

Network Rail Infrastructure Limited  
Annual Return 2017

***Working for you***



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# Corporate Summary

The Annual Return 2017 is the formal means by which we report on our progress in delivering the outputs that were established by the Office of Rail and Road (the ORR) in its Final Determination for Control Period 5 (CP5), covering the period from 1 April 2014 to 31 March 2019. This report, which covers the period from 1 April 2016 to 31 March 2017, also includes our national and route scorecards with commentary. To support this document, we have published [Annual Return data tables](#), which present an ongoing record of our stewardship of the rail network, on the Annual Return page of our website.

Our 2017 [Annual Report and Accounts](#) are also published on our website. As well as this, we provide annual financial performance information to the ORR. This information is presented in our [Regulatory Financial Statements](#), designed to be relevant to the ORR and other persons for the assessment of access charges and to allow the financial performance of Network Rail to be monitored against the ORR's Final Determination assumptions for CP5.

This Annual Return follows the format agreed with the ORR and is prepared in accordance with Condition 12 of our Network Licence.



## Contact us

If you have any questions or feedback about this Annual Return or the [Annual Return data tables](#) please contact us at:

[annualreturn@networkrail.co.uk](mailto:annualreturn@networkrail.co.uk)

To contact us about a safety concern, general queries or to make a complaint about one of our managed stations, please [visit our website](#) or call our 24 hour national helpline:

03457 11 41 41

Our website also provides guidance on activating Type Talk facilities and live chat.

You can find more information and support for our neighbours on the [contact us](#) page of our website.

If you would like to access more information about Network Rail, please visit the [transparency](#) page of our website, or contact us at:

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## Delivering for our customers

For 2016/17, we reviewed and updated our CP5 [Delivery Plan](#) in agreement with the Department for Transport (DfT). This Annual Return reports our progress against our 2016/17 forecasts for CP5 regulated outputs in the Delivery Plan update. The Annual Return data tables, available on our [website](#), report all CP5 measures of performance.

In 2015/16, Network Rail introduced route-based scorecards which set out performance and delivery targets for the year. This year we consulted with our customers to develop bespoke, customer-led scorecards for each route. Our route and national scorecards, which are presented in this document, are a key mechanism by which Network Rail monitors overall business performance.

In July 2016 we published our [Transformation Plan](#) setting out how we will place customers at the heart of what we do and incorporating the recommendations from the [Shaw report](#). Our transformation plan is built around 'the five Cs':

- Customer focused
- Cost competitive
- Commercial
- Culture
- Capacity.

We have an established devolution programme, moving power from the centre to routes. Empowered leaders in our routes will be able to focus more precisely on the needs of their customers, take decisions faster and innovate more effectively. We announced in October 2016 that our route leadership teams will be strengthened by new chief operating officers, project sponsorship directors and business development lead roles. Recruitment of these roles is ongoing. In 2016/17, we created a 'freight and national passenger operators route'. This expanded the remit of the existing team to include passenger operators, such as CrossCountry and Caledonian Sleeper, who operate across multiple routes.

Following an extensive review of how best we can be aligned to customer and stakeholder needs in the north of England, we announced our plans to create a new Northern Investment Organisation to work alongside Transport for the North (TfN) to secure and deliver the best investment for our customers. With TfN, this organisation will be responsible for driving future rail expansion, modernisation and investment across the north to deliver a better railway, bringing economic growth and more housing.

In June 2017 Network Rail published its Railway Upgrade Plan 2017/18. This first-of-its-kind plan

highlights the projects being delivered in the next 12 months, broken down by route, enabling our stakeholders to see at a glance the improvements being delivered for passengers in their areas.

## Key Workstreams

The end of the second quarter of 2016/17 marked the mid-point of CP5. Alongside our planning for the future, the executive team identified five key areas to drive improved business performance through to the end of this control period. These are the programmes that will have the greatest impact on our core role of running a safe, reliable, affordable and growing railway. Each area has executive level ownership and detailed delivery plans associated with them. These are:

- Successfully implement 'Planning and Delivery of Safe Work'
- Renewals recovery – delivering volumes and unit rates in line with plan
- Reduce delay per incident (DPI) to improve train performance
- Enhancements – delivering what we said in the Hendy Plan
- Digital Railway – providing a foundation for CP6.

## Company matters

In April 2016, Network Rail established a property company with its own board to help maximise value from its estate. Network Rail Property's structure and governance arrangements will enable property activities to provide greater focus on delivering land for housing, while continuing to generate income from property assets to reinvest into the railway.

This year has seen some changes to our board, with Malcolm Brinded CBE and Janis Kong OBE stepping down. Silla Maizey has been appointed and has 38 years' experience in the aviation industry and currently serves as a non-executive director of John Menzies Plc, NHS Business Services Authority and Crown Commercial Service.

In December 2016, the Network Rail board asked Professor Peter Hansford to chair an independent review into the barriers to competition in all elements of delivering rail engineering projects. The Rail Delivery Group (RDG) convened a projects group earlier in 2016 to investigate alternative ways to deliver and finance enhancements. This will feed into the independent review led by Professor Hansford. The [Hansford Review](#) began in December 2016. The full report and our response can be found [here](#).

# National

Safety	Worse than Target	Target	Better than Target	2016/17 Actual
Lost Time Injury Frequency Rate (LTIFR)	0.470	0.447	0.425	0.450
Close calls raised	90,000	120,000	150,000	205,555
Close calls % closed within 90 days	70%	80%	90%	77.2%
Train accident risk reduction measures	60%	80%	100%	78.7%
Top 10 Milestones to reduce level crossing risk	60%	80%	100%	60.0%
Financial Performance				
Financial Performance Measure – excl. enhancements	£(100)m	0	£100m	£(184)m
Financial Performance Measure – enhancements only	£(70)m	0	£70m	£(37)m
Cash Compliance – Income & Expenditure	£(12)m	0	£47m	£559m
Investment				
Key milestones of top 10 enhancement projects	6	8	10	8
% of Grip 3 & 6 milestones achieved	60%	80%	100%	72.5%
Asset Management				
Composite Reliability Index (CRI)	13.7%	15.0%	16.3%	15.8%
Track Plain Line (Track Km)	1,207	1,274	1,341	1,182
Track S&C (Point Ends)	899	949	999	1,023
Signalling (SEUs)	984	1,038	1,093	1,029
Underbridges (m2)	98,120	103,572	109,023	123,290
Earthworks (5 chain)	2,526	2,667	2,807	5,414
OLE re-wire and mid-life refurb (Wire runs)	51	54	57	68
Conductor rail (km)	28	30	31	31
Train Performance				
PPM	0.0%	50.0%	100.0%	19.5
CaSL	0.0%	50.0%	100.0%	16.6
Right Time Arrivals	0.0%	50.0%	100.0%	17.3
FDM	0.0%	50.0%	100.0%	69.4
Other	0.0%	50.0%	100.0%	21.7
Locally Driven Measures				
People Measure	0.0%	50.0%	100.0%	97.1
Passenger Satisfaction	0.0%	50.0%	100.0%	27.7
Reduction in Railway Work Complaints	0.0%	50.0%	100.0%	50.6
Other	0.0%	50.0%	100.0%	56.0

## Safety

### Passenger safety

This year marks ten years without a passenger or workforce fatality due to train derailment or collision. Train accident risk reduction was measured on our scorecards by the achievement of volumes and milestones within key workstreams. We achieved 78.7 per cent against our target of 80 per cent in 2016/17.

At the end of 2016/17, seven out of the nine volume metrics within risk reduction workstreams achieved or exceeded target. Deploying Plain Line Pattern Recognition (PLPR) and drainage maintenance were behind target. To help address the shortfall in drainage volumes, routes have introduced dedicated drainage teams where appropriate to continue inspections, surveys and maintenance despite not having access to the new fleet of drainage road rail vehicles. We have identified mitigations to enable further PLPR rollout. Routes are determining how best to use this in 2017/18.

Of the 24 milestones within train accident risk reduction workstreams that were due to be delivered in 2016/17, we completed nine, abandoned four and 11 are late and continuing.

Incidents such as the partial collapse of a bridge at Barrow upon Soar in August 2016 and the train derailment at Watford Tunnel in September 2016 highlight the importance of continuing to implement risk-based controls to maintain our success over the last ten years.

### Public safety

In Great Britain, 4.5 per cent of suicides each year take place on the railway. In response, the rail industry and Samaritans have worked together to train more than 15,000 rail employees and transport police officers in suicide prevention techniques. The rail industry suicide prevention programme was awarded Charity Times' Corporate Social Responsibility Project of the year in 2016.

Interventions by those trained continued to increase, totalling almost 1,600, helping to reduce the number of suicides by 6.8 per cent from the previous year to the lowest number since 2010. At a time when suicide numbers have risen nationally, that the railway has achieved a reduction demonstrates the success in our approach.

Trespass remains a concern and in addition to focus on boundary measures, we continued to invest in schools and community education.

### Level crossing risk reduction

In CP5, a £99 million ring-fenced fund was identified to maximise risk reduction at level crossings through closures and asset improvements. The fund has been devolved to routes, each making a commitment to achieve a minimum risk reduction. With this and other risk reduction work, we have delivered 18.1 per cent level crossing risk reduction benefits since the end of CP4. With long lead times for major bridge or diversion work, the pace of risk reduction is predicted to further increase in 2017/18.

Our scorecard measures achievement of 10 milestones to reduce level crossing risk. At the end of 2016/17, we achieved 60 per cent of the milestones against a target of 80 per cent. Some of the remainder will be achieved later than planned, others have had to be abandoned. In total, we closed 67 level crossings in 2016/17, and seven have had the legal status downgraded as a result of our interventions to reduce risk. Progress in achieving successful closure of some higher risk crossings has been impacted by the historic legal framework and the delay to progressing the Law Commissions' recommendations for reform.

In 2016/17 there were six fatalities at level crossings, two in vehicles and four pedestrians. Our communications campaigns to influence user behaviour have focused on key risk groups including dog walkers, cyclists and van drivers. In order to highlight the risks of level crossing misuse, we publicised CCTV footage of motorists and pedestrians using level crossings inappropriately and unsafely. National campaign materials are used by Level Crossing Managers at local events across the country.

We continued to install audible warning systems to alert pedestrians of approaching trains, and overlay Miniature Stop Lights at private vehicle level crossings.

### Workforce safety

We achieved a third year in which no members of the workforce were killed on our infrastructure. But there was one contractor fatality in 2016/17 in a road traffic accident in June when a pick-up collided with a tree on the way home from overnight works.

Lost Time Injury Frequency Rate (LTIFR) is one of the measures of workforce safety on our 2016/17 scorecard. LTIFR measures the number of personal injuries which have resulted in lost time, normalised per one hundred thousand hours worked.



At the end of 2016/17, LTIFR was 0.450, marginally worse than our year-end target of 0.447. Overall, there were 680 lost time injuries in 2016/17 compared to 693 last year, while the number of hours worked in 2016/17 was 151 million compared to 141 million last year. There was however an increase in more serious injuries, with 90 RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulations) specified injuries compared to 72 last year.

Effective risk assessment informs working safely by identifying the health and safety precautions we need to use. As part of our 'Home Safe Plan', we have committed to review and update all of Network Rail's Work Activity Risk Assessments (WARAs). In 2016/17 we reviewed and prioritised 286 WARAs, identifying where WARAs are no longer relevant or determining the timescales required for review.

Our scorecard also reports close calls. 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. To encourage colleagues to report close calls, we set a target to report 120,000 close calls in 2016/17. We exceeded this target, raising a total of 205,555 workforce close calls. A higher number of close calls reported increases our ability to identify safety issues and is a positive indication of our safety culture.

A close call can only be closed once the hazard has been investigated and addressed. Our target in 2016/17 was to close 80 per cent of close calls within 90 days. In 2016/17, the total percentage closed within 90 days was 77.2 per cent. In the first quarter of the year, we introduced improved processes to prioritise case work, which provided performance improvement in this area. Throughout the year, as overdue close call actions were completed, the effect of this plateaued. We are renewing focus in this area to gain further improvements in 2017/18.

## **Safety Management**

Our central focus to deliver improved workforce health and safety is our Home Safe Plan. The plan comprises 21 national projects identified as providing the biggest safety benefit. This includes medical, first aid, safety of people on or near the line and respiratory standards. All of these have been recently been reviewed and revised and we are closely monitoring implementation, providing accompanying briefings and support.

Business Critical Rules (BCR) set out what teams throughout the business need to do to keep the railway safe and effective with clear identification of

the controls most critical for managing safety. Where there are no critical limits in place, local teams are empowered to conduct their own risk assessments and apply ways of working that better reflect their local conditions. Although delayed, our BCR programme is ongoing and plans are in place for the continued implementation of rules.

We have aligned the outputs from our standards team with the BCR programme, which means that all material relating to new or updated standards is produced in BCR format. This includes a number of engineering standards that have been updated over the last year.

As part of the Home Safe Plan, we are developing the Integrated Management System to include the Health and Safety Management System by the end of CP5. This development programme is currently running according to plan.

The Risk Management Maturity Model (RM3) highlights strengths and weaknesses in the Safety Management System. We piloted the model across our Safety, Technical and Engineering function and this will be rolled out across Network Rail.

In the last five years, 12 colleagues have been killed as a result of incidents while driving to, from or during work. Network Rail has a road fleet of around 7,500 vehicles with 15,000 drivers driving approximately 128 million miles per year. In July 2016 we held a 'safety stand down' where teams across Network Rail took time out from their day-to-day work for a discussion on driver safety. The purpose was to provide an understanding of the importance of safe driving and make sure that everyone feels confident in challenging unsafe behaviour. In the three months following the safety stand down, each period saw a reduction in the number of road traffic offences when compared to the previous year, and an overall 40 per cent reduction in reported speeding incidents.

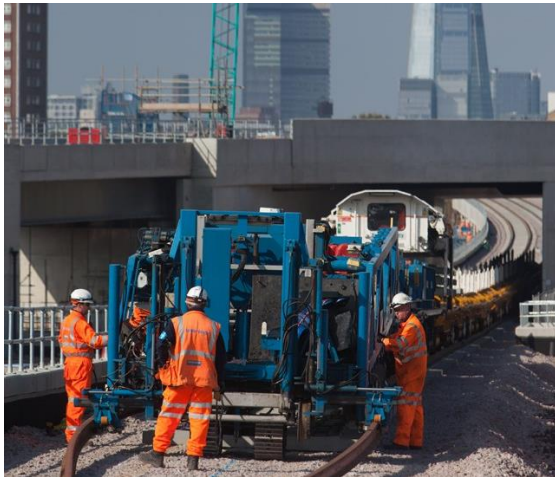
To reduce our road driving risk further, as part of the Management of Occupational Road Risk project, we are installing automated vehicle speed warning equipment in all Network Rail vehicles in 2017. A trial of the equipment in Wessex was completed and national fitment commenced in January 2017. In 2016/17, over 5,000 vehicles were fitted with the vehicle speed warning system. We also updated our policy and the Drivers Handbook for Network Rail employees.

The Procuring for Safety project incorporated our commitment to working with our industry partners to agree expectations and share best practice in safety leadership. The project has created a



balanced scorecard which measures Infrastructure Projects (IP) suppliers' safety performance through a series of indicators.

Fatigue management is a key focus of the Home Safe Plan. We have created training material that aims to reduce fatigue related incidents. We will publish a revised standard following consultation with stakeholders in 2017/18. We upgraded our Sentinel system, which records worker competencies and hours worked, in September 2016. The new functionality strengthens the checks we make that our people are competent and able to work safely on site.



The company standard 'Safety of people working on or near the line' was updated in 2016. Routes and contractors are developing action plans to implement the updates in 2017. The programme will deliver two key elements to reduce workforce safety risk when working on or near the line:

- Assign one person responsibility for both operational and task risk when working on Network Rail's infrastructure
- Implement simpler permitting arrangements to give clear instruction to employees.

In November, four Network Rail IP delivery teams were awarded the prestigious Sword of Honour from the British Safety Council. The track renewals teams were each awarded five stars in the British Safety Council's health and safety management audit scheme. They demonstrated excellence in health and safety management throughout the business – from the trackbed to the boardroom – to an independent panel of experts.

### Occupational Health Management

Network Rail is committed to promoting and protecting the health and wellbeing of all our

employees. Mental resilience has been identified as a key programme within our Home Safe Plan. We need a greater understanding of mental wellbeing within the business to allow people to get the support they need. We published new standards for 'assessing the risk of stress in the workplace' and 'traumatic incident management'. We also support mental wellbeing throughout the business through mental health champions and enhanced training, guides and resources. In 2016/17 we agreed an approach to managing mental health in the workplace throughout the business and we developed a dashboard and periodic Key Performance Indicator reporting to monitor our progress.

The Western route leadership team marked national Mental Health Awareness week in May 2016 by signing a pledge with the charity Mind to raise awareness of mental health issues in the workplace and encourage all those affected to seek help.

