT and the Greater Western Franchisee (First Great Western (FGW)) over the exact scope and required timescales for the project.

As outlined in the Enhancement Delivery Plan FGW is planning to cascade class 165 and 166 DMUs to the Bristol Area from mid-2016 onwards once the electrification starts to go live in the Thames Valley area. Therefore the work scope is focused on two main areas; gauge clearance and stations.

Progress in 2014/15

Gauge clearance

FGW has advised Network Rail that it is working with the train leasing company to modify the suspension resulting in a revised kinematic envelope. This is expected to result in a reduction in the scope of gauge clearance works required. The revised kinematic envelope was made available to NR in spring 2015.

Station works

FGW has advised Network Rail that it is planning a door modification programme to the cascaded trains that will allow a limited level of selective door opening on the trains. As a result, a list of stations to be surveyed for possible platform extension work was drawn up and joint surveys have been undertaken. This has resulted in work scope being required at 23 platforms. This work is a mix of platform resurfacing and platform extensions.

During 2015/16 the project will be developing the single options at each location for both gauge and station works.

W010 Swindon to Kemble re-doubling

Objective

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

Progress in 2014/15

The project was commissioned in August 2014 on a revised programme. The output of four train paths an hour, each way, has been achieved. Works continue to formally close out the project and this will be achieved over the next 12 months.

The new footbridge in Stroud is open and the Statement of Case for the foot crossings is being finalised with Gloucestershire County Council.

W011 Westerleigh Junction to Barnt Green linespeed increase

Objective

This enhancement will provide a linespeed increase to 100mph for the majority of the route, resulting in increased performance robustness.

Progress in 2014/15

Both of the revised milestones have not been achieved. Specifically:

GRIP 6 completion (non-Track) – March 2015; and

GRIP 7 commissioning - April 2015

- the GRIP 6 milestone was missed due to the signalling milestone not being achieved. The reasons for this are currently being reviewed
- commissioning works continue, however the April 2015 milestone was not achieved due to challenges in the commissioning blockade that could not be rectified. This has required the commissioning to be re-programmed to later this year
- two outstanding track renewals sites have been re-programmed. One site was deferred following the collapse of the Dawlish sea wall in February 2014 which required some planned renewals to be re-programmed so the Dawlish works could take priority
- Charlfield Level Crossing is open and compliant with 100mph running. However, the Planning Inspectorate have determined that the application should be re-submitted to demonstrate that full consideration has been given to the provision of an underpass – this will require the a Statement of Change to be submitted following agreement with Gloucestershire County Council
- the proposed linespeed remit is under consideration at this time. This is likely to require review of the established Network Change.

WL001 Welsh Valley Lines Electrification

Objective

The scheme will enable the more efficient operation of passenger services on the Valley Lines network, replacing ageing diesel traction with faster electric trains. A new timetable will be introduced to meet continued growth in demand for rail in the region. The Welsh Route Study (Draft for Consultation) has identified that local commuting into Cardiff could increase by up to 68 per cent between 2013 and 2023, and by up to 144 per cent between 2013 and 2043.

The project will deliver the scope of work described below and will enable faster journey times, more efficient rolling stock and support economic growth.

Scope of works

Electrification of the Valley Lines passenger network which includes the following lines:

- Rhymney
- Coryton
- Merthyr Tydfil
- Aberdare
- Treherbert
- Cardiff Bay
- Radyr via City Line
- Radyr Branch Junction to Penarth Curve South Junction
- Vale of Glamorgan Line to Bridgend
- Penarth
- Barry and Barry Island
- Bridgend to Maesteg
- Ebbw Vale (to Cardiff)
- Cardiff Canton depot reception lines, Rhymney and Treherbert stabling points.

The scope of the project has been estimated at 300 single track kilometres.

General Progress

Network Rail developed the scheme to GRIP 2 in January 2014. This included work on the scope, feasibility, cost range and programme for the scheme and assumed a seamless transition into GRIP 3, with early enabling works from April 2014.

Progress in 2014/15

The ongoing funding arrangements were agreed by the UK Government and the Welsh Government in autumn 2014. Since then, the Welsh Government has completed its own due diligence exercise on the GRIP 2 work.

The regulatory milestones were updated in early 2015 to reflect the change in development of the scheme.

The ongoing funding and sponsorship of the scheme was handed over from the DfT to the Welsh Government in April 2015. The Welsh Government is considering the next steps for the scheme, including how Valley Lines Electrification will

contribute to its plans for integrated public transport for South East Wales (Cardiff Capital Region Metro). Network Rail is ready to continue development and delivery in line with these requirements.

WL002 Barry – Cardiff Queen Street Corridor

Current GRIP Stage: 5–6

Objective

This project facilitates the increase of South Wales valley line services from 12 trains per hour to 14 trains per hour through the central Cardiff corridor by the end of CP4 (March 2014) and to 16 trains per hour by May 2016.

Progress in 2014/15

The new platform and signalling works at Cardiff Queen Street Platforms 1 and 5 are complete and the new station building and access to Platform 5 was handed over to Arriva Train Wales in November 2014. Platforms 1 and 5 were brought into operational use in line with the planned timetable change on 14 December 2014.

The third Cardiff area and re-signalling and enhancement scheme (CASR) phase (Barry) was commissioned successfully during the weekend of 28/29 June 2014. This phase brought into use the extra platform face at Barry Town.

A significant re-planning exercise has been undertaken to ensure 'Certainty of Delivery' of the remaining activities within the CASR programme.

Future works

The fourth phase (East of Cardiff) signalling commissioning is planned for completion in June 2015 and the fifth phase (Cardiff Central) signalling commissioning is planned for Christmas 2016 (24 December 2016 to 3 January 2017). The long Christmas possession is the most suitable time to carry out this work.

Table 11.33: Barry – Cardiff Queen Street Corridor milestones

Milestone	Output	Date	Date Met/Expected
Phase 2 Valley Lines	Cardiff Queen Street station access enhancement completion	November 2014	November 2014
Phase 3 Barry Lines	Commissioning of Treforrest curve track works and signalling	May 2015	May 2015
Phase 4 Cardiff east	Major signalling commissioning and permanent way remodelling Cardiff East	June 2015	June 2015
Phase 5 Cardiff Central	Major signalling commissioning and permanent way Cardiff Central including commissioning of the West of Cardiff: Leckwith – Llanharran	January 2017	January 2017
Phase 6 Cardiff Platform 8 works	Cardiff Central platform 8 works and Southern entrance	January 2017	January 2017
Phase 7 Recoveries	Permanent way and signalling recoveries	October 2017	October 2017
GRIP 6	Completion	November 2017	November 2017
GRIP 7	Completion	April 2018	April 2018
GRIP 8	Completion	December 2018	December 2018

LNE001 Northern Programme - Yorkshire

Current Project Stage: GRIP 2-3

Objective

This programme will deliver infrastructure to support the illustrative train service specification for the Northern Hub and TransPennine electrification. It combines a number of schemes proposed for delivery in CP5 on cross-Pennine routes which facilitate the introduction of electric train operation on passenger and freight services and provide the capacity metric into Leeds and Sheffield.

The current programme will provide:

- an electrified route to enable the operation of electric traction between the following points
- Stalybridge to Leeds
- Leeds to York
- Leeds to Selby
- introduction of additional services, and longer trains, on routes into Leeds and Sheffield.

Network Rail and the funder (the DfT) are currently exploring opportunities to further enhance the outputs of the Programme and deliver improved value for money. The Programme outputs, scope of works and milestones are likely to be changed to reflect these emerging opportunities and will be the subject of a future update to the Delivery Plan. As such, the milestone tables for East of Leeds, West of Leeds and Leeds station have been amended.

Scope of works

The Northern Programmes (Yorkshire), therefore, consists of the following interventions:

Table 11.34: Northern Programme – Yorkshire interventions

Intervention	Description
North TransPennine Electrification East	Provides an electrified route for the operation of electric traction between a) Stalybridge to Leeds b) Leeds to York c) Leeds to Selby
Huddersfield Station Capacity Improvement	Provides for additional capacity for 8 x 23 metre trains to operate on cross-Pennine inter-urban services, 4 x 23 metre to / from Leeds and Manchester and for 3 x 23 metre trains between Huddersfield and Sheffield
Leeds and Sheffield Capacity	Provides additional capacity at Leeds station and a programme of platform extensions to allow longer trains to operate on a number of routes in West and South Yorkshire into Leeds and Sheffield
Bradford Mill Lane Capacity	Provides parallel moves at Bradford Interchange to / from Leeds and Halifax
East of Leeds Capacity	Provides enhanced capacity on the corridor to the east of Leeds

Progress in 2014/2015

North TransPennine Electrification East

- GRIP 3 development of all aspects of the electrification design continued to programme
- Single Option Selection (mid GRIP 3*) achieved
- stakeholder workshops with internal and external stakeholder have been held to confirm the single option for further development.

Huddersfield station capacity improvement

- GRIP 3 development of Huddersfield station design continued to programme
- Single Option Selection (mid GRIP 3) achieved
- stakeholder workshops with internal and external stakeholder have been held to confirm the single option for further development.

Leeds station capacity improvement

- GRIP 3 development of Leeds station design continued to programme
- Single Option Selection (mid GRIP 3) achieved
- stakeholder workshops with internal and external stakeholder have been held to confirm the single option for further development.

Platform Extensions

- GRIP 3 development work has been on hold at request of the funder until Rolling Stock specification is confirmed as part of the Franchise process.

Bradford Mill Lane capacity

- GRIP 3 development has continued, as part of the wider planned resignalling on the route

East of Leeds capacity

- GRIP 2 feasibility study completed to programme
- outcome of feasibility study discussion with funder and industry stakeholders.

Milestones in the year:

- Delivery Plan milestones have been revised to reflect the ongoing discussions with the Funder
- next planned milestone is Bradford Mill Lane Capacity – GRIP 3 – August 2015.

*Mid GRIP 3 is a point of single option selection before AIP design is started.

LNE002a Intercity Express Programme (IEP) - East Coast Capability

Objective

The objective of this programme is to provide additional capability for Class 800/801 trains. The scope of the works includes development, design and implementation works to introduce trains up to 260 metres long on the SCML from 2018 onwards.

Progress in 2014/15

Stations - Phase 1

Platform extensions have been completed at Peterborough, Grantham, Newark Northgate and Wakefield Westgate. The remaining platform extensions (Stevenage and Northallerton) will be completed by August 2017, in accordance with the Delivery Plan milestone.

Overhead Line Equipment (OLE)

An additional option in GRIP 3 to examine return screening conductor has led to revised interim milestones. GRIP 3 was completed and the GRIP 6 completion date remains as planned for August 2017.

Gauging

GRIP 3 was completed on time. 142 sites have been identified that require infrastructure works to provide clearance to IEP. GRIP 4 outline designs have commenced and a rolling implementation programme will begin in June 2015. The Delivery Plan indicator milestones have been updated to reflect the delivery strategy of the project with the GRIP 6 completion milestone remaining as August 2017. All milestones associated with the clearance of the test route have been achieved.

Stations - Phase 2

The DfT has informed Network Rail of the locations where platform extensions are required and GRIP 3 has commenced for platform extensions at Alnmouth, Berwick, Inverkeithing, Kirkcaldy, Leuchars, Arbroath, Montrose and Stonehaven. The Delivery Plan milestones will be updated to reflect the delivery strategy for this project.

Table 11.35: Intercity Express Programme (IEP) - East Coast Capability activity milestones

Activity	Output	Date	Date Met/Expected
Gauge Capability (118937)			
GRIP 3 complete – Gauge Capability	Complete Single Option Selection	January 2014	January 2014
GRIP 4 complete (test route only) – Gauge Capability	Complete Single Option Development	September 2013	September 2013
GRIP 6 start (test route only) – Gauge Capability	Site works commence	January 2014	January 2014
GRIP 6 start – Gauge Capability	Site works commence	June 2015	June 2015
GRIP 6 complete (test route only) – Gauge Capability	Complete and ready for IEP operation	September 2014	September 2014
Gauge Clearance Low traffic testing September 2015	Werrington to Darlington	September 2015	September 2015
Gauge Clearance Normal traffic testing	King's Cross to Inverness/Aberdeen	March 2016	March 2016
GRIP 6 complete – Gauge Capability	Complete and ready for IEP operation	August 2017	August 2017
Station Capability (118939 Phase 1, 133277 Phase 2)			
GRIP 3 complete: Station Capability Phase 2	Complete Single Option Selection	June 2016	June 2016
GRIP 4 complete: Station Capability Phase 2 Station Capability Phase 2: Includes stations in Scotland, Anglia and additional stations on LNE that were identified in February 2012	Complete Single Option Development	TBC	TBC
GRIP 6 start: Station Capability Phase 1	Site works commence	April 2013	April 2013
GRIP 6 start: Station Capability Phase 2	Site works commence	TBC	TBC
GRIP 6 complete: Station Capability Phasee 1	Complete and ready for IEP operation	August 2017	August 2017
GRIP 6 complete: Station Capability Phasee 2	Complete and ready for IEP operation	August 2017	August 2017
OLE (118938)			
GRIP 4 (stage gate review complete): OLE Capability	Detailed design option confirmed	August 2015	August 2015
GRIP 6 started: OLE Capability	Start on site	December 2015	December 2015
GRIP 6 complete: OLE Capability	Practical completion (assets commissioned). Complete and ready for IEP operation	August 2017	August 2017

LNE002b Intercity Express Programme (IEP) - East Coast Power Supply Upgrade

Objective

The output of this scheme is to provide upgraded traction power supply capability between Doncaster and London to support Intercity Express Programme and Thameslink requirements and enable the introduction of new rolling stock on the ECML.

Progress in 2014/15

GRIP 4 was completed to schedule in August 2014. Overhead line equipment and signalling works were completed as planned at Corey's Mill over Christmas 2014. Construction has commenced on new compounds at Langley Junction and Corey's Mill along with the installation of the power to overhead line structures. The programme is on plan for GRIP 6 completion for Corey's Mill to Welwyn in December 2016.

- design work has commenced for telecommunications, SCADA, troughing and route works
- productive discussions have been held with Distribution Network Operators to increase Firm Service Capacity at Little Barford, Nene and Bretton during early 2016
- National Grid has delivered works to schedule for the 400kV feeder station and the programme is on plan to achieve GRIP 6 completion in December 2016.

Table 11.36: Intercity Express Programme (IEP) - East Coast Power Supply Upgrade activity milestones

Activity	Output	Date	Date Met /Expected
National Grid 400kV Feeder Stations (Project 121945)			
GRIP 6 complete Note other GRIP milestones are not appropriate as this programme is delivered by National Grid.	Commissioning complete	December 2016	December 2016
East Coast Power Supply Upgrade Phase 1 (Wood Green to Bawtry) (Project 121948)			
GRIP 4 complete	Complete outline design	August 2014	August 2014
GRIP 6 complete – Corey's Mill to Welwyn (Thameslink requirement)	Commissioning complete	March 2016	March 2016
GRIP 6 complete – Commissioning of Essendine AT Feeder area (formerly Wood Green to St Neots)	Commissioning complete	December 2016	December 2016
GRIP 6 complete – GRIP 6 completion Wood Green – Bawtry (formerly St Neots to Bawtry)	Commissioning complete	August 2017	August 2017
Classic System Reinforcement - Ardsley Feeder station (120213)			
Ardsley (Leeds – Doncaster), GRIP 6 start –	Commence installation	October 2013	October 2013
Ardsley (Leeds – Doncaster), GRIP 6 complete –	Commissioning complete	March 2014	March 2014

LNE003 LNE Routes Traction Power Supply Upgrade

Current Project Stage: GRIP 2

Objective

This project will provide power supply upgrade development work to enable the delivery of required power to support growth in CP6.