The respiratory risk reduction project, part of our Home Safe Plan, implemented a risk reduction standard to adequately and effectively manage employees' exposure to occupational respiratory hazards. The standard allows us to proactively manage employees' present and long-term health. We have also developed guidance and e-learning to accompany the standard.

The Manual Handling Improvement Project started to identify, assess and reduce manual handling risks. The first phase has targeted higher risk activities with thorough risk assessment. Work is underway to implement improvements identified in those assessments.

### Financial performance

Our corporate scorecard assesses financial stewardship across three measures; financial performance excluding enhancements, financial performance for enhancements, and cash compliance. Achieving financial performance targets proved a major challenge in 2016/17 mainly due to higher than expected capital projects' costs. There were also additional costs resulting from infrastructure incidents throughout the year, such as adverse weather events, and financial penalties for service delays caused by infrastructure faults.

Our business plans for the remainder of the control period include significant efficiency challenges for routes and central functions.

More information about our financial performance can be found in our [Annual Report and Accounts](#) and [Regulatory Financial Statements](#).

## Investment

Network Rail is undertaking a huge five year upgrade plan to deliver a bigger and better railway, with more trains, as well as enabling longer and faster train services through longer platforms and the electrification of key lines. Through 2016/17, we delivered eight of the top 10 IP renewals and enhancement milestones, meeting our scorecard target.

During the early May Bank Holiday in 2016, works were completed at several stations on the Western Route as part of Crossrail West. Platform upgrades took place at Slough, Hayes and Harlington, West Ealing, and Southall. These works created operational length platforms for the new Elizabeth Line trains, as well as installing other equipment required to safely operate the new service. In London North Eastern (LNE), £15 million was invested in the re-control of the entire Sheffield area interlocking to York Rail Operating Centre (ROC) in order to make ongoing operational efficiencies and improve reliability.

In June 2016, Network Rail began work to electrify and modernise the old Victorian infrastructure along the 14 mile route between Gospel Oak and Barking. The upgrade, which is being funded by the DfT and Transport for London (TfL), will enable four carriage electric trains to operate along the route from early 2018, doubling capacity and reducing carbon dioxide emissions. Following a phased eight-month closure of the route the line re-opened in February 2017. During this time, five sections of track have been lowered between Walthamstow Queens Road and Gospel Oak stations to create space for overhead wires and the structures that carry them. Ten bridges have been reconstructed or strengthened along the route that runs through

seven London boroughs, and three electrical switching stations have been constructed. However not all of the overhead wires were installed on time. A number of the structures which carry the overhead lines were incorrectly designed and could not be installed at the planned locations. Late delivery of materials and structures also led to delays of this project. The line was re-opened as planned for diesel trains and a plan has been put in place to complete the work before new electric trains arrive in early 2018.

In August 2016, the Edinburgh Glasgow Improvement Programme (EGIP) completed a 20 week programme to renew 1,800 metres of concrete slab track and more than 4,000 metres of new rail in Glasgow Queen Street tunnel. Nearly 3,000 engineers worked over half a million hours to complete the project almost three days ahead of schedule. The works were completed in preparation for the electrification of the line in 2017. This will allow us to introduce faster, longer and greener trains on the main Edinburgh to Glasgow line, delivering thousands of extra seats, shorter journey times and improved accessibility for passengers. The £60 million project is the biggest piece of engineering work on the Edinburgh to Glasgow railway since it was built in the 1840s. Despite successes throughout the year, there have been challenges which have resulted in the revision of future milestones in the programme. We missed our GRIP 6 regulated milestone to deliver infrastructure ready for use by March 2017. This was a result of resource and access constraints and sustained poor weather affecting productivity. Four failures of a safety critical Overhead Line Equipment (OLE) component required all components of this type to be replaced, which also contributed to the delay.



Over the 2016 August Bank Holiday period, Network Rail opened two-thirds of the new low level concourse at London Bridge. The concourse is part of a major redevelopment of Britain's fourth busiest railway station, and the August opening represents a major milestone in the Thameslink programme. The station also saw entry into service of platforms 7, 8 and 9, allowing Charing Cross services to stop, and the closure of platforms 1, 2 and 3 to allow reconstruction work to start. Throughout the redevelopment, Network Rail and construction partner Costain have worked with train operators Southern and Southeastern to keep the station open for the 56 million passengers who use it every year. However, the ongoing works have affected passenger experience, both in the station and during times of disruption. The government sponsored Thameslink programme will transform North-South travel through London when the project is completed in 2018.

In December 2016, the first phase of the Calder Valley upgrade was completed on time and under budget over five weekend closures. Upgrades to signalling and track, including 1,200 metres of new line and a new platform at Rochdale, allow for additional capacity in service and an increase in linespeed for trains on the line. The investment on the line between Manchester Victoria and Leeds is part of the biggest railway upgrade in the north of England since Victorian times.

On 12 December 2016, Network Rail and Chiltern Railways opened the central Oxford to Marylebone line (expected to provide over 850,000 journeys per year) on time and on budget. This was the first new rail link between a major British city and London in over 100 years. The scheme was conceived by Chiltern Railway and delivered by Network Rail in order to provide flexibility and choice for customers.

More than 24,000 Network Rail employees were working over the Christmas and New Year period to deliver £100 million worth of upgrades to the railway across 200 projects.

As part of our Christmas engineering programme, we completed key work to upgrade the Great Western route. Platform extensions completed at Hayes & Harlington station allowed new electric trains to run to London Paddington from January 2017, providing an additional 6,550 seats a day in each direction. At London Paddington, the footbridge across platforms 1 to 5 was raised and platform 12 was extended to prepare for the new, longer electric trains running from Hayes & Harlington, and in preparation for new Intercity Express trains. The work carried out to facilitate the new Intercity Express trains also

included the remodelling of Maidenhead station, signalling work at Didcot, station work at Swindon and electrical power supply at Chippenham. Piling work was also completed in Chippenham as work continues to electrify the Great Western Main Line.

On Crossrail, more than 4,000 engineers delivered work over the Christmas and New Year period which will ultimately integrate the new tunnels beneath London with the existing rail network. Three quarters of the Crossrail route will run above ground in outer London, Berkshire, Buckinghamshire and Essex bringing 1.5 million more people within 45 minutes of central London. Part of this work was the completion of a new dive-under at Acton in London. Over 34,000 tonnes of earth was excavated from a site surrounded by the operational railway. Completion of this challenging project will allow fast Paddington-bound trains on the Elizabeth line to pass under slower freight trains entering and leaving the adjacent busy freight yard. The new dive-under and a second ramp at the Stockley Flyover over Heathrow Junction have been built as part of the Crossrail project, but will also be used by Great Western Railway and Heathrow Express trains to add capacity and improve reliability on this busy section of the network.

In Manchester, bridge and track work were undertaken as part of the project to build the Ordsall Chord – a new piece of track that will link Manchester's main railway stations for the first time.

In Cambridge, tracks and overhead wires were installed at the site of the new Cambridge North station, which subsequently opened in May 2017. There was also a commissioning as part of the Doncaster Station Area Enhancement project to contribute to improvements to connectivity on the East Coast Mainline.

In Cardiff, we officially opened the new platform 8 at Cardiff Central station on 2 January 2017. Passengers travelling on the Penarth, Barry Island and Vale of Glamorgan lines will benefit from the new facilities. The platform will also ease congestion in the Cardiff area and creates the potential for more services to run in the future.

In January 2017, we also commenced work on a £50 million North Wales Railway Upgrade Project, to upgrade track layout to increase the resilience and reliability of the railway in North Wales. The project includes the installation of a new signalling system on the North Wales Coast from Shotton to Colwyn Bay and enhancements at Abergele and Pensarn station. The project is expected to be completed in summer 2018, with commissioning of the new signalling equipment in March 2018.



## Highlights of 2016/17

### Projects that completed their development stages

#### Scottish Programmes

Work has continued on various schemes including completion of development work for journey time improvements on the Highland mainline and resignalling in the Motherwell area to improve capacity.

#### North of England Programmes

Our investment will see the transformation of journeys between towns and cities of the North. Hope Valley completed its development during the last year which will see improved journey times and capacity between Manchester and Sheffield during CP6 (2019 – 2024). Development work on the TransPennine Route Upgrade also continues to progress, also for delivery in CP6.

#### Great Western Electrification Programme

Various elements of this large programme completed their development work in 2016/17 including the section between Bristol Parkway and Cardiff. This work continues the preparation for the arrival of a new fleet of faster, quieter and greener electric trains that will transform the Great Western Route for passengers.

### Projects that were completed and entered into service

#### Edinburgh Gateway station, a part of the Edinburgh to Glasgow Improvement Programme

Infrastructure works were completed at Edinburgh Gateway with the opening of the new station, improving capacity and providing better connections to Edinburgh airport via the tram network.

#### Stafford Area Improvements – Norton Bridge

Delivery of the Norton Bridge flyover was part of the £250 million railway upgrade between Stafford and Crewe. Allowing trains travelling to Manchester from the south and West Midlands to travel over, rather than across, the existing tracks, has removed one of the last major bottlenecks on the West Coast Mainline.

#### East West Rail – Phase 1

On 12 December, Chiltern Railways and Network Rail opened a new rail link connecting Oxford and London – the first new rail link between London and a major British city in over 100 years. The idea for the line came from Chiltern Railways, who jointly funded the project with Network Rail. Two trains an hour will now run on the line, offering passengers more choice, more trains and faster journey times.

#### Cardiff Area Signalling Renewals – Phase 5

The largest signalling commissioning of its kind, this phase of work allows a step-change in network capability across Cardiff and the Valleys. Greater capacity, improved journey times, and operational flexibility will transform journeys. This has been achieved through changes to signalling, track, and stations.

## Regulated milestones due in 2016/17

The Enhancements Delivery Plan (EDP) sets out the outputs, scope and key milestones for every key project that Network Rail is committed to deliver in CP5. An update to the [EDP](#) is published quarterly to reflect our ongoing delivery of the CP5 portfolio. In this Annual Return we have used the March 2016 EDP as the baseline against which we are reporting our delivery of regulated outputs.

Network Rail's initial obligation for each project is to develop it to GRIP 3 (Governance of Railway Investment Project stage 3). In line with the agreements published in the EDP, once GRIP 3 is completed and funding is established, the GRIP 6/ Entry into Service (EIS) milestone is then set to be the regulated obligation.

Each milestone is assigned a status with the following definitions:

- **Regulated output** – a regulated milestone included in the EDP 2016
  - **GRIP 3** – option selection – this stage examines the different engineering options for delivering the project and selects a single option to be developed
  - **GRIP 6 / EIS** – constructing, testing and commissioning – this stage focusses on the physical work associated with delivering a project, and ends with completion/commissioning
- **Complete** – a past milestone that was completed on time
- **Missed** – a milestone not completed on time
- **Revised** – a milestone that has been changed via the regulatory change control process due to changes outside of Network Rail's control, or six months in advance of the milestone date.

Table 1 below outlines our delivery of the regulated milestones that were due for completion during 2016/17. Of the ten milestones that were missed, two had an end-user impact (entry into service for EGIP and Gospel Oak-Barking).

Table 1: Overview of delivery of regulated output milestones

2016/17 milestone status	Number of regulated output milestones					
	GRIP 3		GRIP 6/EIS		All	
	No.	%	No.	%	No.	%
Complete	14	62	13	69	27	66
Missed	5	19	5	26	10	22
Revised	3	19	1	5	4	12
<b>Total</b>	<b>22</b>	<b>100</b>	<b>19</b>	<b>100</b>	<b>41</b>	<b>100</b>

## Enhancement Improvement Programme

In October 2015 we committed to a plan for the delivery of an Enhancement Improvement Programme (EIP) to strengthen the rail industry's ability to successfully deliver major projects. The implementation of the EIP is approaching completion and the resulting changes are becoming embedded in the way that the industry works.

Network Rail and the DfT have improved the way that we work together to manage Network Rail's investment portfolio, establishing a joint Portfolio Board and a Memorandum of Understanding that governs how the organisations work together.

Recognising the importance of strong sponsorship of programmes and projects, Network Rail has introduced a new national Head of Sponsorship, to retain and develop talent in this area. A new cost planning national support service has also been created to establish a 'cradle to grave' cost planning discipline. Project Development and Construction Management professions have been created to retain and develop the skills and capability required to deliver Network Rail's investment portfolio.

To better monitor and understand project and programme performance, a peer review process has been created and a cadre of trained peer reviewers from senior roles across the business established. An ongoing cycle of peer reviews has been instigated and is already identifying areas for improvement and lessons to be shared. A new 'Business Intelligence' system that will deliver new and insightful ways of monitoring project and programme performance has also been piloted.

We have created a policy for designing-in safety considerations from the start of projects, supported by training and a Safety by Design Steering Group.

We are continuing to work closely with the ORR in order to demonstrate the benefits that have been, and are being, realised through the delivery of the EIP.

## Asset Management

### Composite Reliability Index

In 2016/17 the Composite Reliability Index (CRI), representing overall asset reliability, was better than target, and continues the improving trend seen through CP5 so far, at 15.8 per cent. A number of initiatives have been underway throughout the year in a drive for continuous improvement of the reliability of our assets, although there were some infrastructure incidents which had a serious impact on train services.

The number and impact of Temporary Speed Restrictions (TSRs) has been raised as a concern both internally and by our stakeholders. We have been addressing this concern through the TSR summit working group, the deployment of a TSR decision support tool and the roll out of a performance impact analysis tool.

Following a detailed technical review of the weaknesses in our overall signalling reliability, we have been installing 1,200 units of a significantly enhanced version of LED light engines across three routes (LNE, Scotland and South East). We review the progress of installation, fitment and reliability across these routes on a periodic basis. National rollout is planned for 2017/18 following full product certification.

The reliability of signalling assets also benefitted from axle counter improvements following work with our manufacturers and industry partners to improve products and installation methods.

After identifying a weakness with the reliability of newly installed points equipment, we introduced a wide ranging improvement programme working with manufacturers and assessing transportation, installation and commissioning of equipment. Alongside this, we have delivered a national programme of briefings on the set-up of switches and crossings (S&C) to more than 1,300 front line colleagues and introduced additional competency requirements to roll out improved processes. This has improved the reliability of points equipment in the first 12 months from installation.

In early April 2016, around 100 metres of OLE on the West Coast Main Line was damaged, causing a full day of disruption to train services. Later in April, cables powering signals south of Birmingham New Street were damaged by what appeared to be vandalism. Repairs were made quickly, allowing services to resume on the same day. Throughout April, thieves attempted to steal cable seven times. This resulted in the delay or cancellation of 331

passenger and 27 freight services, 2,654 minutes of disruption to passengers and approximately £120,000 of cost to the railway. Directed patrols have been introduced by the British Transport Police to catch and deter criminals.

In order to tackle issues with flooding, we have introduced a number of solutions at high risk areas. In June 2016, we installed a new pumping station to improve drainage on the line between Fulwell and Shepperton. The line between Didcot and Oxford was closed in August 2016 in order to carry out flood alleviation works involving raising the height of the tracks. Following flooding at Dawlish in Devon, Network Rail commissioned a study of the flood relief in the area in November 2015. We identified that culverts placed in Victorian times, combined with the tidal flow of the Exe estuary, were causing flooding of the road near to the railway. As part of our Railway Upgrade Plan, we have corrected this issue with the placement of a new valve. In September 2016, we completed the installation of a new drainage system on the Settle to Carlisle railway line to make the line safer and more reliable for passengers for years to come.

An enhanced approach to designing products for reliability has been introduced as standard within Network Rail to address the risk of poor reliability in new products. From April 2017, new products being introduced to the network will require evidence of meeting our design for reliability standard at the point of product acceptance. Following this, we have started to apply a similar approach to the remediation of existing products to further improve asset reliability.

The fitment of remote condition monitoring equipment has continued throughout the year as part of our 'monitor, predict and prevent' programme. Fitment to track circuits and point machines is underway and due to be completed in August 2017, which will bring the coverage of remote condition monitoring to approximately 60 per cent for points and 35 per cent for track circuits.

We have also taken steps to improve the quality of the data relating to asset reliability. In October 2016 we delivered system functionality improvements and in November 2016 we introduced improved guidance for delay attribution concerning service affecting failures. These steps will allow us to undertake more detailed root cause analysis and more specifically target our improvement programmes.



## Renewals

Our national scorecard measures our delivery against forecast of the seven key renewals volumes: track plain line, track S&C, signalling, underbridges, earthworks, OLE re-wire and mid-life refurbishment and conductor rail. At the end of 2016/17, delivery was above target for five asset types and below target for two.