Progress in 2014/15

Following the production of the Client Remit in late 2014, it was agreed that GRIP 2 should be re-visited since completing the original study in late 2012. This was to enable lessons learnt from current traction power supply projects to be incorporated into an earlier GRIP Stage, to consider a wider range of solution options, to have closer working with the appropriate Distribution Network Operators (DNO's) along this part of the route, to identify options to incrementally upgrade the power supply and to obtain a better understanding of the existing system.

A change control to the existing GRIP 3 milestone of December 2014 was agreed and the GRIP 2 milestone is December 2015. A GRIP 3 milestone has been provisionally identified as February 2017.

Traction power modelling commenced in mid-April which incorporates the ECML ITSS 2020 and future scenarios going forward.

LNE004 Stevenage and Gordon Hill Turnbacks

Current Project Stage: GRIP 5-8

Objective

This project delivers the capacity metric into Moorgate and King's Cross providing for efficient use of suburban rolling stock by allowing services to turnback at Stevenage and Gordon Hill hence providing efficient resourcing for peak capacity on Inner Suburban services into King's Cross and Moorgate.

Progress in 2014/15

Options for each station were identified and explored by the project consultant which then formed the basis of the option selection process. This also included identifying risks to project development and delivery. As part of the option selection process, meetings with the Station Facility Owner (GTR) took place to understand its requirements.

Site investigations including track bed inspection, topographical and ground investigation have been completed. This has taken longer than expected due to limitations in obtaining access to the trackside.

Following the end of the option selection process, stakeholder workshops for both locations have been held with the Station Facility Owner (SFO) and other stakeholders and a single option for the Gordon Hill station has been chosen. There is currently a delay in confirming the single option for Stevenage.

Other progress made includes:

- project requirements have been agreed with the Route Asset Managers
- discussions have taken place as part of the industry Engineering Access Statement planning process for access required during 2017
- discussions with local landowners regarding land access requirements for construction, access and maintenance have begun
- the option selection process has been delayed whilst resolving a signalling specification
- a review of the timetable modelling has been completed.

Table 11.37: Stevenage and Gordon Hill Turnbacks milestones

Milestone	Description	Date	Date Met/Expected
GRIP 3 completion	Single option selection	December 2015	December 2015
GRIP 6 start	Start on site	March 2017	March 2017
GRIP 6 completion	Infrastructure ready for use	September 2018	September 2018

LNE005 Capacity Relief to the ECML (GN/GE joint line)

Current Project Stage: GRIP Stage 7 - Hand Back

Objective

The scheme provides a significantly upgraded line between Peterborough and Doncaster via Spalding and Lincoln that can become the primary route for daytime freight traffic. This allows a parallel growth in Long Distance High Speed (LDHS) passenger services between London and Yorkshire, the North East and Scotland, and freight traffic, particularly intermodal traffic from Felixstowe, Bathside Bay and London Gateway.

Progress in 2014/15

The signalling commissioning phase has been completed and new line speeds have been introduced. The route Gauge is now cleared for W12 traffic, exceeding the committed W9/W10. The Delivery Plan milestones for tonnage, gauge train length, journey time and capacity were all met by November 2014.

All scope has been completed and outputs delivered, achieving GRIP stage 6.

Table 11.38: Capacity Relief to the ECML activity milestones

GRIP Stage	Output	Date	Date Met/Expected
GRIP 6 outputs delivered	Infrastructure available for tonnage and gauge	November 2014	November 2014
GRIP 6 outputs delivered	Infrastructure available for train length, capacity and journey time. (excluding capability provided by an appropriate southern access connection)	November 2014	November 2014

LNE006 North Doncaster Chord

Project stage: Complete June 2014

Objective

The scheme allows an increase in passenger and freight services on the East Coast Main Line (ECML) by removing a significant number of existing freight services between Joan Croft junction and Hambleton South junction and re-routing these via a more direct route.

Progress in 2014/15

The project was completed (GRIP 6) ahead of the published milestone and has been in regular freight use since opening. The benefits created by the CP4 ECML enhancement programme are now available for adoption by future services, with the increase in short term planning flexibility already bringing benefits.

LNE007 Tram Train Pilot

Objective

Tram Trains are a common sight in Europe and this pilot scheme is testing the belief that they could help to improve journey options for passengers around Britain's towns and cities.

The pilot is expected to help deliver better access to jobs, education and leisure facilities; better connections between Sheffield and Rotherham and increased green journey options, minimising congestion on the roads. It will also provide important information and learning that will inform future tram train schemes in Britain. The scheme is being jointly delivered by the DfT, Network Rail, South Yorkshire Passenger Transport Executive (SYPTE) and Stagecoach Supertram.

Progress in 2014/15

During the year the need for an improved track alignment to connect the Supertram and railway networks was identified. This new alignment has been designed and is known as the Tinsley Chord. Public consultation has been held and an application for a Transport and Works Act Order was submitted to the Secretary of State for Transport for the necessary powers to construct and operate the chord.

This process has contributed to the extension in the time required to complete the design stage. In addition the complexity of this innovative scheme has required some elements to be revised prior to acceptance. The overall impact has resulted in the non-regulated indicative start on site date being updated from January 2015 to August 2015.

LNE008 ECML Overhead Line Electrification (OLE)

Objective

The key output is a reduction of delay minutes to support delivery of the route performance as part of CP4/5 Long Term Performance Plan (LTPP). This will be achieved by increasing the reliability and performance of the ECML Overhead Line Electrification (OLE) through delivery of targeted renewals and component changes, identifying key assets within the OLE where a reduction of risk can be achieved.

Progress 2014/15

This project achieved GRIP 6 completion in March 2015. The project delivered crossover and contact wire renewal and removed defects and campaign changes within the wire runs.

Table 11.39: ECML Overhead Line Electrification GRIP 6 milestone

Milestone	Description	Date	Date Met/Expected
GRIP 6 completion	Infrastructure ready for use	March 2015	March 2015

EM001 MML Long Distance High Speed Services Train Lengthening

Objective

This scheme will aim to improve infrastructure capability enabling the introduction of longer trains on the MML on selected services in order to accommodate forecast levels of passenger growth and reduce crowding on MML LDHS between London St. Pancras and Nottingham and Sheffield.

Progress in 2014/15

The scheme is currently in GRIP 3 which is due to complete at the end of June 2015, prior to ECAM in August 2015 with an estimated completion or September to December 2017.

EM002 St Pancras to Sheffield Linespeed Improvements

Objective

The aim of this scheme is to remove all the remaining speed restrictions between London St Pancras and Sheffield through sustainable solutions, maximising synergy with permanent way renewals planned in CP5.

Progress in 2014/15

The project continued its implementation phase during 2014 and reduced the temporary speed restrictions (TSRs) in the sections in order to release the potential journey time reduction. By the end of the year all works were complete in the Down direction enabling a full eight minutes of journey time reduction. In the Up direction works also progressed well and at year end only two TSRs remain in the Up direction. These are planned to be completed early in 2015/16.

LNW003 Stafford Area Improvement Programme

Objective

The aim of this scheme is to address the capacity and performance constraints in the Stafford area. The project will deliver the capability for two additional, off peak, paths from London to the North West (each direction), one additional path per hour on the Birmingham – Manchester axis (each direction) and one additional freight path per hour through Stafford, again in each direction.

Progress in 2014/15

In 2014/15, the following works were delivered:

- Development Consent Order (DCO) approved by Secretary of State for Transport for the Norton Bridge element of the programme
- National Grid Gas successfully diverted two of the three high pressure pipelines required by the scheme to facilitate the new rail infrastructure construction
- stakeholder engagement continues on the programme, working closely with Staffordshire County, Stafford Borough and Parish Councils, Environment Agency, Natural England, local communities and Train and Freight operators
- Stafford resignalling has completed 15 of the 22 stages required for final commissioning, planned later in 2015
- earthworks for the grade separation at Norton Bridge commenced with 150,000m^3 moved on site
- structure works have commenced with four bridges practically complete and the remaining eight in varying stages of construction
- new switches and crossings (S&C) units installed at Stafford and Norton Bridge in support of the programme.