Delivery of renewals across the plain line track portfolio finished the year the furthest behind target, by approximately seven per cent. The shortfall was driven by under delivery of High Output renewals. The most significant drivers of this were loss of access, restricted access windows and plant failure. Refurbishment delivery was also lower than target. LNE has deferred refurbishment activity, prioritising higher criticality, complex worksites instead. By accelerating condition-led renewals from the 2017/18 workbank, we delivered additional conventional renewals of plain line track, particularly in Wales, which has partially offset the shortfall in High Output delivery.

Our delivery of S&C renewals in 2016/17 was eight per cent better than target. This relates largely to refurbishment works where asset condition has made this intervention type more cost effective than maintenance, and route resourcing has enabled the additional interventions. Significant progress was made by London North Western (LNW) in the delivery of renewals across key schemes including Banbury Area Remodelling, Oxenholme South and Blackburn Interlocking.

Signalling renewals volumes in 2016/17 were one per cent below target. The most significant shortfall in signalling renewals in the year was in relation to the Scotland Area National Operating Strategy (SANOS) works which has been re-programmed to be commissioned in 2017/18 following workbank review. The vast majority of other signalling schemes across the network commissioned as planned in 2016/17. Level crossing renewals activity was below target for the year, primarily due to a delay to product acceptance in LNE.

A re-prioritisation of the structures workbank to better respond to changing asset condition has, in some cases, resulted in variance from planned renewals volumes in 2016/17. Underbridge renewals volumes were 19 per cent ahead of target for the year. Four large projects have driven this performance; the completion of 2015/16 rollover at

Marsh Lane in LNE, emergent works at Dover sea wall in South East, accelerated interventions at Sharnbrook viaduct in East Midlands and the unbudgeted addition of the Ordsall Chord in LNW. Despite national delivery exceeding target, there have been some deferrals in some routes. In Scotland, repair works at Conon Viaduct were deferred following ecological concerns. In Anglia, preventative activity was also deferred due to access constraints. Wessex has also had difficulties in securing restricted road access to carry out planned works at Quay Viaduct.

Delivery of drainage renewals was behind plan nationally, with mixed performance across routes. Additional works were delivered in LNW, Scotland and Western due to rollover, emergent works and upskilling of resource. Delivery in East Midlands, Kent and LNE was under target due to more favourable asset condition, workbank re-prioritisation and resourcing constraints.

Earthworks renewals were 103 per cent ahead of plan for the year. Much of this can be attributed to the continued delivery of 2015/16 schemes, and a number of emergency interventions in response to landslips also contributed to the renewals delivery.

Buildings renewals completed in 2016/17 fell short of target. Although renewals of managed stations outperformed target, there was under delivery for franchised stations, light maintenance depots and lineside buildings. The majority of the shortfall has been in relation to re-prioritisation following a review of asset condition within the portfolio.

Across the electrification portfolio, delivery of OLE wire runs and conductor rail renewals was better than target for 2016/17. Access availability was a key driver of the national favourable performance in these areas across Scotland (OLE) and Wessex (conductor rail). LNE deferred a number of OLE renewals due to unit rate cost increase.

Fixed Plant renewals delivery was under target for the year. Delivery of Signalling Supply Point volumes in South East and points heaters in LNW was under target. Additionally, the renewal of Signalling Power Cable at Tiverton has been deferred to 2017/18.

Overall, delivery of renewals across the Telecoms portfolio exceeded target, as larger ongoing projects which started early in the control period achieved final commissioning. The majority of this year's renewals volumes have been delivered by Hi-Path and Paddington CCTV.

## Station Stewardship Measure

The Station Stewardship Measure (SSM) represents the average condition 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. Scores represent the percentage of remaining life according to the following scale:

- >76% = 1
- 46-75% = 2
- 16-45% = 3
- 1-15% = 4
- 0% = 5

Lower SSM scores indicate better station condition. Performance against the current SSM measure remains positive. For all station categories targets have been surpassed.

In 2013/14, the ORR published a report; 'Shaping Station Stewardship Measure', which included 12 recommendations for improving the current SSM measure, and methodology, to become SSM+. A working group has been established with representation from Network Rail, the ORR, the DfT and the RDG. The proposal is that this working group will report to a, currently unformed, senior level Steering Group representing the industry. To date, the working group has agreed a four box matrix approach to cover the four key aspects to station management and measurement; Sustainability, Robustness, Capacity and Passenger Experience. The proposal is to establish cross-industry sub-groups to develop suitable solutions for each of these four areas, and propose them to the working group for onward recommendations to the steering group. The target date for implementation remains the start of CP6.

## Asset Management Excellence Model

The Asset Management Excellence Model (AMEM) measures an organisation's asset management capability by assessing its maturity in a range of core activities. A score of over 70 per cent is required to reach the 'excellent' category. Network Rail has a regulated target to reach 72 per cent by 2018. A higher percentage indicates a better performance.

In August 2016 Asset Management Consulting Limited (AMCL) carried out an interim AMEM assessment to test whether Network Rail was on course to achieve the regulated output halfway into CP5. The assessment found that progress towards achievement of the regulated output has been mixed; one of the six targets has already been

achieved although in general much more needs to be done to apply completed initiatives at a route level. The view of AMCL is that in some areas the process of devolution has resulted in a loss of clarity about systems and processes, and the new arrangements have not yet settled in and become robust. Network Rail understands where these shortfalls are and has plans in place to achieve the regulated output.

## Asset Data Quality

Asset Data Quality is assessed using confidence grading for data reliability and a grading for accuracy and completeness.

Data reliability represents the process and governance for producing data from 'A' (best governance) to 'D' (poorest governance). Accuracy and completeness is reported using a number of data checks:

- Completeness check – is there a field in the master source system to store the relevant attribute data?
- Validity check 1 – is the data populated in the master source system and field?
- Validity check 2 – does the data pass system acceptable rules?
- Validity check 3 – does the data pass attribute specific business rules?

Our approach to managing the quality of our data is to treat data as an asset which is maintained and renewed according to network-wide assurance standards. This enhanced asset data quality management system is aligned with best practice, such as ISO8000. We have rolled assurance arrangements out to our routes, where the accountabilities are being discharged through Asset Management teams within routes.

We trialled the Asset Data Governance system in Western route between June and September 2016. The process was refined and deployed to the remaining routes and relevant central functions.

The Asset Data Governance action plan has been implemented to support Network Rail achieving A-grade governance, which will in turn enable the organisation to:

- Understand gaps and risks that exist against the framework, and have a prioritised plan to address them
- Make decisions based on known and agreed business risk profile
- Act to manage unacceptable levels of business risk.

## Offering Rail Better Information Services

The Offering Rail Better Information Services (ORBIS) programme is a major investment that is set to change the way in which asset information is collected, stored and utilised. The programme is designed to place quality data at the heart of our decision making to deliver better, safer and more efficient ways of working.

For each regulated output of the ORBIS programme, critical sub-milestones are agreed and tracked to build confidence in delivery to schedule. The ORR regulated outputs are managed within the ORBIS Governance Framework and the status is reported to the ORBIS Programme Board on a monthly basis.

To date, seven regulated output milestones have been completed and two delayed:

- June 2016 milestone: 'Asset hierarchies established and Ellipse designated as master system for civils'
- December 2016 milestone: 'GEOGIS decommissioned'.

The sub-milestones for these are tracking to the revised schedules.

A single deployment plan for Civils Strategic Asset Management solution (CSAMS) will deliver the regulated output 'Asset hierarchies established and Ellipse designated as master system for civils' and the evidence for completion has been agreed with the ORR. This is on track for November 2017.

The technical go-live date for the Integrated Network Model (INM) to replace GEOGIS was missed due to on-going technical issues with the environment (not related to INM). As a result, the business go-live, originally planned for 19 June 2017, has been delayed following a business-led decision to deploy INM to the business in September 2017. Deployment activity has commenced so that the September business deployment can be successfully achieved.

## Network Capability

Network capability refers to the linespeed, gauge, electrification and route availability of the railway. The ORR's CP5 Final Determination required us to maintain and enhance the overall capability of the network, and our network licence requires us to make accurate data available about the capability of the network. Some customers have raised concerns about our management of the process to change network capability and have challenged the accuracy of some information that Network Rail

holds regarding the capability of the network, which stakeholders rely upon to plan their businesses with a reasonable degree of assurance. Additionally, there are some long-standing discrepancies between actual and published capability of the network that we are seeking to resolve with our stakeholders

Nationally, the amount of electrified track has increased in 2016/17. This is largely due to the roll out of new electrification in Western, with the commissioning of the 16 mile test track between Reading and Didcot. This has facilitated testing of two new train fleets in the Hitachi Intercity Express Programme and 387 Electrical Multiple Units. Towards the end of the year Crossrail stage works energised the section of line from 12 miles to 24 miles to support the introduction of electric services to Maidenhead from May 2017. Electrification will continue to progress west over the next 12 months with electric services being extended as the infrastructure becomes available. Electrification on the Western route has not yet been commissioned to support passenger services.

Our linespeed capability has also improved, most notably in LNW. In December 2016 we completed the first phase of upgrades to the Calder Valley line that runs between Manchester Victoria and Leeds via Bradford. This included upgrades to signalling equipment and track to increase the speed that trains can travel on the line.

## Train performance

The Public Performance Measure (PPM) combines figures for punctuality and reliability into a single performance measure. It is the industry standard, measuring the performance of individual trains advertised as passenger services against their planned timetable as agreed between the operator and Network Rail. PPM is the percentage of trains arriving on time at their final destination. 'On time' means within ten minutes of scheduled arrival time for long distance services, and five minutes for regional services. PPM is measured for all passenger trains across the network, whatever the cause of delay or cancellation. A higher result represents better performance.

A train is counted as being Cancelled and Significantly Late (CaSL) if it is cancelled (at origin or en-route), the originating or terminating station is changed, it fails to make a scheduled stop, or it arrives at its terminating station 30 minutes or more after its scheduled arrival. A lower result represents better performance. CaSL is not a regulated measure for Scottish train operators, including Scottish operators running in England.



Some of our route scorecards also include other measures of passenger train performance. These are part of a suite of measures being developed to provide more transparency of train performance data. These measures are published [here](#).

At year-end PPM for England & Wales was 87.4 per cent against a forecast of 89.9 per cent, and a regulated target of 92.3 per cent. Scotland PPM was 90.3 per cent compared to our forecast, and the regulated output, of 92.0 per cent. CaSL for England & Wales was 4.0 per cent against our forecast of 2.9 per cent and the regulated target of 2.2 per cent. The commentary below provides a national overview. Disaggregated performance data is available in the [Annual Return data tables](#), and route commentary is provided later in this document.

Overall, passenger train performance in 2016/17 has been below the standard we want to achieve. With the exception of the impact of poor weather, delay from all types of causes was overall worse than target.

The rail industry is experiencing year on year passenger growth. The most significant impact this has on performance is that trains dwell for longer than planned in stations to allow more passengers to disembark and board the train. These small delays then have a knock on effect as the train moves through the network and causes delays to other services. Passenger train performance has been consistently better at weekends in 2016/17, when there are fewer passengers, than on weekdays. Providing extra capacity for passengers, particularly during peak hours, influences our service management decisions and can reduce opportunities to recover service when issues do arise. This has been seen to adversely impact DPI, which has been identified as one of our key CP5 workstreams by our Executive.

The effects of DPI can be seen in a number of causes of delay. Despite a national improvement in the number of fleet and infrastructure failures, the delays that have resulted from them have continued to increase throughout the year. This is a result of difficulties in recovering services following remedial works on fleet or the infrastructure.

Similarly, whilst the number of suicides on the railway has continued to reduce through 2016/17, and interventions by our people have increased, we have seen a continued increase in delay caused by external factors, again reflecting the current problems in managing DPI. We are committed to cross-industry programmes to prevent, or mitigate, the disruption caused by external events, including

suicides. Trespass incidents are at an all-time high, with over 8,000 incidents in 2016/17. Network Rail's Trespassing Prevention Campaign was launched in April 2017. We now have embedded inspectors and joint working with British Transport Police in all routes. This is to help to prevent external incidents, respond to incidents quickly when they do occur, and to act as a link to the other external emergency services whose actions can be key to minimising disruption. At the end of 2016/17, more than 12,000 rail employees and transport police officers have been trained in suicide prevention techniques.

The objective of the DPI programme is to deliver a 'root and branch' approach to predicting, preventing, managing, and recovering from incidents occurring on the network. In so doing, the programme requires close cooperation between Network Rail and operators. Incident officers have been introduced within an incident management structure in our routes to drive more effective incident response and recovery.

Whilst national delay due to weather was overall better than target for the year, a small number of significant weather related incidents affected train performance for several operators during the year. Flooding in June 2016 caused severe disruption to passengers travelling from Norfolk, Suffolk and Essex into London. Autumnal conditions affected nearly all operators, despite our much improved readiness for the effects of these conditions. Storm Doris in February 2017 resulted in multiple obstructions on the line and brought widespread speed restrictions across the network.

There has also been well publicised industrial action affecting the availability of train crew in 2016/17. This has particularly affected Govia Thameslink Railway (GTR) train performance, although impacts have also been seen for other operators.

We have continued to focus on reducing asset and infrastructure failures and TSRs, using technology to predict and prevent issues and implementing a risk based maintenance approach.

As the amount of delay has increased, and more investigation is required to identify the causes of delays, the amount of unattributed and un-investigated delay has increased. This has reduced our ability to effectively identify and target interventions on the most significant root causes of delay. This is a particular issue on South East and Wessex routes. We have been developing our delay attribution processes throughout the year and will be establishing a new competency framework with accompanying training and resources.



In 2016/17, major enhancement programmes, including Crossrail, HS2 and Thameslink, have increased industry demand for maintenance employees, particularly across the South East. In response to this, we focused on strengthening our recruitment and retention programmes in 2016/17.

The Thameslink and Crossrail construction programmes will come to a close in 2018. This will naturally reduce the risk of work related problems that cause delay across the network, such as possession overruns. Our main focus in relation to these programmes is now to develop and implement readiness programmes for service introduction. We are working with the relevant stakeholders to deliver these programmes.

Across the network, train performance was significantly worse than target for four passenger train operators in 2016/17; GTR, Southeastern, South West Trains and Virgin Trains East Coast.

Network Management remains the biggest category of Network Rail caused delay for GTR and Southeastern. Uninvestigated or unexplained delay is most prominently an issue within the South East and Wessex routes. The volume of delay in these routes has outstripped our capacity to investigate and attribute delay. Reactionary delay is also a concern, particularly when rolling stock and train crew affected by earlier delays are not in the correct location for later services. A sustained increase in uninvestigated delays hinders our understanding of the causes of delay on the network and consequently the development of effective performance improvement plans. Therefore, in order to strengthen our capacity in this area, as detailed in our plans to address DPI, we are recruiting additional team members and delivering

appropriate training to investigate root and branch causes of delay.

Southeastern train performance continued to decline steadily in 2016/17. PPM MAA ended the year at 86.1 per cent, 2.4 percentage points short of the performance strategy target agreed with our customer. Disappointingly, the proportion of Network Rail caused delay was also considerably higher than target and in May 2017 the ORR initiated a review of Network Rail's delivery of performance for Southeastern. The ORR's review concluded that Network Rail is doing everything reasonably practicable to recover performance for Southeastern. Notwithstanding this the ORR has made a number of observations on the steps that Network Rail is and could be taking to improve performance. We are working with the ORR to agree the timescales for responding to each of them. The ORR's report has been published on its [website](#). Delivery of performance for both Southeastern and GTR has shown steady improvement from Period 10 of 2016/17 which has continued into the early part of 2017/18.

The delivery of performance improvement plan milestones for South West Trains, both from an operator and Network Rail perspective, is generally tracking in line with plan. Despite this, performance for South West Trains has been below target throughout 2016/17. The categories of Network Rail delay which have had the most significant impact on performance are 'external', 'non-track assets' and 'track'. With South West Trains, we are taking a joint approach to tackling trespass and fatalities. In 2016/17 we introduced a single dedicated team working on multiple workstreams to mitigate against externally caused delay. We also addressed growing concerns relating to DPI in Wessex,

re-instating a response team at Surbiton. Average time to site, and time to fix when faults do occur, has reduced over the course of the year.

Challenges in delivering train performance for c2c were primarily related to difficulty accommodating growth following a major timetable change in December 2015. This has been exacerbated by fleet reliability issues and TSRs due to clay bank shrinkage at the end of the summer.

Specific incidents impacted train performance for Virgin Trains East Coast and other East Coast Main Line operators. These incidents were mostly external, but there were also overhead line failures and some delays due to fleet issues.

Train performance was also below target for ScotRail. There has been a drive and renewed commitment by the ScotRail Alliance to continue to improve. In September 2016, the ScotRail Alliance launched an improvement plan, setting out proposed actions to improve the reliability of services. We have delivered over 900 milestones as part of the plan, leading to PPM MAA reaching 90.3 per cent in March 2017. We are continuing with the alliance performance improvement plan to deliver better performance. Amendments to the timetable at the December 2016 release have shown positive results with greater resilience and improved PPM on key lines. More positively, train performance has been good for Virgin Trains West Coast, London Midland and TfL Rail.

PPM for Virgin Trains West Coast improved in 2016/17 to 2.1 percentage points better than target. London Midland train performance also improved, reflecting LNW's focus on performance improvement on the West Coast Main Line.

Despite delay causing incidents remaining relatively static, PPM for TfL Rail has improved over the year. The positive out-turn is a result of interventions to manage passenger growth, and in preparation for the opening of the Elizabeth line in 2019.

The Freight Delivery Metric (FDM) measures the percentage of commercial freight trains that arrive within 15 minutes of booked arrival time, or with less than 15 minutes delay caused by Network Rail or a non-commercial freight operator. We achieved 94.3 per cent FDM against our target of 93.5 per cent and the regulatory output of 92.5 per cent.

We continue to work with ports and terminals across the network to improve right time departures. We have implemented visualisation and a performance control room at the Port of Felixstowe

which includes the operators and the port. This should help drive improvements in performance to and from the port, which is responsible for 10 per cent of freight movements on the network.

## **Network Availability**

The principal measures of the availability of the network to run trains are the Possession Disruption Indices for passenger (PDI-P) and freight (PDI-F).

Following franchise changes in 2015, the Network Availability Reporting System (NARS) was unable to report PDI-P figures between April 2015 and February 2016. Throughout CP5 train service codes have been divided amongst service groups and subsequent weightings been re-distributed, adversely affecting the figures produced.

PDI-P ended 2016/17 at 1.25 per cent, significantly higher than expected when the original forecasts for CP5 were made. However, service group changes resulting from changes to franchises mean that this out-turn is unreliable, not representative of our performance and not comparable with the regulatory targets that were set by the ORR before the start of the control period.

We do not believe that PDI metrics are now a reliable indicator of network availability. Furthermore, PDI measures are not used by our business to inform possession planning decisions and we are further aware that PDI is not a measure that is valued by the industry. Following discussions with the ORR, we will continue to report PDI data until the end of CP5 for regulatory purposes, recognising that there are fundamental weaknesses in the measure.

To more accurately monitor and track our ability to effectively plan possessions in line with industry processes and the impact they have on both industry and end users, we propose to continue to monitor and publicly report (via our Annual Return) three early warning indicators. The early warning indicators we are proposing to monitor and report are: i) level of access disputes raised, ii) additional information relating to the notification discount factor and iii) the possession value indicator. The historic data for access disputes and the notification discount factor are included within the [Annual Return data tables](#). We believe this will provide assurance to the industry in the absence of reliable PDI data.

We consider that it is likely that the PDI-F calculation has similar issues to PDI-P. PDI-F saw an increasing trend towards the end of 2016/17, reaching 1.05 per cent at the end of the year.

## Locally Driven Measures

### People Measure

Each route includes a measure relating to people in their scorecard. In 2016/17, all routes included a measure related to the 'Your Voice' survey which all Network Rail employees are invited to complete nationally. Some routes measured the implementation of action plans following the previous survey, while others measures the overall score achieved.

### Passenger Satisfaction

The [National Rail Passenger Survey](#) (NRPS) collects passenger opinions of train services from a representative sample of journeys. Transport Focus commissions the survey twice each year in spring and autumn. Our route scorecards measure passenger satisfaction within the route.

### Reduction in Railway Work Complaints

Around five million people's homes either back on to or face the railway, while 22 million people live or work less than 500 metres away from the railway. We receive both positive and negative contact from the communities and people that we come into contact with. Each of our route scorecards measures the reduction in railway work complaints compared to the previous year.

### Other

All route scorecards contain people, passenger and reduction in railway work complaints measures. As well as this, customers and routes have agreed on other measures of performance. As these vary dependent on customer and route priorities, they cannot be individually categorised and are represented on the national scorecard as 'other'. Full details of performance for all locally driven measures are included in route scorecards below.

## Customers and communities

Our national helpline is the central point for all contact from the public. We encourage all types of contact, positive or negative.

Contact by telephone to our helpline, which is open 24 hours a day, has consistently been the most used method of contact in 2016/17. Newly introduced methods, such as the web form and live chat on our website, offer more ways to contact us.

Contact through Twitter has increased significantly since Network Rail launched the service in 2012 and is recognised as a customer service channel in

its own right. Throughout the year we have been using Twitter to inform people of the work that we are doing to upgrade the railway. The 'Christmas Works' campaign drove an increase of 2,470 new followers in less than two weeks. This proactive campaign led to positive interactions with our followers. Compared to 2015/16, we have around 26,000 new followers at the end of 2016/17, and the number of mentions has increased by approximately 52,000.

In 2016/17, our Interactive Voice Response (IVR) system handled more than a third of all contacts before they were actioned by our central team. The IVR includes options such as enquiries about train times and ticketing. If selected this redirects the user to more appropriate sources of information from other areas of the industry. For 2017/18 we are investing in a new smarter and leaner IVR system that will make it easier and quicker for people who contact us.

Over a quarter of contacts were handled by our helpline on the first call to Network Rail during 2016/17. The majority of centrally closed contacts are requests for information and queries relating to one of our 18 managed stations. Of the 168,450 contacts received into our central team 18 per cent were allocated to the route for action.

Consistently, the highest volume of contact was related to non-Network Rail issues (e.g. ticket information and refund requests). Aside from non-Network Rail issues and information requests the category that we are contacted about most is 'Railway Work'. To drive focus on this we committed to reducing the volume of railway work complaints on each of our route scorecards in 2016/17. Performance in this area was mixed, and targets have been set again for our 2017/18 scorecards.

In 2016/17 we reduced our average age of cases by over a third, from 43 days in 2015/16 to 28 days in 2016/17. This is the first time we hit our target of 29 days. Six of our eight routes have shown an improvement in the average age of open cases.

Over the past two years, routes have focused on reducing the number of active cases open at year end. We have increased focus on customer service and allocated funds in routes so that action can be undertaken to address requests for work. Nationally, the number of active cases open at the end of 2016/17 has reduced by two per cent.

Since 2013/14, the average turnaround time for the resolution and closure of cases has improved from 71 days to 30 days in 2016/17.



## Sustainable Development

Our network extends to most of Great Britain, running through Areas of Outstanding Natural Beauty, Sites of Special Scientific Interest and towns and cities where people live and work. We need to balance our responsibilities towards the environment that we operate in with the effective management of the infrastructure to reduce risk of accidents or delays. In 2016 we updated our Sustainable Development strategy to allow us to drive forward environmental improvement in a prioritised, risk based way.

### Environmental Impact

In June 2016, electrification work between London Liverpool Street and Southend Victoria required deep foundations to be put in place. As standard practice, an ecology survey was carried out during the early stages of the project identifying badger setts in the area. Rather than using the results to apply for a licence to move the badgers, which disrupts the animals and can be a long and costly process, details were sent to the project team. Designers adjusted plans to place the foundations where they would not affect the badger setts, and saved time and money on the project.

Network Rail's Queen Mary Viaduct project in East London won a bronze 'Green Apple Award' in the Building and Construction category for Regeneration for Environmental Best Practice in November 2016. The award recognised the demolition of disused railway arches to provide additional land for Queen Mary University and the London Borough of Tower Hamlets, which has now been developed into an outdoor sports facility and new student accommodation.

### Energy and carbon

We have a target to reduce carbon dioxide equivalent (CO<sub>2</sub>e) emissions from our non-traction portfolio by 11.2 per cent against the CP4 exit position by the end of CP5. A new energy management policy and strategy are in place and data, systems and processes have been overhauled. This has provided clear strategic guidance alongside much more accurate, more visual and easily accessible information to enable our business units to understand, and control, energy use and therefore emissions of CO<sub>2</sub>e. Each of our routes now has a designated individual who is responsible for its energy management programme. Poor performance in 2014/15, due to additional infrastructure and large scale electrification programmes, has now been recovered and we are on track to achieve our

target, with scope 1 and 2 emissions in 2016/17 at 262,623 tonnes. This shows a 6.9 per cent carbon reduction from 2015/16 and a 12 per cent reduction against the baseline at the end of CP4.

### Weather resilience and climate change

Our new Weather Resilience and Climate Change Adaptation (WRCCA) Strategy 2017-2019 was developed through engagement with stakeholders and was finalised in February 2017. It looks to build on work undertaken by the WRCCA programme to date and to provide a framework within which all work relating to weather resilience and climate change adaptation is undertaken within Network Rail. It enables us to focus on and invest in prioritised activities through internal and external consultation. Our approach to climate change and weather resilience is detailed on our [website](#).

### Waste

In 2016/17, Network Rail achieved 86 per cent diversion from landfill. IP waste represents nearly 40 per cent of total Network Rail waste, but over 70 per cent of disposed waste. Workstreams have been developed to reduce and reuse waste instead.

### People

We are developing our workforce so that we can continue to maintain, renew and enhance the railway in future control periods. In 2016/17, we expanded our Advanced Apprenticeship scheme by 50 per cent. From 2017, there will be two apprenticeship intakes each year, in March and September, beginning training of 140 new apprentices from March 2017.

### Social Performance

This year our community focus has been on engaging lineside neighbours affected by railway work. We have worked with communities in three pilot areas to assess the impact of our work and provide social benefits to the local area through community gardens and school art projects.

Network Rail has also identified opportunities to maximise socio-economic value through future infrastructure projects, like the Trans-Pennine Route Upgrade. Projects are beginning to create Social Management Plans as part of the planning process which identify opportunities to add value through accessible design, job creation, building communities and driving local economic growth.

## Digital Railway

Britain's railway is the fastest growing in Europe. It carries twice as many passengers today than it did just two decades ago. The industry is facing the major challenge of meeting the urgent need for extra capacity on the rail network to improve performance and the passenger experience. With passenger numbers expected to double again in the next 25 years, the digital modernisation of the network will be every bit as much a part of the solution as traditional infrastructure upgrades.

The Digital Railway strategy is to deploy digital signalling and train control on parts of the network where there are acute capacity or performance issues. Similar technology is already used on the London Underground and the government has indicated its desire to accelerate deployment on the rail network. More trains will run on existing tracks to make the railway safer, faster and cheaper. To lead a cross industry programme of digital modernisation, David Waboso CBE, joined Network Rail in June 2016 from London Underground, as the new Managing Director, Group Digital Railway.

In April 2016, Network Rail, the RDG, Rail Safety and Standards Board (RSSB) and the ORR provided written evidence to the Transport Select Committee for its inquiry into Rail technology: signalling and traffic management. The conclusions of the inquiry emphasised the importance of an integrated cross-industry plan to deliver the digital railway. Throughout the rest of 2016/17, Digital Railway has focused on bringing about collaboration between Network Rail, the wider rail industry and the supply chain.

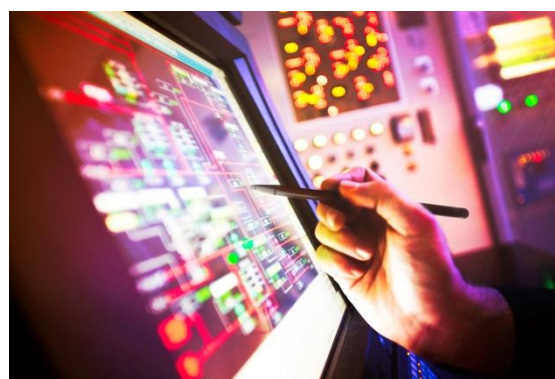
In April, rail supply industry representatives from around the country met to discuss the opportunity for new high-tech engineering jobs created by Digital Railway. Over 200 attendees from rail suppliers attended this major conference and explored a range of areas where the rail supply chain's specialist skills will be in demand.

Delegates also had the chance to voice their opinion about the key priorities for the future technical strategy for rail. In June, Digital Railway presented at the Young Engineers' Railway Seminar and hosted a supplier collaboration workshop. New engagement forums have been set up to consider the impact of Digital Railway across the industry, including a joint working group of Network Rail's Operations Council alongside representatives for RMT and TSSA trade unions.

Three Digital Railway case studies were completed which highlighted the potential benefits of deploying

digital signalling technologies. In autumn 2016 the preparation of several Digital Railway Strategic Outline Business Cases began under the governance of Route Boards, consisting of senior Network Rail route planners, rail operators and other stakeholders. These will be used to inform potential funding decisions for CP6.

In his Autumn Statement the Chancellor announced an investment of £450 million for a trial of digital signalling on the railway. A shortlist of potential schemes has been developed and will be subject to further analysis to inform the final decision on where and how this funding should be used, in order to deliver the best return for passengers.



The Thameslink upgrade programme will feature digital signalling and train control – European Train Control System (ETCS) and Automatic Train Control – through the central core, from St. Pancras to Blackfriars. This will allow 24 trains per hour to run through central London by December 2018. In November 2016 testing began of the Automatic Train Operator system on the Class 700 train, running over ETCS.

The Early Contractor Involvement (ECI) project was established to bring together rail operators and the supply chain, with the purpose of reducing the cost of deploying digital control systems and finding innovative ways to speed up delivery.

The first report of the ECI programme was published in December 2016, highlighting that the costs of digital technology could be reduced if reforms were made to the way the supply chain is engaged. These findings are now informing the development of the targeted business cases.

In 2017, we established Route Steering Boards on five routes to bring together a range of stakeholders, including train operators and senior planners, to analyse how digital technology can increase capacity and improve performance.

# Scotland

Safety	Worse than Target	Target	Better than Target	2016/17 Actual
Lost Time Injury Frequency Rate (LTIFR)	0.420	0.400	0.380	0.464
Close calls raised	5,625	7,500	9,375	8,649
Close calls % closed within 90 days	70%	80%	90%	70.7%
Train accident risk reduction measures	60%	80%	100%	81.0%
Top 10 Milestones to reduce level crossing risk	60%	80%	100%	80.0%
Financial Performance				
Financial Performance Measure – excl. enhancements	£(8)m	0	£8m	£(3)m
Financial Performance Measure – enhancements only	£(5)m	0	£5m	£(14)m
Cash Compliance – Income & Expenditure	£(3)m	0	£13m	£(25)m
Investment				
Top investment Milestones	60%	80%	100%	83%
Asset Management				
Reduction in Service Affecting Failures	0.0%	4.2%	7.2%	-0.8%
Track Plain Line (Track Km)	234	247	260	246
Track S&C (Point Ends)	85	89	94	103
Signalling (SEUs)	81	85	90	18
Underbridges (m2)	22,532	23,784	25,036	25,505
Earthworks (5 chain)	550	580	611	769
Train Performance				
Abellio ScotRail PPM	91.0%	92.0%	92.5%	90.3%
Caledonian Sleeper PPM	89.0%	89.7%	90.5%	89.2%
Abellio ScotRail Right Time Departures	80.0%	82.5%	85.0%	85.2%
Abellio ScotRail Cancellations	1.6%	1.5%	1.4%	0.9%
Freight Delivery Metric (FDM)	94.6%	95.4%	96.3%	96.0%
Locally Driven Measures				
Your voice Engagement Score	68.0%	70.0%	72.0%	72.0%
Passenger Satisfaction	89.0%	89.0%	90.0%	88.5%
SQUIRE %	93.0%	94.0%	95.0%	89.9%
Annual Stakeholder Survey	60.0%	66.0%	72.0%	52.0%
Complaints per 100K Customer Journeys	30	28	26	24
Reduction in Railway Work Complaints	889	842	796	867

## Safety

The ScotRail Alliance has continued to reduce the number of lost time accidents within its workforce. The LTIFR has improved from 0.543 at the end of 2015/16 to 0.464 at the end of 2016/17, although did not meet the scorecard target of 0.400.

Safety at both Network Rail managed stations in Scotland, Glasgow Central and Edinburgh Waverley, has consistently improved, reducing the Fatalities and Weighted Injuries (FWI) rate throughout 2016/17. Overall FWI in Scotland finished the year behind target, largely due to the late delivery of St Ninians level crossing closure.

A number of initiatives have been carried out at level crossing locations across Scotland to reduce the overall risk that these sites pose. This has delivered a level crossing risk reduction of 0.060 from our CP4 exit position. Throughout 2016/17, there have been no public accidents at any level crossings in Scotland.

The number of close calls closed within 90 days fell short of target at 70.7 per cent. The target for the total number of TSRs in Scotland was met as a result of planning interventions carried out in advance of a requirement for a TSR developing.

## Financial performance

The overall Financial Performance Measure (FPM) for 2016/17 failed to achieve target due to underperformance in both renewals and enhancements. Within Renewals there were issues regarding the delivery of High Output Plain Line Renewals volumes which means that these will have to be done at a later date with an additional cost. In the area of Enhancements there were increased costs for both the EGIP and Rolling Programme of Electrification projects.

Overall these increased costs in Renewals and Enhancements are still forecast to be contained within the Scotland Borrowing Limit for CP5 and will continue to be monitored on a monthly basis.