Table 11.40: Stafford Area Improvement Programme milestones

Milestone	Description	Date	Date Met/Expected
GRIP 4 completion	Single option scope definition	April 2014	April 2014
GRIP 6 start Stafford Resignalling	Start on site	February 2014	December 2013
GRIP 6 start Norton Bridge	Start on site	October 2014	March 2014
GRIP 6 completion Stafford resignalling	Infrastructure ready for use	December 2015	August 2015
GRIP 6 completion Norton Bridge	Infrastructure ready for use	August 2017	May 2016
Infrastructure operational	Infrastructure ready for use	December 2017	October 2016

LNW004 West Coast Power Supply Upgrade

Objective

Phase 3 of the WCPSU project is remitted to upgrade the WCML traction supply to a 12kA autotransformer (AT) system and is a key capacity enabler.

Progress in 2014/15

Phase 3A (Wembley to Whitmore) received GRIP 5-8 authority in May 2011 and remains on programme to deliver its committed outputs for February 2017.

Phase 3B delivers an upgraded AT system from Whitmore (Stafford) to Euxton, and Carnforth to Great Strickland and in line with Phase 3A remains on programme to deliver its scheduled outputs and final commissioning into service for February 2017.

Table 11.41: Phase 3 Milestones: North Wembley – Great Strickland

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

LNW005 Birmingham New Street Gateway project

Current Project Stage: GRIP 6

Objective

This redevelopment provides an upgrade to the station in order to enhance station facilities and provide greater capacity to support passenger growth over the next 30 years. During 2013/14 significant progress was made including the completion of, and 'switchover' to, the western concourse, substantial completion of façade installation and progression of Phase 2 concourse works.

The redevelopment of Birmingham New Street station will upgrade the station to provide enhanced station facilities and greater capacity for passenger handling up to 2035. The project is jointly funded by Network Rail, Advantage West Midlands, Birmingham City Council (BCC), Centro and the DfT, with BCC as client.

Progress in 2014/15

In 2014/15 the project has moved closer to completion to provide Birmingham with a station fit for the twenty first century. In the latter part of 2014 the atrium roof structure was complete and was clad with ETFE, a strong plastic material previously used on the Eden Project. This allowed demolition to start underneath so natural light could flood the concourse for the first time. To facilitate this work the dispersal bridge which serves the 'b' end of the platforms was moved out of the path of the demolition, meaning passengers could use the new escalators at this end of the station for the first time. Over a six month period over 6,000 tonnes of concrete was removed from two floors of the old shopping centre to create an iconic centre piece for the new station.

Inside the atrium, final finishes have commenced whilst the programme of platform upgrades continues, opening up more space at platform level and increasing capacity. The retail units have been constructed both at concourse and Grand Central levels with bulkheads, glazing and shop fronts being formed. This allows fit out to start within the individual units whilst work reaches completion on flooring, ceiling, services and ticket gates.

The exterior of the station is progressing well with the stainless steel façade being installed to the east, west and south of the structure. The John Lewis building is complete and has been handed over for fit out and the taxi rank structure has been erected and in being paved. The 'media eyes' have been procured putting the project in a good position for the opening in September 2015 and giving a great first impression of Britain's second city.

LNW006 Walsall to Rugeley electrification

Objective

This project will provide the infrastructure to enable the running of electric rolling stock between Walsall and Rugeley Trent Valley. Electrification of the route will provide an electrified alternative / diversionary route to the Wolverhampton – Stafford route.

Progress in 2014/15

GRIP 3 single option selection was completed in September 2014. GRIP 4 single option scope was defined and completed in March 2015.

Major works involving Walsall Tunnel were completed successfully over Easter 2015. Bridge reconstructions to prepare for the introduction of OLE were carried out by Amalgamated Construction (AMCO).

LNW007 Chiltern Main Line Train Lengthening

Objective

Platform extensions and train lengthening will accommodate and additional 1,000 passengers during the morning three hour peak into London Marylebone. Nine-car operation at five key stations will enable this.

Progress in 2014/15

Chiltern Mainline Platform Lengthening (Except High Wycombe down Platform)

GRIP 6, with platform extensions, was completed in September 2014. Works were completed within budget with minimal disruption to passengers, TOCs and FOCs. Stations with extended platforms are featured below:

- Bicester North
- Haddenham and Thame Parkway
- Princes Risborough
- High Wycombe (up platform)
- Beaconsfield.

The programme for bringing the platform extensions into operational use is planned in the coming months. Chiltern Railways proposed to operate nine-car trainsets on a regular basis from September 2015.

Chiltern Mainline Platform Lengthening – High Wycombe down Platform

This section of the scheme involves lengthening the down platform at High Wycombe, sidings enhancements work, and additional signalling equipment at London Marylebone. GRIP 3 Completion was reached in December 2014. GRIP 4 design development identified additional scope necessary to complete the platform extension, resulting in a re-authority to gain approval for an additional £2.804 million (now complete). The scheme remains on target for completing the down platform extension at High Wycombe by the end of August 2015. However the permanent footbridge will not be complete until December 2015.

LNW008 North West Train Lengthening

Objective

Infrastructure interventions are required to help facilitate the operational plans developed with train operators to meet the HLOS capacity metrics and support forecast demand in CP5 for routes into Liverpool and Manchester.

Progress in 2014/15

This scheme is currently undertaking an option selection of sites with Network Rail and the TOCs. The intention is still to deliver the necessary enhancements in line with December 2016 and December 2018 timetable changes.

LNW009 Bromsgrove Electrification

Current Project Stage: GRIP 6

Objective

This project will increase capacity by extending an existing three trains per hour service to Bromsgrove that currently terminate and turn back at Longbridge.

Progress in 2014/15

- progress has been made on GRIP 5 detailed design
- signalling development has been undertaken by Network Rail's Signal Design Group (SDG), signalling scheme plan signoff and contract award to Siemens Rail Automation in July 2014. Signalling construction work commenced in autumn 2014
- GRIP 4 Timetabling and RailSys draft reports issued
- the bridge reconstruction design and build contract was awarded to provide full electrification clearances at four affected structures. Work started on site in August 2014.

The station scheme started on site. It has undertaken a significant ground de-contamination exercise at the site of a former oil terminal: relocated tracks in the new station area to clear the 'footprint' for the four new platforms, built retaining walls and started on the construction of platforms, foundations and station buildings.

LNW010 Redditch Branch Enhancement

Current GRIP Status: GRIP 6

Objective

This capacity enhancement scheme will provide the infrastructure to increase the train service frequency between Birmingham and Redditch, on the southern half of the Birmingham Cross-City line.

Progress in 2014/15

- the main contract was awarded to Buckingham Group (main contractor)
- site works commenced in December 2013
- an eight-week blockade took place to enable the main works (the rail replacement bus service was widely praised as exemplary)
- the project was delivered with 120,000 hours worked without RIDDOR incidents.

The scheme's output increased the service frequency from two to three trains an hour on the Cross-City services to Redditch, which commenced on 14 December 2014. As well as capacity improvement, the scheme delivered an improvement in train performance. Passenger numbers have increased since. The scheme is a CP5 project listed in the Final Determination, and is now no longer being monitored by the ORR having discharged its Regulatory milestones on schedule.

Table 11.42: Redditch Branch Enhancement GRIP 6 milestone

Activity	Output	Date	Date Met/Expected
GRIP 6 Complete	Infrastructure ready to use	August 2014	August 2014

Scotland

SF001 Scottish Stations Fund

Objective

The purpose of the fund is to improve and enhance station facilities as well as consider proposals for new stations. The fund is to support the Scottish Ministers objective of improving the public's access to railway services.

Progress in 2014/15

- mobile information screens for Edinburgh Waverley and Glasgow Central stations have been installed to improve public station information, especially during events and disruption.
- cladding has been installed at Newton station to improve the public underpass in conjunction with DDA accessibility improvements. A new booking office was completed as part of the work undertaken prior to the Commonwealth Games.

SF002 Scottish Strategic Rail Freight Investment Fund

Objective

The purpose of the fund is to encourage growth in rail freight and reduce emissions. The fund should support sustainable rail transport for freight, thereby reducing the supply chain's transport emissions and reducing road congestion

Progress in 2014/15

The Carmuirs Aqueduct enhancement – replacement of twin tunnels with an aqueduct to enable W12 gauge clearance and linespeed benefits.

SF003 Scottish Network Improvement Fund

Objective

The purpose of this fund is to deliver, interventions on the Scottish network which support the development of the capacity and capability of general infrastructure and network communications systems in line with the strategic priorities of Scottish Ministers, including improved journey times, improved connectivity and resilience.

Progress in 2014/15

AOCL+B (automatic open crossing local + barriers) will contribute towards improved line speeds and ultimately journey time.

SF004 Future Network Development Fund

Objective

The purpose of this fund is to develop proposals for strategic interventions to improve the capacity and capability of the Scottish network in CP6 and beyond.

Progress in 2014/15

This fund is currently being used to develop options for the Carstairs Junction remodel, the Dunbar station new Down platform and the Millerhill fully signalled route. It is also being used to develop options that feed into the Scotland Route Study due for publication in December 2015.

SF005 Scotland: Level Crossing Fund

Objective

In addition to the baseline funding requirement for level crossing safety in Scotland, this fund will support Network Rail, local authorities and other local stakeholders to work in partnership to facilitate the closure and partial closure of level crossings in Scotland to reduce wider industry costs.

Progress in 2014/15

Camperdown level crossing closure – a contribution from this fund and signalling renewals jointly enabled this crossing to be closed.

SC001 EGIP - Electrification of Springburn to Cumbernauld

Current Project Stage: Project Complete

Objective

The project has electrified 50 single track kilometres of railway in order to permit electric trains to operate between Springburn and Cumbernauld and Motherwell and Cumbernauld. This has allowed Glasgow Cumbernauld services to divert to Glasgow Queen Street Low Level, freeing capacity in Queen Street High Level.

This project has helped address capacity issues at Glasgow Queen Street High Level. The extension of existing EMU (Electric Multiple Unit) services from Springburn to Cumbernauld has facilitated a cascade of Class 158 DMU (Diesel Multiple Unit) rolling stock to the new Borders Railway.

Scope of works

- electrification of the routes from Cowlairs West/Sighthill Junction to Cumbernauld
- electrification of Gartcosh Junction to Gartsherrie South Junction
- electrification of Garnqueen North Junction to Gartsherrie South Junction
- installation of additional S&C and a crossover at Springburn to improve operating flexibility for Cumbernauld service turnarounds
- platform lengthening at Cumbernauld for six-car EMU operation.

The extent of the electrification works equates to circa 50 single track kilometres of new electrification, clearance works for the remaining three foul structures, parapet raising on five other bridges and immunisation of existing telecoms and S&T equipment.

Table 11.43: Milestones for SC001 EGIP Electrification of Springburn to Cumbernauld

Activity/Output	Date	Date Met/Expected
GRIP 6 completion (Infrastructure ready for use)	March 2014	March 2014

Progress during 2014/15

Works complete. The new electric service commenced on schedule, on Sunday 18th May. The new Cumbernauld station building has now been completed and was officially opened on 14th July by Cumbernauld MSP, Jamie Hepburn.

SC002 EGIP - Initial Phase Key Output 1

Current Project Stage: GRIP Stages 5-8

Objective

This project will electrify the route between Newbridge Junction and Glasgow Queen Street and extend platform lengths at selected stations. Together with alterations at Glasgow Queen Street and Edinburgh Waverley this will permit seven-car electric trains to operate on the route. In addition, a new station will be constructed known as Edinburgh Gateway including a tram interchange to give improved access to Edinburgh airport and West Edinburgh.

The key outputs of EGIP include reductions in journey times and increased passenger capacity on the main Edinburgh to Glasgow route, giving benefits to passengers, contributing to the Scottish Government's goals of improving economic connectivity and reducing road congestion. Electrification will also reduce CO_2 emissions on the route.

The increase in capacity will be achieved through electrification and the introduction of longer train formations. Seven-car formations will operate during peak periods. Intermediate station platforms will be extended to accommodate longer trains. These will replace the current three-car DMUs which operate as six-car formations during peak periods. End to end journey times will be progressively reduced from the current fastest journey time of 50 minutes to 42 minutes on completion of EGIP Initial Phase and the electrification of other routes that connect with the corridor when eight-car trains will also be able to operate.

Table 11.44: EGIP – Initial Phase Key Output 1 projects

Project	Physical outputs
Glasgow Queen St High Level to Newbridge Junction (via Falkirk High) Electrification	25kv OLE
Cumbernauld to Greenhill Lower Junction Electrification	25kv OLE
Glasgow Queen Street High Level station capacity	Extended platforms, station throat re-modelling and signalling headway improvements
Platform extensions at Croy, Falkirk High, Polmont and Linlithgow	Platforms lengthened to support eight-car EMU operation
Haymarket to Inverkeithing signalling headways	Signalling improvements to deliver reduced headways
Edinburgh Waverley station capacity	Works to support operation of eight-car EMU E&G services, which may include platform, S&C and signalling alterations and additional S&C in the station throat.
East of Edinburgh EMU depot	Creation of a stabling and cleaning facility for new EMU rolling stock at Millerhill. This may require Portobello Junction re-modelling which is not currently within EGIP scope.
Edinburgh Gateway station	New station on the Edinburgh to Fife Line to provide an interchange with the Edinburgh Tram network for onward connection to Edinburgh Airport.

The extent of the above electrification works equates to approximately 150 single track kilometres of new electrification, including provision of a new feeder station at Greenhill, electrification clearance works to eight foul structures and immunisation of existing telecoms and signalling equipment.

Progress during 2014/15:

Following a commercial submission to the ORR, and both the ORR's and Transport Scotland's agreement to RAB (Regulatory Asset base) fund Key Output 1 works, contracts were to an Alliance of Morgan Sindall PLC and Costain Limited to deliver EGIP Key Output 1, with the exception of the Haymarket to Inverkeithing signalling headways project and Edinburgh Gateway Station Project.

Glasgow Queen St High Level to Newbridge Junction (via Falkirk High) Electrification and Cumbernauld to Greenhill Lower Junction Electrification

GRIP 5 electrification works were completed during 2014/15 and GRIP 6 site works have commenced. By March 2015, around ten per cent of OLE stanchion foundations have been successfully installed.

Platform extensions at Croy, Falkirk High, Polmont and Linlithgow

GRIP 5 has been completed for the platform extensions and appropriate planning permissions sought. As of March 2015 implementation works have commenced at Croy station.

Glasgow Queen Street High Level station capacity

GRIP 4 has been completed for platform and track design.

Haymarket to Inverkeithing Signalling headways

Siemens were contracted to deliver this work package. As of March 2015, axle counters are now installed on the route section. Commissioning is on target for May 2015.

Edinburgh Waverley station capacity

GRIP 3 option selection report has been completed. GRIP 4 is now underway.

East of Edinburgh EMU depot

Purchase of the Millerhill site from DB Shenker has been concluded. GRIP 4 design is underway following input from the incoming ScotRail franchisee.

Edinburgh Gateway Station

A GRIP 5 – 8 contract has been awarded to Balfour Beatty PLC to deliver the Edinburgh Gateway Station Project. Site mobilisation commenced in January 2015. The Scottish Water advance works sewer diversion associated with these works completed in December 2014.

SC003 EGIP - Initial Phase Key Outputs 2, 3 & 4

Current Project Stage: GRIP Stages 5

Objective

This project will remodel Glasgow Queen Street station to permit the operation of eight-car trains on the main Edinburgh/Glasgow route and increase line speeds where appropriate to deliver a 42 minute fastest journey time between Edinburgh Waverley and Glasgow Queen Street. The key outputs of EGIP include reductions in journey times and increased passenger capacity on the main Edinburgh to Glasgow route, giving benefits to passengers, contributing to the Scottish Government's goals of improving economic connectivity and reducing road congestion.