## Investment

Transforming Scotland's rail network, the Scottish Government funded EGIP has continued at pace in 2016/17, working across the central belt to electrify the main railway between Edinburgh and Glasgow. There have been major challenges in relation to EGIP throughout the year, including the overrun and missed completion milestone for electrification. The programme is now in its final phase with the first electric services set to operate along the route this year. To achieve this, the project has delivered

route clearance works on 61 structures along the line of route, completed the electrification of the Cumbernauld line, track lowering and Winchburgh tunnel and re-developed Edinburgh's Haymarket station.

Completion of the Edinburgh Gateway train-tram interchange in December 2016 marked another new addition to the rail network, improving travel options for passengers from Fife and the north of the country as well as providing easy access to the Edinburgh tram network and the city's airport.

The Transport Minister approved the Transport and Works Scotland (TAWS) Order authorising the redevelopment of Glasgow Queen Street station on 31 March 2017. The TAWS process has taken longer than originally anticipated resulting in a later start to the works at Queen Street to deliver EGIP Key Output 3 and 4. We are in the process of agreeing revised regulatory milestones for completion of the works.

The essential refurbishment and upgrade of Glasgow Queen Street Tunnel was the largest piece of engineering work to be undertaken on the Edinburgh to Glasgow route since the railway was first constructed. Throughout the 20-week programme, engineers renewed 1,800 metres of concrete slab track and installed more than 4,000 metres of new rails through the kilometre-long structure. The work also included the installation of infrastructure to prepare for the future electrification of the station. Glasgow Queen Street is a key terminus for trains arriving from central, north and west Scotland. Collaborative planning in the ScotRail Alliance enabled the provision of service on alternative routes for passengers. This included the upgrade of Anniesland Chord to support the re-routing of more trains through Glasgow Queen Street low level and Glasgow Central station. This achievement was recently recognised at the Scottish Transport Awards where the project won the prize for the most innovative Transport Project.

## Asset Management

The number of service affecting failures across Scotland increased in 2016/17. Although reliability across our signalling portfolio finished the year behind target, we have begun to see improvements in reliability through the continued installation of the new Mark 3 LED replacement light engines.

We have implemented route asset improvement plans focusing on increasing the reliability of our assets across the network in Scotland. These plans are being delivered in Delivery Units and have progressed well in 2016/17.



Scotland exceeded target for three of the five renewal volumes on our scorecard. Lower than forecast track renewals were the result of reduced productivity of the high output programme. In the signalling portfolio, renewals at Yoker were deferred by one week into 2017/18 in order to tie into another large possession. S&C works at Dalmuir were also deferred to 2017/18 as a result of plant availability.

### **Train performance**

Although train performance was below target for the year for both ScotRail and Caledonian Sleeper, there has been significant renewed commitment by the ScotRail Alliance to continue to improve.

The 20 week blockade at Glasgow Queen Street station alongside industrial action presented performance challenges in the first half of 2016/17.

Responding to concerns over train performance in September 2016, the ScotRail Alliance launched an Improvement Plan, setting out proposed actions to improve the reliability of services. We have delivered over 900 milestones as part of the plan, leading to PPM MAA improving to 90.3 per cent at the end of 2016/17 against a scorecard and regulated target of 92 per cent. We are continuing with the alliance performance improvement plan to deliver better performance.

Amendments to the timetable at the December 2016 release have shown positive results with greater resilience and improved PPM on key lines;

North Electrics and Argyle lines. Further resilience has been built into the May 2017 timetable.

In response to the national challenge to reduce DPI, we have been working to improve response times and time to fix including an increased presence at junctions and the use of improved diagnostic equipment. We have also implemented daily reviews across the Alliance to assess the post morning peak service recovery requirements and prepare for the evening peak

### **Locally driven customer measures**

Passenger satisfaction was 88.5 per cent. Both of our managed stations have been heavily involved in monitoring areas linked to passenger satisfaction, such as cleaning and maintenance contracts.

We have focussed on keeping passengers informed throughout the year, including major campaigns on the Glasgow Queen Street blockade and winter weather preparedness. We have also engaged with external bodies regarding station accessibility and seeking feedback on current station works. Glasgow Central station was awarded a Changing Places award 2017 in recognition of the improved accessibility at the station.

The number of complaints received in relation to railway work has reduced in 2016/17. However, this will remain a key focus as the volume and intensity of engineering work across the network continues to increase.



# Anglia

Safety	Worse than Target	Target	Better than Target	2016/17 Actual
Lost Time Injury Frequency Rate (LTIFR)	0.550	0.524	0.498	0.592
Close calls raised	4,500	6,000	7,500	7,331
Close calls % closed within 90 days	70%	80%	90%	80.7%
Train accident risk reduction measures	60%	80%	100%	87.4%
Top 10 Milestones to reduce level crossing risk	60%	80%	100%	90.0%
Financial Performance				
Financial Performance Measure – excl. enhancements	£(7)m	0	£7m	£(3)m
Financial Performance Measure – enhancements only	£(2)m	0	£2m	£(14)m
Cash Compliance – Income & Expenditure	£(2)m	0	£8m	£(25)m
Investment				
Top investment Milestones	60%	80%	100%	83%
Asset Management				
Reduction in Service Affecting Failures	0.0%	2.0%	4.0%	3.0%
Track Plain Line (Track Km)	120	126	133	109
Track S&C (Point Ends)	48	50	53	35
Underbridges (m2)	1,676	1,769	1,862	2,415
OLE re-wire and mid-life refurb (wire runs)	5	6	6	20
Train Performance				
Abellio Greater Anglia PPM	89.5%	90.1%	90.7%	88.8%
c2c PPM	96.4%	96.7%	97.0%	94.5%
London Overground PPM	94.4%	95.1%	95.5%	94.5%
TfL Rail PPM	93.7%	94.0%	94.3%	94.7%
Abellio Greater Anglia CaSL	2.7%	2.5%	2.2%	3.1%
c2c CaSL	1.5%	1.3%	1.1%	2.2%
London Overground CaSL	2.1%	1.8%	1.6%	2.4%
TfL Rail CaSL	2.5%	2.2%	2.1%	2.7%
c2c Right Time Arrival	76.1%	78.0%	79.9%	73.0%
LOROL Right Time Arrival	76.1%	79.9%	83.7%	75.7%
TfL Rail Right Time Arrival	80.0%	84.0%	88.0%	83.4%
Abellio Greater Anglia Right Time Arrival	66.5%	68.4%	69.8%	64.7%
Freight Delivery Metric (FDM)	91.2%	92.6%	94.0%	93.9%
Locally Driven Measures				
Your Voice Action Plans completed	80.0%	90%	100%	100.0%
Passenger Satisfaction	83%	85%	87%	84.0%
Passenger Satisfaction (Liverpool Street)	89%	90%	91%	88.0%
Reduction in Railway Work Complaints	595	563	532	830
T-12 Milestone Delivery	94%	97%	100%	98.0%
Crossrail East Milestones	5	7	9	9
Number of Temporary Speed Restrictions (TSRs)	24	20	16	37

## **Safety**

In Anglia, there has been steady progress in improving safety. We have reduced the number of lost time injuries throughout 2016/17, although narrowly missed the end of year target. Due to the trends identified in types of accidents, we extended existing winter programmes with a specific focus on slips, trips and falls, manual handling, driving, mental wellbeing and track worker near misses.

Over the course of 2016/17 we removed over half of our backlog of close calls within the year and are now closing 80 per cent of new close calls within 90 days, meeting our scorecard target. Resources to close out close calls have been increased in our delivery units to continue the improvement.

We have continued to improve our safety culture by focusing on leadership behaviour and better safety conversations. We have developed our people's understanding of fair culture and improved risk awareness by increasing the roll out of Risk Based Commentary, a simple but effective system proven to improve safety.

Throughout the year, we carried out public consultation and held 26 events across the region, on our plans to close or modify around 130 level crossings. In March 2017 we put forward three Transport and Works Act Orders applying for the powers to take these forward to address level crossing near misses involving both pedestrians and vehicles. If successful, work will begin in 2018. This is in addition to improving safety at our riskiest crossings and replacing our highest risk pedestrian crossing; Trinity Lane in Waltham Cross, with a footbridge.

## **Financial performance**

Financial performance was also mixed. Operations and maintenance costs were in line with budgets, as were enhancement projects (which saw £424m invested in the region). We failed, however, to meet our financial efficiency targets and this was largely owing to performance penalties we were required to pay to train operators for missing performance benchmarks, and requiring more disruptive access than originally planned to deliver renewals.

## **Investment**

Delivery of Crossrail from Liverpool Street to Shenfield has continued at pace with major infrastructure changes at Shenfield station enabling the introduction of new, quieter, more reliable electric trains for TfL Rail from May 2017.

Ahead of the introduction of new trains, we upgraded the infrastructure including new overhead wire structures and signals, with additional traction power supply for the new service.

Cambridge North, a new station on the network, has been built to serve Cambridge Science Park and the suburb of Chesterton. Funded by the DfT and developed by Network Rail in partnership with Cambridgeshire County Council, Cambridge North station now provides a much-needed alternative for commuters in the north east of the city.

Work began on the Lee Valley rail programme to increase capacity and support local regeneration plans. Working with UK Government, Mayor of London, TfL and local authorities, we will enable an increase of services on the West Anglia Main Line and accommodate proposed plans for Crossrail 2.

After a phased ten-month closure to electrify the line between Gospel Oak and Barking, the route re-opened at the end of February as planned. However, the installation of the overhead wires was not completed on time, and so further work will be needed to enable electric trains to run. A schedule is being finalised at the time of writing, as is a full review into what went wrong with the project.

After a phased ten-month closure to electrify the line between Gospel Oak and Barking, the route re-opened at the end of February as planned. However, the installation of all of the overhead wires was not completed on time. A number of the structures which carry the overhead lines were incorrectly designed and could not be installed at the planned locations. Late delivery of materials and structures also led to delays of this project, and so further work will be needed to enable electric trains to run. A schedule is currently being finalised, as is a full review into what went wrong with the project.

## **Asset Management**

The reduction in the number of service affecting failures through the year exceeded target, at 3.2 per cent. Signalling power supply failures were the most adverse area, which we are addressing through a new cable testing plan and focus on back up supplies and generator availability.

The renewals project to replace overhead wires into London Liverpool Street has improved asset reliability affecting passengers from Norwich and Southend. Two speed restrictions that had caused disruption to passengers during summer have been reduced in length with an increased trigger level.

We did not achieve target for delivery of our seven key renewals volumes; this is due to a shortfall of

Track and S&C volumes which have been deferred to later in the control period. The track shortfall was primarily due to under-delivery of the high output workbank due to plant reliability issues with regard to the High Output Ballast Cleaning Train and unforeseen planning constraints. E&P Wire run delivery was delivered as per target and we have over-delivered on all other assets. Structures significantly over delivered by approximately 30 per cent of planned volume. This was achieved with the increased utilisation of our Works Delivery team to deliver planned volumes. Signalling, which had no renewal volumes planned for 16/17 (as Digital Railway currently supersedes any short term renewals), delivered a signalling aspect renewal at Oulton Broad North station allowing for greater traffic management at the level crossing which has led to improved road traffic congestion at the station.

### Train performance

Train performance has been mixed in Anglia. A number of significant events, including flooding in June 2016 between Maryland and Seven Kings, affected passenger train performance. Storm Doris caused significant disruption to passenger services in period 12 as a result of trees and other debris on the line, with only TfL Rail exceeding target. More positively, we have significantly reduced the number of signalling-related delays and overrunning works impacting on train services.

TfL Rail performance continued to improve, with 95 per cent of trains on time; a route record. Delivery of performance for Abellio Greater Anglia has fluctuated throughout the year, particularly affected by fatalities and trespass on the route, stabilising at around 89 per cent of trains on time. To minimise the impact of trespass and fatality incidents, we have embedded a British Transport Police inspector within the route to work closely with control.

Arriva Rail London began operating the London Overground franchise in November 2016. Performance improved throughout 2016/17, but is still at lower levels than previously achieved. We are focusing on the East London Line and station dwell time to drive reliability through the next year.

Performance for c2c was influenced by the timetable change in December 2015, which continued into 2016. Amendments to the timetable in 2016/17 show signs of recovery of performance.

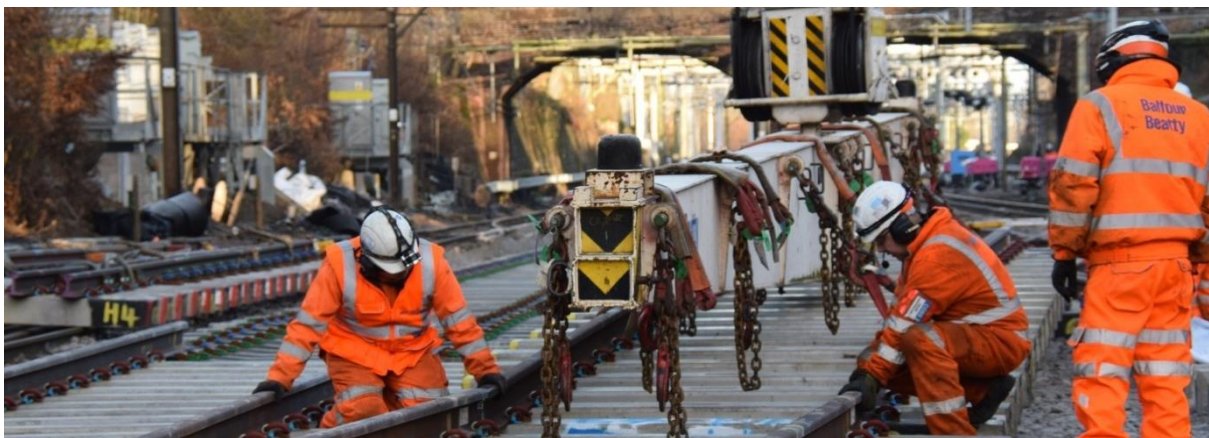
In response to the national 'must win' to reduce the delay impact of events, we have implemented a DPI reduction plan across the route. This includes trials of incident management resource, initially implemented at Upminster box and rolled-out across the route. We also introduced our first pit-stop maintenance location at Liverpool Street.

### Locally driven customer measures

Overall passenger satisfaction fell just short of the 85 per cent target, at 84 per cent. Passenger satisfaction at Liverpool Street Station was two percentage points worse than target as the ongoing works on the ticket office, station environment and retail offerings were behind schedule at the end of 2016/17, now expected to be delivered in 2017/18.

The number of railway work complaints was worse than target. This is a result of underestimating the impact of the large volume of project work, especially the Gospel Oak to Barking Electrification project blockade.

The number of TSRs was worse than target in 2016/17. Throughout the year, we held weekly calls to discuss the removal of TSRs between all relevant teams. The TSR team developed plans to accelerate the removal plans for some TSRs towards the end of the year as appropriate.





# London North Eastern & East Midlands

Safety	Worse than Target	Target	Better than Target	2016/17 Actual
Lost Time Injury Frequency Rate (LTIFR)	0.573	0.546	0.519	0.739
Close calls raised	9,720	12,960	16,200	18,963
Close calls % closed within 90 days	70%	80%	90%	83.8%
Train accident risk reduction measures	60%	80%	100%	86.9%
Top 10 Milestones to reduce level crossing risk	60%	80%	100%	90.0%
Financial Performance				
Financial Performance Measure – excl. enhancements	£(17)m	0	£17m	£(64)m
Financial Performance Measure – enhancements only	£(6)m	0	£6m	£3m
Cash Compliance – Income & Expenditure	£(4)m	0	£17m	£56m
Investment				
Top investment Milestones	60%	80%	100%	91%
Asset Management				
Reduction in Service Affecting Failures	0.0%	2.0%	4.0%	0.6%
Track Plain Line (Track Km)	359	379	398	285
Track S&C (Point Ends)	312	330	347	366
Signalling (SEUs)	64	68	71	73
Underbridges (m2)	32,993	34,826	36,659	38,469
Earthworks (5 chain)	562	593	624	2,842
OLE re-wire and mid-life refurb (wire runs)	23	24	25	25
Train Performance				
Northern East PPM	92.4%	92.6%	92.9%	93.0%
East Midlands Trains PPM	92.4%	93.0%	93.3%	92.0%
TransPennine Express PPM	88.5%	89.0%	89.0%	88.8%
Govia Thameslink Railway Great Northern PPM	85.0%	85.5%	86.0%	80.2%
Govia Thameslink Railway North PPM	83.0%	85.0%	86.0%	77.3%
Grand Central PPM	83.0%	85.0%	87.0%	85.0%
TransPennine Express CaSL	6.0%	5.0%	4.4%	5.0%
Grand Central CaSL	7.5%	6.1%	4.0%	5.7%
Hull Trains CaSL	7.0%	6.7%	5.5%	7.6%
Northern East On Time	75.9%	76.0%	76.3%	76.6%
East Midlands Trains On Time	71.0%	73.0%	75.0%	70.0%
CrossCountry Right Time at Newcastle (southbound)	85.0%	90.0%	95.0%	84.0%
CrossCountry Right Time at Leeds (northbound)	70.0%	75.0%	80.0%	68.7%
CrossCountry Right Time at Doncaster (northbound)	55.0%	60.0%	65.0%	53.4%
Virgin Trains East Coast Right Time Arrivals	56.0%	65.0%	70.0%	50.7%
Virgin Trains East Coast Right Time Departures	86.0%	90.0%	92.0%	84.0%
DB Tyne & Wear Delay Minutes	15,000	14,131	13,000	14,332
Freight Delivery Metric (FDM)	93.1%	94.2%	95.3%	95.3%
Locally Driven Measures				
Your Voice Action Plans completed	80%	90%	100%	100.0%
Passenger Satisfaction	85.9%	86.8%	87.7%	86.1%
Passenger Satisfaction (Kings Cross, Leeds)	88.1%	89.0%	89.9%	90.5%
Reduction in Railway Work Complaints	1,270	1,203	1,136	1,156
T-12 Milestone Delivery	70%	80%	90%	100%
Possession Overruns (incident count)	450	400	350	446
Number of Temporary Speed Restrictions (TSRs)	60	50	40	48

## Safety

London North Eastern & East Midlands (LNE & EM) performed better than target on train accident risk reduction measures and level crossing closures. We completed nine of the ten planned level crossing closures throughout the year. The missed closure of Selby Road level crossing was due to issues with product approvals.

The number of close calls raised also exceeded target, and the route met target for the number of close calls closed out within 90 days. In 2016/17, we introduced close call owners, assigning close calls to a specific person responsible for the close out of the call, which contributed to our out-performance of target.

LTIFR worsened in the year, ending the year below target. 'Slips, trips and falls' was the most common cause of lost time injuries throughout the year, with 'manual handling' being the second most common cause. In response to 'slips, trips and falls', we held workshops throughout the year and a route-wide safety stand down in January 2017. We also undertook assessments for 'manual handling' to identify areas for improvement. For the 2017/18 year we have launched an improvement programme with dedicated resource including front line leaders and trade union representatives.

## Financial performance

FPM in LNE & EM was challenging in 2016/17. FPM was worse than target due to challenges in route train performance, which cost £15 million in compensation. Increased unit rate cost and under delivery of track renewals cost £26 million more than budget. However, the route worked hard to remain cash compliant and stay within the cash budget we were allocated.

## Investment

Work is continuing on our enhancement portfolio. On the Midland Main Line (MML), over 90 per cent of planned work to upgrade the track has been completed. Many bridges have also been demolished and replaced or had strengthening work carried out, including Syston Road bridge.

On the East Coast Main Line (ECML), the opening of 'Platform 0' at Doncaster was a major milestone delivered on time in December 2016. The power supply upgrade to enable Intercity Express Trains is progressing well and on plan to be delivered in 2017. A Transport and Works Act Order has been submitted to the Secretary of State for Transport to

reinstate the fourth track between Huntingdon and Woodwalton.

In collaboration with local funders, we built two new stations at Ilkeston (funded by Derbyshire County Council) and Low Moor (funded by West Yorkshire Combined Authority) in 2016/17. It has been over 50 years since either Ilkeston or Low Moor had rail stations. Both regions will benefit from increased connections to other towns and cities across the north, bringing economic benefits in growth, jobs and housing to the communities. Low Moor station is the third new station we have constructed within West Yorkshire in the past 18 months.

We have held a number of public events on vegetation clearance and enabling works as part of the TransPennine Route Upgrade (TRU), which is now well underway. Most importantly, the TRU team remain on plan for submitting the proposals to the DfT in December 2017 to allow funders to make choices on how the programme can be taken forward

## Asset Management

In response to OLE failures affecting services on the ECML, an OLE crisis team was established in 2016/17 to deliver resilience packages. We introduced a new route asset manager for OLE, and our director of route asset management undertook reviews into the inspection, maintenance and renewals strategies for overhead line to reduce the effects on train performance.

Our route asset management plans were updated to focus investment on the reliability and safety of our assets to improve train performance. We have focused on reducing the backlog in the maintenance workbank which brought us to the lowest level it has ever been on LNE & EM.

Reliability of track assets improved through the year and the ECML recorded a lowest ever number of broken rails. The number of TSRs improved through the year beating our scorecard target.

Delivery of the key renewals volumes reported by our scorecard was better than target in 2016/17, with the exception of plain line renewals. High output renewals were worse than target for the year due to mechanical failures and planning failures affecting several sites. Earthworks renewals volumes were ahead of target for the year with additional volume being gained through wholesale vegetation clearance on embankments supplementing delivery.



### **Train performance**

Passenger train performance in LNE & EM was mixed throughout 2016/17 but indicators were positive in the last quarter. The number of Network Rail attributed delay minutes in the route was better than target for the year by more than 10 per cent.

Train performance for Northern and TransPennine Express (TPE) was in line with targets for the year. This performance reflects the improvements which have been made in key areas, such as improved infrastructure reliability at Leeds, York and Newcastle Delivery Units.

The delivery of performance for other operators was more challenging. The MML was affected by high-profile incidents this year, including the partial bridge collapse at Barrow upon Soar and a signalling issue at Luton. These incidents, as well as fatalities on the network, meant that East Midlands Trains (EMT) and GTR failed to meet target. The last quarter of the year has seen strong signs of recovery of performance for EMT.

Overall asset reliability on the ECML was at its highest level, but OLE de-wirements heavily impacted performance. The greatest effect on performance was external factors such as suicides, gas leaks and lineside fires. Consequently neither Virgin Train East Coast (VTEC) nor CrossCountry met their targets.

We have focused on reducing the number of TSRs to improve train performance, and have implemented patrolling security teams at locations which are known to be used by vulnerable people to access the tracks.

In 2016/17, through our joint campaign with the operator, VTEC achieved the perfect day at 100 per cent PPM on more than one occasion.

In response to the national must-win relating to DPI, we began the recruitment of fault teams at key areas of the route to improve response capability, time to site and time to fix when faults occur.

### **Locally driven customer measures**

We have increased and improved our communications with lineside neighbours in relation to upcoming engineering works, which has resulted in a reduction in the number of complaints received in this area.

We have held alliance board meetings throughout the year with all customers, and established working groups to deliver alliance priorities. We also introduced alliance pulse checks.

We have continued to deliver community action days in 2016/17 and introduced guidance across the route to increase participation in future action days.

# London North Western

Safety	Worse than Target	Target	Better than Target	2016/17 Actual
Lost Time Injury Frequency Rate (LTIFR)	0.726	0.691	0.657	0.620
Close calls raised	10,554	14,072	17,590	18,171
Close calls % closed within 90 days	70%	80%	90%	75.3%
Train accident risk reduction measures	60%	80%	100%	71.3%
Top 10 Milestones to reduce level crossing risk	60%	80%	100%	70.0%
Financial Performance				
Financial Performance Measure – excl. enhancements	£(19)m	0	£19m	£(49)m
Financial Performance Measure – enhancements only	£(13)m	0	£13m	£(34)m
Cash Compliance – Income & Expenditure	£(7)m	0	£26m	£128m
Investment				
Top investment Milestones	60%	80%	100%	83%
Asset Management				
Reduction in Service Affecting Failures	0.0%	2.0%	4.0%	1.2%
Track Plain Line (Track Km)	164	173	182	150
Track S&C (Point Ends)	144	152	160	135
Signalling (SEUs)	338	357	376	367
Underbridges (m2)	21,121	22,295	23,468	30,275
Earthworks (5 chain)	418	442	465	370
Conductor Rail (KM)	4	4	4	0
Train Performance				
Chiltern PPM	94.0%	94.5%	95.0%	93.1%
London Midland PPM	88.0%	88.7%	90.0%	88.8%
Merseyrail PPM	95.4%	95.9%	96.2%	95.8%
Virgin Trains West Coast PPM	86.5%	87.0%	87.5%	89.1%
Virgin Anglo-Scot PPM	80.0%	82.0%	83.0%	84.0%
TransPennine Express Anglo-Scot PPM	79.0%	80.0%	81.0%	84.5%
Chiltern CaSL	1.5%	1.4%	1.3%	1.8%
London Midland CaSL	2.7%	2.5%	2.3%	2.9%
Merseyrail CaSL	2.0%	1.9%	1.8%	1.7%
Virgin Trains West Coast CaSL	4.0%	3.8%	3.6%	3.9%
Freight Delivery Metric (FDM)	92.5%	93.7%	94.9%	95.0%
Locally Driven Measures				
Your Voice Action Plans completed	80%	90%	100%	100.0%
Passenger Satisfaction	84%	88%	90%	87.0%
Reduction in Railway Work Complaints	1,474	1,397	1,319	1,369
Virgin Network Advocacy Measure	30	35	40	35
Northern Right Time Arrival	46%	48%	50%	49.1%
Chiltern Right Time Arrival	77%	81%	85%	70.6%
CrossCountry Right Time Arrival at Birmingham N.S	25%	35%	45%	30.3%
Right time departures from major stations	58%	60%	62%	61.8%
London Midland Cross City DPI	56	55	54	40
Merseyrail Autumn Delay Minutes	10,926	9,910	9,460	6,088
PPM failures due to possession overruns	1,500	1,450	1,350	1,350



## Safety

Our 'Take 5 for safety' campaign was embraced this year by everyone on LNW. It was inspired by Jason Anker, a scaffolder from Stoke, who fell from a ladder more than 20 years ago and has been in a wheelchair ever since. We have learnt from safety incidents in the past to pause to think about the safety implications of the work we are doing. 'Take 5 for safety' has underpinned our good safety record this year. LTIFR at the end of the year was 0.620, beating our target of 0.691.

Throughout the year, we focused on a number of areas in response to the injuries within our workforce. This included focusing on the immediate causes of 'slips, trips and falls', and ensuring the correct use of Personal Protective Equipment (PPE) to protect our people from injuries.

We exceeded our target for the number of close calls raised, but did not achieve target for the percentage closed out within 90 days. Our Head of Route Safety, Health and Environment has led engagement through the route to increase awareness around close call close out and identify areas requiring additional support.

We achieved seven of our top ten milestones to reduce level crossing risk. In 2016, there was a fatality at one of our level crossings. The level crossing had excellent visual sighting and was compliant with all standards and policies. However, we took action to secure the emergency closure of the crossing and constructed a temporary footbridge, with the intention of keeping the crossing closed permanently.

## Financial performance

Strong train performance led to us being broadly on target for revenue. Disappointingly a shortfall was caused by unexpected disruptions such as the Eden Brows landslip on the Settle-Carlisle line and a cutting wall collapsing at Liverpool Lime Street as a result of a third-party business incorrectly using land adjacent to the tracks for storage. Both of these required major repairs, which are now complete. There was also some overspend in relation to employee costs, including increased pensions costs and the use of specialist sub-contractors. Whilst the level of overspend was less than the previous year, greater cost control is needed in the year ahead.

## Investment

In December 2016, Chiltern launched its Oxford to Marylebone service which was made possible by LNW's successful completion of a £320 million

upgrade, £130 million of which was funded by Chiltern.

In February 2017, the world's first asymmetrical network arch railway bridge was installed as part of the Ordsall Chord scheme in Manchester. In December 2017 trains will start running across it. Ordsall, part of the Great North Rail Project, will enable faster, more frequent services to and from all the major economic centres in the north by connecting Manchester's main railway stations. Journey times will be reduced for customers as far afield as Newcastle.

Elsewhere, as part of the Great North Rail Project, progress continued to electrify the line from Blackpool to Preston, set to complete in May 2018. In January 2017 work began on the Wirral Line upgrade under the River Mersey, part of £340 million of railway upgrades across the Liverpool City Region between now and 2019.

Having received Royal Assent, the HS2 scheme is now becoming a reality. The new high speed rail line from London to Birmingham will bring much needed additional capacity to the West Coast. Work to enable HS2 at Euston is already underway by Network Rail.

## Asset Management

The Settle to Carlisle line reopened at the end of March 2017 after more than a year of repairs by Network Rail engineers to a 500,000-tonne landslip at Armarthwaite, which had threatened the future of an iconic part of Britain's railway.

In September 2016 a land slip at Watford tunnel led to a London Midland train partially derailing. Nobody was hurt, and our engineers moved swiftly to make safe and reopen the line within a few days.

In March 2017 a section of cutting wall collapsed as a result of a third party stacking containers on land adjacent to the railway line, sending 200 tonnes of rubble across all four lines into Liverpool Lime Street station. One week later our engineers had made safe, repaired and reopened the railway, prompting praise and thanks from politicians and customers.

Throughout the year we have been implementing risk based maintenance for the majority of main lines across the route in order to proactively predict faults and allow interventions before asset failures affect services. We have been working to progress solutions for Global System for Mobile Communications - Railway (GSMR) issues. The reliability of our telecoms assets continued to improve throughout the year.

The impact of TSRs has been a focus throughout the year. The Route Asset Management team implemented a weekly TSR call in order to develop robust removal plans. Particular focus has been paid to cyclic top related TSRs, as these have been a significant contributor to unplanned TSRs.

Of the renewals volumes reported on our scorecard, we outperformed target for signalling, underbridges and earthworks. Renewals for plain line track, S&C and conductor rail were below target. Delivery of High Output renewals across the network has been lower than target in 2016/17. The under-delivery of conventional renewals across the track portfolio was largely driven by capacity, isolation and driver issues. Despite renewals of S&C being below target at year end, significant progress was made through the successful delivery across schemes including Banbury Area Remodelling, Oxenholme South and Blackburn interlocking.

### **Train performance**

Over the past year, PPM on the West Coast Main Line (WCML) hit its highest ever level, with the delivery of performance for Virgin Trains West Coast rising from 84 per cent two years ago to 89.1 per cent in 2016/17. Two years ago, we put together the 'Virgin Trains recovery programme' due to unsatisfactory train performance. Two years on, the programme has delivered improvements with record-breaking performance. Our focus now is to maintain this as HS2 construction begins. We also hit PPM target for London Midland.

While we missed our Chiltern target, we made significant gains in performance after devising a joint plan, the 'Chiltern pledges,' to rectify issues which became apparent after the launch of its new Oxford to Marylebone service. Our relationship with Chiltern remains strong.

### **Locally driven customer measures**

Performance against the majority of locally driven customer measures was better than target for 2016/17.

Throughout the year, we focused on removing the cause of complaints wherever possible rather than responding to them after the event. Notifying line-side neighbours of potential disruption and close working with railway upgrade project teams reduced the causes of possible complaints, helping to deliver an outperformance of target.

Passenger satisfaction at Network Rail managed stations across LNW was largely positive according to the National Rail Passenger Satisfaction survey in autumn 2016. Satisfaction at Birmingham New Street has continued to improve since its re-opening in 2015, with a result of 91 per cent in the autumn survey. At Manchester Piccadilly, we have embarked upon a joint project with operators to improve the passenger experience on Platforms 13 and 14.



# South East

Safety	Worse than Target	Target	Better than Target	2016/17 Actual
Lost Time Injury Frequency Rate (LTIFR)	0.553	0.527	0.501	0.505
Close calls raised	4,319	5,758	7,198	6,451
Close calls % closed within 90 days	70%	80%	90%	80.3%
Train accident risk reduction measures	60%	80%	100%	100.0%
Top 10 Milestones to reduce level crossing risk	60%	80%	100%	80.0%
Financial Performance				
Financial Performance Measure – excl. enhancements	£(12)m	0	£12m	£(30)m
Financial Performance Measure – enhancements only	£(12)m	0	£12m	£2m
Cash Compliance – Income & Expenditure	£(5)m	0	£21m	£(37)m
Investment				
Top investment Milestones	60%	80%	100%	100%
Asset Management				
Reduction in Service Affecting Failures	0.0%	2.0%	4.0%	16.9%
Track Plain Line (Track Km)	107	113	119	120
Track S&C (Point Ends)	104	109	115	134
Signalling (SEUs)	84	88	93	93
Underbridges (m2)	3,616	3,817	4,018	8,440
Earthworks (5 chain)	200	211	222	244
Conductor Rail (km)	11	12	12	15
Train Performance				
Govia Thameslink Railway PPM	81.5%	84.0%	85.1%	74.3%
Southeastern PPM	87.5%	88.5%	90.5%	86.1%
Govia Thameslink Railway CaSL	5.4%	4.7%	4.4%	9.2%
Southeastern CaSL	3.5%	3.2%	2.9%	4.0%
Network Rail caused Delay Minutes	2,006,135	1,792,315	1,628,805	2,495,921
Freight Delivery Metric (FDM)	89.9%	91.5%	93.1%	84.7%
Locally Driven Measures				
Your Voice Action Plans completed	80%	90%	100%	99.0%
Passenger Satisfaction	81%	83%	86%	78.9%
Reduction in Railway Work Complaints	950	900	850	957
Govia Thameslink Railway pulse check	60%	80%	100%	78.1%
Southeastern pulse check	60%	80%	100%	87.5%
Number of Temporary Speed Restrictions	50	46	36	45

## Safety

Our continued focus on embedding a positive safety culture has increased health and safety awareness among our employees with tangible results; not least a significant reduction in LTIFR from 0.812 at the end of 2015/16 to 0.505 by the end of 2016/17. The route leadership team led a series of day and night safety workshops with more than 1,000 colleagues across the route. The level of engagement seen has provided invaluable learning.