Electrification will also reduce CO_2 emissions on the route. The increase in capacity will be achieved through electrification and the introduction of longer train formations. Four-car EMUs will be introduced, operating as eight-car formations during peak periods. These will replace the current three-car DMUs which operate as six-car formations during peak periods. End to end journey times will be progressively reduced from the current fastest journey time of 50 minutes to 42 minutes on completion of EGIP Initial Phase and the electrification of other routes that connect with the corridor.

Table 11.45: Physical works for projects within EGIP Initial Phase Key Outputs 2, 3 & 4

Project	Physical Works
Glasgow Queen Street High Level station : concourse works	Physical works required to allow extensions to a number of the existing platforms at their concourse ends to provide eight-car standage Increased station concourse space and enhanced passenger facilities to accommodate forecast growth.
Edinburgh to Glasgow (E&G) Line speed Improvements	Increased line speeds at a number of locations to allow end to end journey target to be achieved. (The extent of these works is dependent on the output from timetable and rolling stock development work that is currently underway)

Progress in 2014/15

A Single Option was defined in February 2014. Phase 1 consultation on the prospective Transport and Works Order Scotland (TAWS) necessary to authorise the Key Output 4 works was held between March and May 2015. Phase 2 consultation on the TAWS Order was held between October and December 2014. The current target date for TAWS Order submission is late July 2016.

Purchase of Consort House to facilitate Key Output 4 was completed on 31 March 2015.

Table 11.46: Milestones for SC003 EGIP Initial Phase Key Outputs 2, 3 & 4

Activity/Output	Date	Date Met/Expected
GRIP 3 completion	April 2014	April 2014
GRIP 4 completion	September 2014	September 2014
GRIP 6 start	January 2017	January 2017
GRIP 6 completion	March 2019	March 2019

SC005 EGIP - Haymarket station capacity project: GRIP 5 to 8 implementation

Current Project Stage: Project Complete

Objective

This project has rebuilt Haymarket station to accommodate anticipated future passenger flows.

This project forms part of EGIP. The project has enhanced the facilities at Edinburgh Haymarket station in order that it can accommodate forecast future demand levels, including that generated by EGIP. A tram interchange is now available following completion of the Edinburgh tram project.

Scope of works

The proposal involves the redevelopment of Haymarket station to extend the station concourse over the existing car park to the rear of the station building. Specific works are:

- an expansion of the existing station concourse
- the creation of an additional entrance off Haymarket Terrace facilitating improved accessibility and links to other transport modes
- the retention of the Grade A Listed building and refurbishment of the ground and lower ground floors
- a glazed roof structure over the new concourse with new station ticket office and retail outlets beneath
- new footbridge concourse extension with lift, escalator and stair access to platforms below;
- removal of old footbridge and stairs
- re-profiled platform surfaces throughout including new copers and new surfacing with tactile strips
- new six-car length platform canopies
- refurbished platform facilities for staff and passengers
- new emergency escape facilities off the east end of Platforms 2, 3 and 4
- associated alterations to car park access and egress arrangements
- enhanced security measures.

Progress in 2014/15

Table 11.47: Milestones for SC005 Haymarket station Capacity Project

Activity/Output	Date	Date Met/Expected
GRIP 6 completion	April 2014	April 2014

SC006 EGIP 2013 advance route clearance programme (other routes)

Current Project Stage: Project Complete

Objective

This project will undertake advance route clearance works at various structures to facilitate the electrification of the route to Stirling Dunblane and Alloa included in the rolling Programme of Electrification (Scotland) (see SC008).

The project will deliver electrification clearances at nine foul structures. These structures are on routes that are covered by Transport Scotland's subsequent wider electrification aspirations following the completion of EGIP. GRIP 1 to 4 development of the project was undertaken as part of EGIP. The electrification is now being delivered on a standalone basis and does not form part of EGIP. However these advanced works are being funded from the EGIP programme.

Scope of works

- the scope of work to be delivered by Network Rail for GRIP 5 to 8 (detailed design and implementation including commissioning, handover and completion) comprises the following
- Form B and 'approved for construction' drawings
- implementation programme including commissioning and handover activities
- compliance with appropriate planning and statutory consents
- implementation of works including commissioning, handover and completion
- replace Carmuirs twin tunnels with aqueduct to enable W12 gauge clearance and future line speed improvements (part funded from Scottish Strategic Rail Freight Investment Fund).

Table 11.48: Milestones for SC006 EGIP 2013 Advance Route Clearance Programme (Other Routes)

Activity/Output	Date	Date Met/Expected
GRIP 6 completion	June 2015	June 2015

Progress in 2014/15

All works have been completed and handed back to the Network Rail asset steward. Carmuirs Aqueduct was completed and opened to vessels on 27 March 2015

SC007 Borders Railway

Current Project Stage: Delivery

Objective

The Borders Railway is the longest domestic railway to be built in the British Isles for over 100 years. Running for approximately 48 kilometres south of Edinburgh, this new line will include seven new stations and connect Midlothian and the central Borders to the rail network for the first time in almost 50 years.

The project has been developed to act as an economic and social stimulus for both Midlothian and the Scottish Borders, two locations in Scotland with the highest average age and lowest average earnings per head of population. The scenic route is expected to be a major draw for tourists but will also connect the central Borders to Edinburgh in less than one hour, making the area more attractive for employment, education and leisure.

Train services will operate half hourly at peak times, with hourly services off-peak. The business case predicts annual passenger numbers of 647,000.

Progress in 2014/15:

Since assuming the Authorised Undertaker role in 2012, Network Rail has built or refurbished over 140 structures, moved 1.5 million tonnes of earth, laid over 1,000 108-metre lengths of rail and written over 100,000 letters to members of the community about progress on the project.

The railway was commissioned on 7 June, with driver training beginning the following day. The project is on budget and on schedule to open to passengers on 6 September 2015, less than three years after Network Rail became the Authorised Undertaker.

A submission was made to the ORR in summer 2012 for the inclusion of the development and delivery of the project in the Delivery Plan, which identified future milestones to be met as follows:

Table 11.49: Milestones for ID Borders Railway

Activity/Output	Date	Date Met/Expected
Commence Mining Remediation	15 November 2012	15 October 2012
Commence Main Works site mobilisation	31 January 2013	7 January 2013
GRIP 4 Stage Gate Review	30 April 2013	17 April 2013
Commence Track Laying	29 June 2014	29 June 2014
Route Available for driver training	14 June 2015	14 June 2015
Stations ready for handover to TOC	14 June 2015	14 June 2015
Service Commencement by TOC	6 September 2015	6 September 2015

SC008 Rolling programme of electrification (Scotland)

R&C Rutherglen and Coatbridge (R&C) electrification

Scope of works

Network Rail is electrifying the R&C route from Rutherglen East Junction to Whifflet North Junction and Langloan Junction to Coatbridge Junction.

The project comprises: installation of approximately 26 single track kilometres of 25kV OLE, provision of Driver Only Operation (DOO) platform equipment; replacement of a foul road overbridge with a new bridge to achieve OLE clearances; parapet protection works at overline structures; and immunisation and electromagnetic conductivity (EMC) works to cable routes, equipment and station domestic wiring installations.

This proposal is a Network Rail/ScotRail Alliance initiative, supported by Transport Scotland. It forms part of the rolling programme of electrification specified for CP5 to reduce emissions and energy consumption, with delivery accelerated to maximise the utilisation of existing electric multiple unit (EMU) rolling stock.

This is part of the rolling electrification programme for Scotland agreed with Transport Scotland for CP5.

Electrification of the route will allow consideration of possible improvements in capacity, journey times and connectivity available by integrating the Whifflet (R&C) passenger services with the Argyle line group of services.

Electrification also provides a further diversionary route for Virgin and First TransPennine Express electric passenger services, thus enhancing network resilience.