Preventing accidents is a key focus. In 2016/17 there were 6,451 close calls reported in South East route. Each close call has the potential to help us avoid an accident as a result of our people taking decisive action to highlight safety risks and tackle root causes.

We achieved our close call close-out target for 2016/17 at 80 per cent. We have enhanced our focus on identifying and addressing root causes to successfully close out close calls within 90 days. There is also a continued focus within our Maintenance Delivery Units to close out the backlog of close calls that have been open for over 90 days.

An ethos that emphasises prevention is at the heart of a £40 million programme which started this year to reduce the need for trackside workers to manually operate the third rail power supply on the busy Brighton Main Line. New equipment will improve employee and contractor safety and provide more 'time on tools' for frontline employees.

We met our target to deliver 80 per cent of the top ten level crossing risk reduction milestones.

## Financial performance

Financial performance in 2016/17 has been impacted by operational performance, with compensation payments for delays and cancellations to train operators affecting FPM. Additional operating expenditure incurred to help address some of the key performance issues has also adversely impacted FPM.

Income from operators was lower than expected, primarily as a result of industrial action – fewer trains being operated reduced the level of some income streams. The [Regulatory Financial Statements 2017](#) provide full details of route based financial performance.

## Investment

Investment in South East route has supported the continued demand for rail transport and been

focussed on meeting CP5 plans, with renewals helping to deliver improved asset reliability.

We have doubled peak capacity on the busy route from Uckfield to London Bridge, enabling ten car services to start running from July 2016, two years ahead of the original target agreed with the ORR. The work was brought forward to cope with a higher than expected increase in passenger numbers and the availability of additional GTR rolling stock.

We also increased capacity on the Southeastern metro lines, enabling trains to be extended from ten car to 12 car length. The work included platform extensions on the lines to Dartford, Gravesend and the Medway towns, and power supply upgrades.

We have continued our station improvement programme, with a new station at Rochester, improvements completed at Horley and Leatherhead and work underway at Strood and Eastbourne. In partnership with Southeastern, the redundant station building at Snodland was refurbished and reopened providing a manned station for the first time in 30 years.

Significant progress was made as the Thameslink Programme nears completion. In August 2016 the first part of the new street-level concourse at London Bridge opened to passengers and in November 2016 we successfully tested one of GTR's new Siemens Class 700 trains in Automatic Train Operation (ATO) mode; a first on the GB mainline network and a major milestone for the Digital Railway.

## Asset Management

The reliability of our assets has increased over the last year and is now at historically high levels. Our focus throughout the year has been on improving our capability to predict future asset performance risk through better use of data analytics. We have also built closer relationships between the asset and Maintenance Delivery Unit operational engineering communities.

We successfully delivered in line with target for all seven key renewals volumes in South East.

## Train performance

The South East route is the busiest and most congested in the country, with more than 500 million passengers traveling on our network last year; almost 30 per cent of all passenger journeys in Britain.

Train performance was a significant issue on South East route for 2016/17. Causes include the ongoing



constraints on the infrastructure caused by our work to rebuild London Bridge station, and on-off incidents such as a freight train derailment at Lewisham. The issues have also been exacerbated in part by the highly publicised industrial action by train operating employees.

Record passenger growth, a railway operating at full capacity, and tough operational challenges mean that train performance for both GTR and Southeastern has declined from the previous year. Southeastern achieved 86.1 per cent PPM (compared to 86.9 per cent in 2015/16) and GTR achieved 74.3 per cent PPM (compared to 81.5 per cent in 2015/16). Industrial relations issues involving GTR drivers and train crew had a significant impact on its performance, while both GTR and Southeastern have been impacted by the ongoing rebuilding of London Bridge station.

Southeastern train performance continued to decline steadily in 2016/17. PPM MAA ended the year at 86.1 per cent, 2.4 percentage points short of the performance strategy target agreed with our customer. Disappointingly, the proportion of Network Rail caused delay was also considerably higher than target and in May 2017 the ORR initiated a review of Network Rail's delivery of performance for Southeastern. The ORR's review concluded that Network Rail is doing everything reasonably practicable to recover performance for Southeastern. Notwithstanding this the ORR has made a number of observations on the steps that Network Rail is and could be taking to improve performance. We are working with the ORR to agree the timescales for responding to each of

them. The ORR's report has been published on its [website](#). Delivery of performance for both Southeastern and GTR has shown steady improvement from P10 of 2016/17 which has continued into the early part of 2017/18.

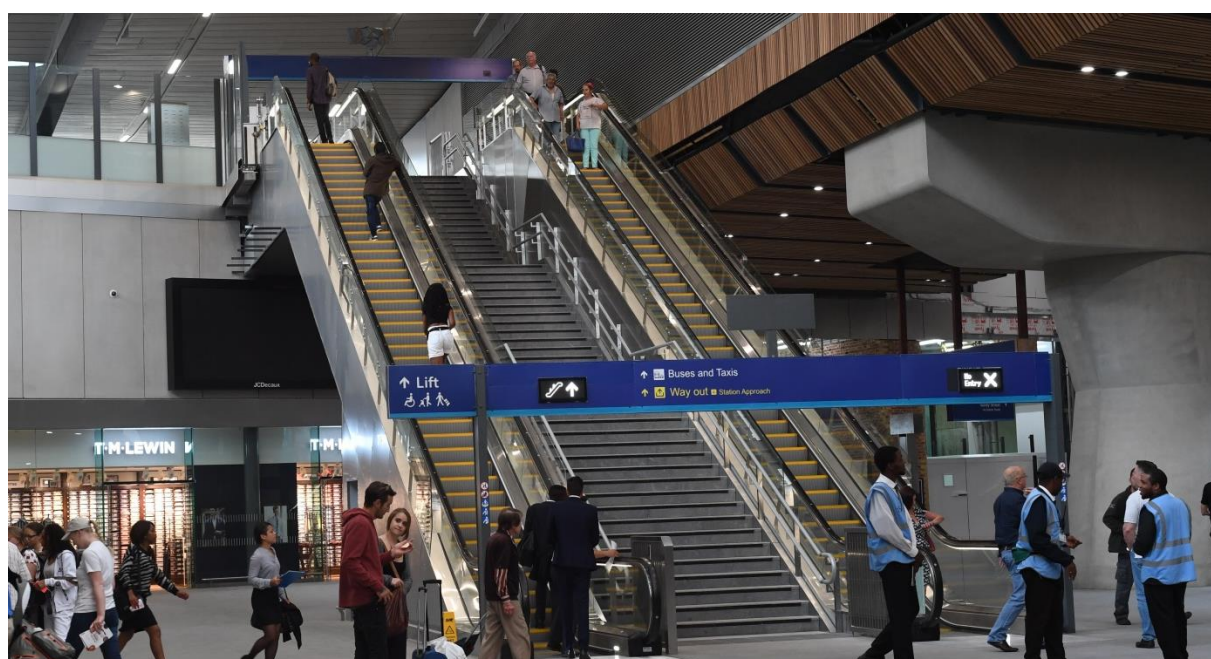
Congestion means that the amount of delay caused per incident has increased by nine per cent despite improving asset reliability. We are continuing to focus on reducing this, with rapid response teams at key locations aiming to drive down the time it takes to resolve any asset failures and pre-agreed operational plans to improve service recovery timescales.

The biggest cause of delay minutes over the course of the year was unexplained delay. This is largely a result of resourcing issues in our delay attribution team, meaning we have been unable to keep up with the increasing levels of delay. Unexplained delay prevents us from analysing the root cause and identifying effective solutions in a timely manner. We have recruited new team members to respond to this challenge.

### Locally driven customer measures

We received 957 railway work complaints, missing our target to reduce the number to 900. We are developing an action plan to address this in the next year.

We undertake 'Pulsecheck' surveys throughout the year with our customers. Responses from Southeastern were above target at the end of the year, while GTR responses were just below target.



# Wales

Safety	Worse than Target	Target	Better than Target	2016/17 Actual
Lost Time Injury Frequency Rate (LTIFR)	0.481	0.458	0.435	0.559
Close calls raised	3,750	5,000	6,250	7,267
Close calls % closed within 90 days	70%	80%	90%	87.0%
Train accident risk reduction measures	60%	80%	100%	95.7%
Top 10 Milestones to reduce level crossing risk	60%	80%	100%	100.0%
Financial Performance				
Financial Performance Measure – excl. enhancements	£(5)m	0	£5m	£0m
Financial Performance Measure - enhancements only	£(3)m	0	£3m	£0m
Cash Compliance – Income & Expenditure	£(2)m	0	£8m	£25m
Investment				
Top investment Milestones	60%	80%	100%	100%
Asset Management				
Reduction in Service Affecting Failures	2.0%	7.3%	12.6%	14.2%
Track Plain Line (Track Km)	87	92	97	105
Track S&C (Point Ends)	95	101	106	101
Signalling (SEUs)	238	251	264	264
Underbridges (m2)	10,632	11,223	11,814	12,077
Earthworks (5 chain)	378	399	420	458
Train Performance				
Arriva Trains Wales PPM	92.2%	92.5%	93.5%	91.9%
Arriva Trains Wales CaSL	2.7%	2.6%	2.5%	2.9%
Arriva Trains Wales Right Time	60.0%	61.0%	61.5%	60.4%
Great Western Railway Right Time Departures (Wales)	80.0%	82.5%	85.0%	78.8%
Seasonal Preparations (Milestone 'v' Target)	80.0%	90.0%	100.0%	100.0%
Freight Delivery Metric (FDM)	93.7%	94.7%	95.7%	94.7%
Locally Driven Measures				
Your Voice Engagement Action Plans completed	80%	90%	100%	100.0%
Passenger Satisfaction	84%	85%	86%	82.0%
Reduction in Railway Work Complaints	455	431	407	475
T-26 Late Notice Possessions Requests	4	3	1	3
LTP – Planning Contractual Compliance	40	28	20	34
Management of Major Events (Cardiff Central)	75%	85%	90%	90.0%

## Safety

LTIFR for Wales route at the end of 2016/17 was below target at 0.559, partly due to an increased number of non-fault road vehicle collisions. Despite not meeting the target for this year, we have reduced LTIFR from 0.88 at the beginning of CP5. We made significant progress on reducing slips, trips and falls; the biggest cause of Lost Time Injuries overall this year. Continuing to reduce these incidents will be a key focus in the year ahead.

The number of close calls raised has continued to improve and exceeded target with over 7,000 proactive calls being made in the year; 87 per cent of which were closed within 90 days exceeding scorecard target. Train accident risk remains steady and we achieved target delivery volumes for tubular stretcher bar installation, vegetation management and drainage work.

We continue to work hard to reduce risk at level crossings as part of our level crossing risk reduction programme and closed eight level crossings in the year. Incidents of trespass have unfortunately increased on the route over the year and we are working closely with our partners to reduce this figure.

Over the course of the year, we delivered rail safety messages to over 13,000 young people across Wales.

Working with our industry partners and organisations including Samaritans, we are seeking to address the increase in the number of suicides on the route.

## Financial performance

The Wales Route has exceeded targets for all key financial metrics over the year.

By creating more locally devolved budgets, our people have been empowered to deliver their work more efficiently. The [Regulatory Financial Statements 2017](#) provide full details of route based financial performance.

## Investment

Wales and the Border Counties rely on rail for creating jobs, building sustainable communities and economic growth. Demand from passengers continues to grow and the number of passenger journeys in Wales is at the highest point in modern times with over 30 million journeys in the last year; double the number travelling less than 20 years ago.

Over Christmas we completed the most complex signalling phase delivered to date anywhere in Britain as part of the flagship £300 million Cardiff Area Signalling Renewals Project. The completion, including the opening of an additional platform at Cardiff Central station, in January 2017 has increased reliability, operational resilience and our ability to recover when incidents arise. The upgrade works replaced outdated signalling with state of the art technology, upgraded track layout at key points on the Cardiff and Valleys network, and delivered new platforms and improved stations.

In January 2017, we commenced work on the North Wales Railway Upgrade Project. The project includes upgrading track layout to increase the resilience and reliability of the railway in North Wales. As part of this, we completed a platform extension at Abergele and Pensarn station, and began work to improve drainage and track layout around the station.

## Asset Management

The reliability of our assets has significantly increased over the last year and is now at historically high levels. The number of service affecting failures in Wales reduced by 14.2 per cent.

Improvement initiatives in the route included a strong focus on the resolution of track related TSRs and improving track reliability. We also allocated additional resources to undertake vegetation clearance and off track work to support the reduction of incidents and therefore helping to improve performance.

Renewals delivery has also been successful in Wales in 2016/17 with all key volumes meeting target. We exceeded our plain line track renewals target as a result of increased availability of resources, the acceleration of works at Severn Tunnel and Shrewsbury as well as the completion of 2015/16 rollover.

In February 2017 the Conwy Valley line was closed following damage during Storm Doris. Due to the limited accessibility of the site, with a single track railway and no road access, engineers were unable to use machinery typically used for similar repairs. A team of specialist geo-technical engineers cleared vegetation and removed over 300 tonnes of rock from the rock face to ensure the line was safe to re-open for passengers. We completed the work and reopened the line in April 2017.

## Train performance

PPM MAA for our lead train operator, Arriva Trains Wales, was 91.9 per cent at the end of 2016/17. As



a result of the recent commissioning of the Cardiff Area Signalling Renewals scheme (CASR) over the Christmas period, and the opening of the new platform 8 at Cardiff Central, PPM has significantly improved, particularly on the Valleys lines. This, alongside our continued joint focus with Arriva Trains Wales on service recovery and reducing incident delays, has resulted in significantly improved service consistency for passengers. We have made good progress in this area, improving a number of our processes and introducing a Senior Incident Officer to play a proactive role to ensure the quickest possible service recovery in the event of service incident failures. We have also approved the increase of operational and infrastructure rapid response capability in critical locations to build on this improvement.

Throughout the year, there have been a number of issues which have impacted PPM and we are committed to working with our partners to minimise the impact of future incidents. We are working to mitigate the impact of electrification work on train performance.

We saw particular train performance successes towards the end of the year when PPM hit highest recorded levels in Wales at 94.6 per cent and passenger lateness on the Valleys network was the lowest for five years.

We also improved Great Western Railway (GWR) on time departures through the removal of speed restrictions and agreement has now been reached on sourcing additional platform employees at Cardiff Central station with further improvements expected.

### **Locally driven customer measures**

Since devolution, our focus has shifted much more to working collaboratively with our customers, for the benefit of our passengers. We have already set up a number of joint boards with our lead train operator, Arriva Trains Wales, and involving Welsh Government, to ensure that we work together as an industry to deliver a safe, reliable, affordable and growing railway for Wales.

We met our target for the reduction of railway work complaints in Wales.

According to the National Rail Passenger Survey carried out by Transport Focus, passenger satisfaction was 82 per cent at the end of 2016/17, missing our target of 86 per cent. We have been working with Arriva Trains Wales to produce and implement action plans for the improvement of passenger satisfaction.





Safety	Worse than Target	Target	Better than Target	2016/17 Actual
Lost Time Injury Frequency Rate (LTIFR)	0.472	0.449	0.427	0.702
Close calls raised	3,281	4,374	5,468	4,660
Close calls % closed within 90 days	70%	80%	90%	82.0%
Train accident risk reduction measures	60%	80%	100%	94.9%
Top 10 Milestones to reduce level crossing risk	60%	80%	100%	100.0%
Financial Performance				
Financial Performance Measure – excl. enhancements	£(6)m	0	£6m	£(22)m
Financial Performance Measure – enhancements only	£(5)m	0	£5m	£1m
Cash Compliance – Income & Expenditure	£(2)m	0	£8m	£10m
Investment				
Top investment Milestones	60%	80%	100%	100%
Asset Management				
Reduction in Service Affecting Failures	0.0%	3.5%	7.0%	-6.7%
Track Plain Line (Track Km)	42	44	47	64
Track S&C (Point Ends)	45	48	50	63
Underbridges (m2)	3,864	4,078	4,293	4,294
Earthworks (5 chain)	170	180	189	204
Conductor Rail (km)	14	14	15	16
Train Performance				
South West Trains PPM	90.4%	90.8%	91.2%	87.1%
Great Western – PPM on North Downs Route	85.2%	87.6%	87.8%	83.0%
South West Trains CaSL	3.0%	2.8%	2.6%	3.6%
CrossCountry Right Time Arrivals (Reading)	35.0%	40.0%	45.0%	32.2%
Freight Delivery Metric (FDM)	91.8%	93.1%	94.4%	94.5%
Locally Driven Measures				
Your Voice Action Plans completed	80%	90%	100%	95.0%
Safety Maturity	3.08	3.26	3.39	3.33
Passenger Satisfaction (Waterloo)	88%	89%	90%	86.0%
Reduction in Railway Work Complaints	521	493	466	501
Unplanned speeds over 7 days	11	9	7	9
SNC & VSNC – planning	273	199	141	162
GTR (Network Rail delay minutes)	65,054	59,134	54,398	63,197
Possession Overruns per year	366	332	306	182

## Safety

Wessex route performed better than target on train accident risk reduction measures, and exceeded target for the delivery of level crossing risk reduction measures including a number of level crossing closures.