Progress during 2014/15

The OLE was scheduled to be commissioned in August 2014 and was amended to September 2014 due to access and supply chain requirements. This allowed ScotRail to commence driver training to align with the December 2014 timetable change when full EMU introduction was scheduled to take place.

The December 2014 timetable milestone was achieved and full EMU services have been introduced over the R&C route. The addition of this electrified route has allowed a complete re-cast of the Argyle Line Group services and has released capacity in Glasgow Central High Level station for the Lanark EMU service.

Table 11.50: Milestones for R&C Electrification

Activity/Output	Date	Date Met/Expected
Award GRIP 4 to 8 Contract	January 2014	January 2014
Commission 25kV OLE	August 2014	September 2014
Complete Works	March 2015	September 2016

The Railways (Interoperability) Regulations 2011, As Amended apply to this project in terms of the Electrification Subsystem Upgrade and the project is currently working with the ORR HMRI to conclude a number of Interoperability Regulations matters. This includes but is not limited to demonstrating that the new Network Rail Series 2 OLE equipment is fully interoperable. This means that whilst the electrified infrastructure is operational a number of work activities have to continue until September 2016.

Shotts Electrification

Scope of works

Network Rail is electrifying the Shotts route from Holytown Junction to Midcalder Junction.

The project comprises: installation of approximately 74 single track kilometres of 25kV OLE, reconstruction of a number of foul overline structures to achieve OLE clearances; parapet protection works at overline structures; and immunisation and electromagnetic conductivity (EMC) works to cable routes, equipment and station domestic wiring installations.

This proposal is supported by Transport Scotland. It forms part of the rolling programme of electrification specified for CP5 to reduce emissions and energy consumption, with delivery accelerated to maximise the utilisation of existing electric multiple unit (EMU) rolling stock.

This is part of the rolling electrification programme for Scotland agreed with Transport Scotland for CP5.

Electrification of the route will allow consideration of possible improvements in capacity, journey times and rolling stock utilisation for ScotRail services. Once completed it contributes to resilience of the network and opens up opportunities for the rail freight operators to utilise electric traction on flows from Mossend/Coatbridge terminals to and from ECML connected ports.

Electrification also provides a further diversionary route for Virgin and First TransPennine Express electric passenger services, thus enhancing network resilience.

Progress during 2014/15

The project commenced during 2014 by undertaking some route clearance and advance works that included the removal of a number of foul overline structures. During this period further site surveys, detailed design and planning activities have taken place. These support the next tranche of route clearance works that are planned to commence in April 2015 and run through to March 2016.

Table 11.51: Milestones for Shotts Electrification

Activity/Output	Date	Date Met/Expected
Award initial GRIP 4 to 8 Advance Works Contract	August 2014	August 2014
Commission 25kV OLE	September 2018	September 2018
Complete Works	March 2019	March 2019

The Railways (Interoperability) Regulations 2011, As Amended apply to this project which will involve ORR HMRI.

The project will install Network Rail Series 2 Overhead Line Equipment (OLE) together with a number of new sub-stations to control the 25kV distribution system.

A number of new sub-stations and a new grid supply point are included in the scope of the project.

Greenhill Lower-Falkirk Grahamston-Polmont, Stirling, Dunblane and Alloa

Scope of works

Network Rail is electrifying the following routes.

- Greenhill Lower - Carmuirs West Junction - Falkirk Grahamston and Polmont;
- Carmuirs West – Stirling – Dunblane – Alloa (including Larbert Junction to Carmuirs East).

The electrification of the Grangemouth Branch (planned to be funded from the Scottish Strategic Rail Freight Investment Fund) is included in this part of SC008. This section is to be delivered by the Alliance partnership that is delivering the Edinburgh Glasgow Improvement Programme (EGIP) - Electrification Project.

The project comprises: installation of approximately 97 single track kilometres of 25kV OLE, reconstruction of a number of foul overline structures to achieve OLE clearances; parapet protection works at overline structures; and immunisation and electromagnetic conductivity (EMC) works to cable routes, equipment and station domestic wiring installations.

This proposal is supported by Transport Scotland. It forms part of the rolling programme of electrification specified for CP5 to reduce emissions and energy consumption, with delivery accelerated to maximise the utilisation of existing electric multiple unit (EMU) rolling stock.

Electrification of the Grangemouth branch as far as Fouldubs Junction (network yard loops) facilitates electric haulage of intermodal and general freight services from the terminals adjacent to Fouldubs Junction.

The Railways (Interoperability) Regulations 2011, as Amended apply to this project which will involve the ORR HMRI.

Table 11.52: Milestones for Greenhill Lower-Falkirk Grahamston-Polmont, Stirling, Dunblane and Alloa Electrification

Activity/Output	Date	Date Met/Expected
GRIP 6 completion	March 2019	March 2019

Progress during 2014/15

The lines from Greenhill Lower-Falkirk Grahamston-Polmont, to Stirling, Dunblane and Alloa were successfully route cleared for the installation of OLE, following completion of all outstanding clearance works. The Grangemouth Branch was also route cleared for OLE following the successful ‘jacking up’ of Beancross Road overbridge.

The final remaining structure on the route to be cleared for OLE installation was Carmuirs Tunnel. Carmuirs Tunnel was demolished and replaced with a single span aqueduct to carry the Forth and Clyde Canal. The canal re-opened to canal traffic on 27 March 2015. The design of the new aqueduct facilitates a future linespeed increase and gauging capability on the section of route from Greenhill Lower Junction to Carmuirs West Junction.

The project is planning to install Network Rail 25kV Series 2 Overhead Line Equipment (OLE). The system will be fed from Greenhill Feeder Station.

Track Sectioning Cabins will be provided at Carmuirs, Polmont and Causewayhead by Stirling.

SC009 Aberdeen to Inverness Improvements Phase 1

Scope of Works

This project will provide infrastructure to permit trains to call at potential new stations at Kintore and Dalcross without extending average journey times and permit more frequent commuter services to Aberdeen and Inverness while contributing towards the Scottish Government's longer tem aspirations for the route.

Project Comprises of:

- infrastructure to provide a new single platform station at Dalcross
- new station at Forres on straight alignment
- extending existing Forres loop westwards to include new station location on the straight alignment
- removal of signalling token exchange arrangements at Forres
- signalling enhancements at Elgin to provide bi di on Platform 2 plus signalled access to / from the goods sidings
- reinstatement of double track between Inverurie and Aberdeen (subject to extent of redoubling practicable through tunnels between Kittybrewster and Aberdeen station)
- infrastructure to provide a new twin platform station at Kintore
- line speed improvements between Inverurie and Aberdeen
- platform extensions at Elgin and Insch to accommodate six-car trains.

Progress in 2014/15

Contracts for detailed survey and design have been let and are progressing well. Work will be delivered in phases during CP5 split west and east along the route. The construction contract for the west end of the route will be awarded through the framework whilst the Invitation to Tender was released for the east end works in April 2015 This includes the more substantial element of double tracking between Aberdeen and Inverurie.

Advanced works have commenced on the route and are progressing well with de-vegetation works complete along the route including the area of double tracking between Aberdeen and Inverurie.

Table 11.53: Milestones for Aberdeen-Inverness Phase 1

Activity/Output	Date	Date Met/Expected
GRIP 3 With AIP	March 2016	March 2016
Complete Works	March 2019	March 2019

SC010 Highland main line journey time improvements (phase 2)

Scope of Works

This project will provide infrastructure to permit the reduction of average end-to-end journey time between Edinburgh/Glasgow and Inverness by ten minutes, the operation of one passenger train per hour in each direction taking into account Transport Scotland's longer term aspirations for the route.

A GRIP 3 report without survey and AIP, completed in June 2014 concluded that considerable synergy was required between rolling stock, timetable and infrastructure strategy. Development work was then paused during the ScotRail refranchising process, awaiting the successful bidder's aspirations on rolling stock strategy and timetabling for the route.

Following the announcement of Abellio as the new franchisee and High Speed Trains (HSTs) as the intended rolling stock for the Highland Mainline, a timetable development report has been conducted to assess HST performance on the route and the requirement for infrastructure intervention to meet the aspired outputs.

The outputs from this timetable development report are being discussed with Transport Scotland to determine which interventions will progress during CP5.

Progress in 2014/15

A GRIP 3 report without survey and AIP was completed in June 2014 based on class 170 rolling stock. Following the refranchising process and the announced change in rolling stock, a timetable development report was completed in March 2015 based on the use of HSTs. The output of this is currently under review.

During the pause in project development it was agreed with Transport Scotland that a limited scope of survey works would continue based on previous development work. This included setting up a survey snake grid across the route from Perth-Inverness, topographical survey for linespeed improvements at Killiecrankie tunnel and the survey of double tracking between Culloden and Daviot. These survey works have now commenced.

Table 11.54: Milestones for Aberdeen-Inverness Phase 1

Activity/Output	Date	Date Met/Expected
GRIP 3 without survey and AIP	June 2014	June 2014
GRIP 3 with AIP	July 2016	July 2016
Complete Works	March 2019	March 2019

SC011 Motherwell area stabling

Objective

This project will electrify the remaining 'Back of Shop' sidings to permit the stabling of additional EMUs at Motherwell required by the electrification with a longer term target to consolidate all stabling at Motherwell

Progress in 2014/15

Phase 1 – Motherwell Back of Shop sidings

A GRIP 2 study was completed in June 2012 but this concluded that limited opportunities for cost effective enhancement of the initially preferred site at the former Motherwell TMD (Train Maintenance Depot) existed. The extent of scope deemed cost effective to take forward to implementation consisted of improvements to the 'back of shops' sidings location (including additional electrification) in the former TMD. Electrification of number one siding was completed in January 2014 and electrification of numbers four and five sidings completed by the end of May 2014. The other enhancement works to numbers four and five sidings were competed by the end of July 2014.

Phase 2 – Motherwell Bridge sidings

A GRIP 2 study had been completed in March 2014 to examine options for the redevelopment of the former Motherwell Bridge sidings as a stabling and servicing facility. Transport Scotland then requested that progress with the project was deferred until the announcement of the successful bidder of the new ScotRail franchise was made. Following the announcement and engagement with Abellio as the new franchisee, it was concluded based on their stabling strategy that there was no further requirement for enhancements at Motherwell in CP5. Further review is underway to identify where additional stabling is required and an option for an enhanced facility at Perth is currently being developed.

SC012 Motherwell resignalling enhancements

Objective

This project will, in conjunction with the renewal of Motherwell signalling assets, provide appropriate and cost effective enhancements where appropriate including reduced headways.

Scope of Works

The scope of the enhancement element of the project consists of increased signalling capacity on the down Shotts line between Carfin and Holytown Junction; and Midcalder Junction which is now linked to the Shotts three-aspect project.

Progress in 2014/15

Table 11.55: Milestones for Motherwell North – Carfin/Holytown

Activity/Output	Date	Date Met/Expected
GRIP 3 completion	March 2016	March 2016
GRIP 6 start on site	August 2016	August 2016
GRIP 6 completion	April 2018	April 2018

SC013 ECML (North) - WCML (Carstairs) gauge enhancement

Objective

This project will deliver infrastructure enhancements to permit W12 gauge traffic to operate between Temple Hirst Junction and Carstairs via the ECML.

Progress in 2014/15

Bridge reconstructions and track works are progressing to programme.

Table 11.56: Milestones for ECML (North) – WCML (Carstairs) Gauge Enhancement

Activity/Output	Date	Date Met/Expected
GRIP 6 completion	March 2016	March 2016

Programme Management Capability

Network Rail recognises the impact our project and programme management capability has on the successful and efficient delivery of capital works and the operation of the railway. In order to understand better these capabilities and future requirements, we are undertaking a P3M3 (Project, Programme, and Portfolio Management Maturity Model) assessment. P3M3 will allow us to understand better our strengths and weaknesses and assess capabilities that need additional development in order to deliver CP5 successfully, focusing business improvement initiatives on those areas that will realise tangible value.

The initial P3M3 assessment plan is divided into two phases:

- Phase 1 : assessment of Infrastructure Projects and Network Strategy & Planning
- Phase 2 : Operational Routes, Asset Management and Group Business Services (GBS)

Table 11.57: Programme Management Capability Milestones

Milestone	Description	Date	Status
Start Phase 1 P3M3 Assessment	Appoint assessors, agree assessment strategy, train business leads and issue survey.	January 2014	Complete
Commence development of improvement plans for Phase 1	Complete P3M3 assessment, agree focus areas and commence business improvement planning.	April 2014	Complete
Agree Phase 1 P3M3 improvement measures with ORR	Agree the improvement monitoring mechanism with business and ORR based on the business improvement plans developed.	June 2014	Complete
Integrate Phase 1 improvement plans into existing change programme	Embed the agreed improvement plans into business as usual activities in the devolved organisations.	June 2014	Complete
Start Phase 2 P3M3 Assessment	Appoint assessor(s), agree assessment strategy and issue survey	January 2015	Complete
Complete Phase 2 P3M3 Assessment	Complete the P3M3 assessment of routes and GBS.	December 2015	Re-scoping of milestone

Definition

P3M3 is a maturity model owned by Axelos. P3M3 is used by organisations to assess capability maturity in the areas of project, programme, and portfolio management.

P3M3 assesses seven functional areas of an organisation's capability:

- management control
- benefits management
- financial management
- stakeholder engagement
- risk management
- organisational governance
- resource management.

The model scores the assessed organisation on a maturity scale of one to five:

1) **Awareness** - Processes are not usually documented. There are no, or only a few, process descriptions.
2) **Repeatable** - The organisation will be able to demonstrate, by reference to particular initiatives, that basic management practices have been established – e.g. tracking expenditure and scheduling resources and that processes are developing.
3) **Defined** - The management and technical processes necessary to achieve the organisational purpose will be documented, standardised and integrated to some extent with other business processes.
4) **Managed** - Characterised by mature behaviour and processes that are quantitatively managed – i.e. controlled using metrics and quantitative techniques.
5) **Optimised** - The organisation will focus on optimisation of its quantitatively managed processes to take into account changing business needs and external factors.

Adoption in Network Rail

Introduction of P3M3 across Network Rail is taking place in two phases: Phase 1 – Infrastructure Projects and Group Strategy, and Phase 2 – Network Operations.

Phase 1

All planned Phase 1 milestones have been completed in the first year of CP5.

Outperform, in partnership with Aspire Europe, were contracted as accredited P3M3 assessors to complete ten assessments across Infrastructure Projects and Group Strategy as shown in Table 195.

Table 11.58: Network Rail P3M3 Phase 1 Assessment Strategy

Organisation	Assessment(s)		
Strategy & Planning	-	-	Portfolio
Thameslink	Project	Programme	-
Scotland North East	Project		Portfolio
Western & Wales	Project		
Central	Project		
Southern	Project		
Signalling	Project	-	
Track	Project	-	

Following successful completion of the assessments, improvement planning was undertaken and consolidated by Network Rail to identify and define a programme of change activity.

The P3M3 Improvement Programme is now in the delivery phase with six monthly reviews scheduled with the ORR in order to provide ongoing confidence of improvement. Reassessment is planned to be undertaken in 2017.

Phase 2

The scope of Phase 2 assessment was established for our routes.

Outperform, in partnership with Aspire Europe, have been contracted as accredited P3M3 assessors to complete nine assessments across Network Operations. However, following discussions with the route teams, it has been decided to develop a more focused assessment programme than originally envisaged. The new agreed scope and supporting Delivery Plan will be presented to the Executive Committee for formal endorsement during summer 2015. The first assessment has started in Anglia Route (focusing on Works Delivery).

It is possible that the re-scoping of the assessment will affect the completion delivery milestone of December 2015.

Section 12 – Indices

Enhancements projects

Tables and Figures

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