We achieved a five per cent reduction in LTIFR in Wessex this year, although target was not met with year-end performance at 0.702. In order to continue to drive improvements in this area we have developed a safety improvement plan which includes our Wessex Tidy Rail campaign. The campaign targets the removal of railway debris, as slips, trips and falls are the largest contributor to workplace accidents. There has been a reduction in these types of accidents since the campaign started. We have also held a series of workshops for frontline employees and held over 20 events across the route on a variety of safety topics as part of Trade Union Health and Safety Week.

The number of close calls raised, and those closed within 90 days, were on target. We have started the process of creating 'close call champions' to assist all employees in identifying what close calls are open and closing them down effectively.

We achieved all of our milestones related to level crossing risk reduction as a result of considerable continued interaction with our stakeholders. This included the closure of Chandlers Ford and Sherrington Level Crossings.

## Financial performance

Challenges in route performance contributed to worse than target FPM performance in 2016/17. Compensation payments to operators totalled £32 million which makes up most of the variance.

The route has developed robust improvement plans to prevent this re-occurring in future years.

## Investment

Passenger numbers are at their highest level since the Victorian era and are continuing to grow, and London Waterloo is Britain's busiest station with annual passenger numbers reaching over 99 million in one year.

Network Rail and South West Trains are working to boost capacity at Waterloo with an £800 million investment. This is the biggest package of improvements for passengers using Waterloo for decades and will provide: five additional platforms; longer platforms for longer trains between Waterloo and Reading; new trains between Waterloo and

Windsor; and longer trains on London Suburban services. In 2016/17 we completed work to extend platforms at Sunningdale, Camberley, Bracknell and Wokingham stations to enable longer trains for passengers travelling to and from Waterloo. We also replaced key sections of track at Waterloo to improve reliability and prepare the track to accommodate more trains.

A Rail Upgrade Plan investment of £6 million addressed the recurring issue of flooding on the line between Fulwell and Shepperton. Other notable investments included a new bridge at Gomshall and a new footpath at Bramley.

## Asset Management

Overall we did not achieve our target for the reduction of service affecting failures. The key contributor to this underperformance has been signalling faults, specifically train detection and signal failures, which have deteriorated throughout the year. Our Inner Maintenance Delivery Unit has committed to a signalling reliability growth plan which we expect to start to address the underperformance of signalling assets next year.

We met or exceeded all of the seven Wessex renewals volumes targets for 2016/17. We exceeded our target for volume of conductor rail renewals as a result of favourable access availability. Acceleration of works between Vauxhall and Waterloo supplemented strong delivery earlier in the year at West Byfleet, Petersfield and Kingston. We also took advantage of available resource within the works delivery team to deliver additional volume for both plain line and S&C track.

## Train performance

Over the last 12 months, performance on the Wessex route has been disappointing, falling to levels last seen in 2005. As one of the busiest routes in the UK this is a challenge which must be addressed going forward.

Delivery of performance improvement plans, both from an operator and Network Rail perspective, generally tracked to plan throughout the year. We have been seeing the benefit of our agreed joint performance improvement plans with South West Trains as these are implemented.

Notwithstanding this, PPM for South West Trains was under target in 2016/2017.

Of Network Rail caused incidents, the most significant contributors to poor performance in 2016/17 have been 'external', 'non-track assets' and 'track' categories. The management of our

assets when faults occur has continued to improve throughout the year. We reviewed our 'time to site' metric and identified that prolonged delays were occurring in the Surbiton area as a consequence of the nearest response teams being based in Clapham and Woking. As a result, we reinstated a response team at Surbiton. 'Time to site' has improved throughout the year, as has 'time to fix'.

'Uninvestigated delay' is an issue in Wessex. The amount of delay has outstripped our delay attribution teams' capacity to investigate and appropriately attribute all delay. In comparison to 2011/12, the number of delay incidents in 2016/17 decreased by four per cent nationally, but increased by 26 per cent in Wessex.

We initiated an intensive recruitment campaign and our delay attribution team is now back to full strength. We have also trained colleagues from outside the delay attribution team to provide additional resource during busy periods.

### Locally driven customer measures

We did not achieve our target for the reduction of railway work complaints. The most significant issues in this area have been worker behaviour and noisy works. Our Customer Service Manager is working with front line teams to continue to review action plans and ensure that momentum continues to reduce the number of complaints next year. The number of service requests outstanding has reduced towards the end of the year and the drive to continue the reduction will continue.

Between autumn 2015 and autumn 2016 the passenger satisfaction at London Waterloo Station, measured by the National Rail Passenger Satisfaction survey, decreased from 88 per cent to 86 per cent. Our area manager is reviewing our plans in this area, with particular focus on an action plan for the partial closure of the station for upgrade works in August 2017.



# Western

Safety	Worse than Target	Target	Better than Target	2016/17 Actual
Lost Time Injury Frequency Rate (LTIFR)	0.520	0.495	0.471	0.609
Close calls raised	4,692	6,256	7,820	7,551
Close calls % closed within 90 days	70%	80%	90%	78.5%
Train accident risk reduction measures	60%	80%	100%	94.3%
Top 10 Milestones to reduce level crossing risk	60%	80%	100%	50.0%
Financial Performance				
Financial Performance Measure – excl. enhancements	£(8)m	0	£8m	£(11)m
Financial Performance Measure - enhancements only	£(23)m	0	£23m	£(2)m
Cash Compliance – Income & Expenditure	£(7)m	0	£29m	£106m
Investment				
Top investment Milestones	60%	80%	100%	96%
Asset Management				
Reduction in Service Affecting Failures	0.0%	4.2%	8.0%	-4.7%
Track Plain Line (Track Km)	94	100	105	102
Track S&C (Point Ends)	67	70	74	87
Signalling (SEUs)	179	189	199	213
Underbridges (m2)	1,686	1,779	1,873	1,815
Earthworks (5 chain)	248	262	276	507
Train Performance				
Great Western Railway PPM	89.5%	90.0%	90.3%	88.4%
Great Western Railway CaSL	3.0%	2.9%	2.6%	3.0%
Heathrow Express CaSL	1.8%	1.4%	1.3%	1.8%
Heathrow Express Right Time Arrival	71.6%	72.3%	74.0%	63.2%
CrossCountry Right Time Arrival at key node	60.0%	65.0%	70.0%	46.2%
Freight Delivery Metric (FDM)	92.6%	93.8%	95.0%	93.9%
Locally Driven Measures				
Your Voice Action Plans completed	80%	90%	100%	100.0%
Passenger Satisfaction	82.0%	84.3%	87.0%	86.0%
Reduction in Railway Work Complaints	1,357	1,285	1,214	1,145
Project Milestone completed for passenger benefits	60%	80%	100%	80.0%
Alliance Milestones Completed	8	10	12	8



## Safety

LTIFR in Western route increased in 2016/17. This was largely driven by an increase in commuting road traffic accidents and minor injuries or aggravations of existing conditions.

To improve our vehicle safety record we have specified higher safety rated vehicles, installed vehicle speed warning systems (VSWS) and, through our route safety improvement fund, we are looking to pilot dashboard cameras in our fleet. We are also engaging closely with our teams to provide training and raise awareness of slip, trips and falls and manual handling risks, updating risk assessments and improving planning via Planning and Delivering Safe Work (PDSW).

Our fatalities and weighted injuries measure in Western route was at a record low at the end of 2016/17, representing a reduction in major injuries and the 'severity of harm' with no specified (major) RIDDOR events.

There has been a reduction in public railway fatalities (including suicides) across the route, from 33 in 2015/16 to 24 in 2016/17. We closed 12 level crossings over the course of the year, including the notorious crossing at Ufton Nervet, through our action plans to address our biggest public and passenger safety risks.

## Financial performance

FPM has been negatively impacted this year by increased compensation paid to train operating companies, mainly arising from poor asset performance, particularly between Paddington and Maidenhead.

Delivery against our financial plans in operations, maintenance, renewals and other income has been on plan. This includes the delivery of our key renewals volumes.

Strong management and control of our renewals portfolio, plus some deferred work in enhancements into future years, has driven a positive cash position.

## Investment

Western route is delivering the largest and most significant upgrade to the Great Western Mainline in its 175-year history. The Greater West Programme involves modernisation of the route's infrastructure to improve reliability and to enable a cascade of rolling stock across the entire route. The programme is also modernising and electrifying

some lines to enable new, more spacious trains to operate on high speed routes.

In May 2016 we opened a dedicated Electrification Training Centre in Swindon to ensure we had the correct number of trained employees with appropriate competencies to deliver and maintain an electrified railway.

In June 2016 the first new Class 800 intercity express trains (IET) were successfully tested between Reading and Didcot using the newly energised overhead electric power supplies. Work continued throughout the year to deliver all milestones to enable the new Class 800 trains to start operating some high speed services from autumn 2017.

In July 2016 platform 14 at Paddington was successfully lengthened and electrified enabling GWR to start running new electric Class 387 Electrostar trains between Hayes and Harlington and Paddington in January 2017.

In March 2017, we successfully electrified the 12 miles of railway from Maidenhead to Stockley Junction enabling the new Electrostar trains to run from Paddington to Maidenhead from May 2017. The new eight carriage Electrostar trains provide 6,550 more seats a day in each direction.

Their introduction enables the existing GWR Turbo fleet to be cascaded from the Thames Valley area to the Bristol Severn Beach line in the summer of 2017.

In February 2017 we completed a £30 million project to restore Brunel's original roof at Paddington to its former glory. The Paddington improvement project delivered a new ticket office for GWR providing 12 open counters, more space and improved ticket machines for passengers. The project also saw the completion and opening of 'The Lawn', with a transformed café and retail area at the back of the station to provide passengers with a modern retail and dining experience.

Alongside the Greater West Programme, the route is delivering the western surface elements of the Crossrail Programme required for the introduction of the new Elizabeth Line on Western route from May 2018.

The Network Rail Crossrail Programme remained on schedule throughout the year and will enable testing of the new Class 345 trains on the route in the autumn of 2017. This is a key milestone to enable Elizabeth Line trains to start operating

passenger services between Paddington and Heathrow in May 2018.

### **Asset Management**

Our target for the reduction of service affecting failures was missed in Western route.

While the overall reliability of assets on Western route is good, performance on the inner Thames Valley into Paddington remains challenging, with minor problems tending to cause significant delays due to service volume.

Issues with the reliability of our assets in 2016/17 have been driven by two key issues, track circuits and points. We have plans in place to improve reliability across asset portfolios for both of these areas.

We hit or exceeded our seven key renewals targets in 2016/17. Of these key volumes, drainage and vegetation clearance volumes are higher than ever before, promoting better service delivery. Scrap clearance is also delivering a tidier railway which is safer for our employees.

In November 2016 Government awarded Western route a further £10 million to continue geo-technical investigations required to inform the on-going plan to improve the resilience of the line between Exeter and Newton Abbot.

### **Train performance**

We appointed a Chief Operating Officer, who took up post in May 2017, to drive improved performance working closely with our train operating partners.

We also created additional resources, in the form of Senior Incident Officer and Incident Officers, that started to take up post from May 2017, to work with our train operator colleagues to tackle DPI.

A derailment at Paddington in June 2016 after a train passed a signal at danger had a serious effect on services. Nobody was injured during the incident and a full service was restored within a matter of days.

Work has also been carried out to improve the resilience of the railway in the face of extreme weather.

For example, in December 2016 we resumed services at Cowley Bridge in Exeter, following flooding as a result of Storm Angus, within two days. This was a significant improvement on the four weeks of disruption caused the last time this occurred, and we have plans to improve this further.

We also delivered a significant flood alleviation scheme at Hinksey in Oxfordshire to prevent the River Thames inundating the railway during flood events. This work is vital to keeping the line between Oxford and Paddington open.

### **Locally driven customer measures**

In February 2017 Western route, GWR and Heathrow Express announced the creation of a new route supervisory board to help improve performance for passengers.

The route supervisory board is independently chaired by experienced former government rail advisor Dick Fearn and comprises the managing directors of Network Rail Western Route, GWR and Heathrow Express, plus Nina Howe, from passenger watchdog Transport Focus.

Among other functions the board will oversee an enhanced customer scorecard which is designed to bring our regional targets into line with those of Train Operating Companies, bringing 'track and train' together to create a more joined up service for passengers.

The NRPS survey reported that passenger satisfaction for Network Rail managed stations in Western route was 86 per cent, exceeding our scorecard target.

We met our target for the reduction of railway work complaints in Western by increasing pre-notification of our works and continually briefing our workforce on the importance of worker behaviour when near lineside residents and communities. We will continue to drive improvements in this area.

# Freight and National Passenger Operators

Safety	Worse than Target	Target	Better than Target	2016/17 Actual
Lost Time Injury Frequency Rate (LTIFR)	0.400	0.200	0.000	0.000
Close calls raised	84	94	104	175
Close calls % closed within 90 days	70%	80%	90%	100%
Freight Derailment	25	15	0	13
Freight SPADs	72	52	32	40
Safety Hour	57%	67%	77%	74%
Financial Performance				
Freight Track Access Income	£57m	£60m	£63m	£52m
Investment				
CP5 SFN Schemes – GRIP 3 completion vs baseline	80%	90%	100%	100%
CP5 SFN Schemes – GRIP 6 completion vs baseline	80%	90%	100%	95%
Train Performance				
FDM – National	92.5%	93.5%	94.5%	94.3%
FDM – DBC	92.5%	93.5%	94.5%	95.0%
FDM – GBRF	92.5%	93.5%	94.5%	92.8%
FDM – FLIM	92.5%	93.5%	94.5%	92.3%
FDM – FLHH	92.5%	93.5%	94.5%	95.6%
FDM - DRS	92.5%	93.5%	94.5%	95.8%
FDM - Colas	92.5%	93.5%	94.5%	96.6%
FOC on TOC	1.24	1.20	1.15	1.24
Network Rail cancellations - Freight	0.4%	0.3%	0.2%	0.3%
Right Time Departures - Freight	76.0%	78.0%	81.0%	81.3%
PPM - CrossCountry	89.1%	90.0%	90.9%	89.7%
CaSL – CrossCountry	4.1%	4.0%	3.9%	4.0%
Right Time – Caledonian Sleeper	74.0%	75.0%	76.0%	79.9%
Locally Driven Measures				
Customer Satisfaction	65.0%	69%	72%	69%
SPR compliance with milestone	80%	90%	95%	100%
Timetable quality index	3.7	3.4	3.1	2.6

In 2016/17 the Freight and National Passenger Operators (FNPO) route was established for national customers whose interests extend across routes.

Our customers include Freight Operating Companies (FOCs), CrossCountry, Caledonian Sleeper, charter operators and aspirant open access passenger operators. We do not physically operate infrastructure, but are accountable for the delivery of performance and other outputs for our customers.

### **Safety**

FNPO does not have the same safety accountabilities as routes but does take a lead in working with customers and stakeholders to improve freight safety. Compared to last year, the number of signals passed at danger was 20 per cent fewer, which is in part testament to the focus we have been driving in our regular safety meetings with FOCs and also the developing work of the National Freight Safety Group. We have also outperformed our freight derailment target and plan to do more to manager derailment risk on freight only infrastructure. Through the National Charter Trains Safety Group, we have forged strong safety collaboration within the charters industry. A recent achievement includes the update to the Rail Industry Standard on Steam Locomotive Operation, which includes the Fire Risk Protocol.

### **Financial performance**

Due to the sharp decline in coal volumes carried in recent years and the continued effect into this year, we have not achieved our 2016/17 freight income target of £60 million, realising £52 million. Although other market sectors such as intermodal and construction materials are continuing to grow, the overall growth rates are behind our target. We have established a new business development team to identify new growth and income opportunities. We are working with developers of about a dozen new rail freight terminals which are being developed on our vacant land that are wholly funded by freight end users for loading and unloading their goods.

### **Investment**

We have continued to develop and deliver Strategic Freight Network (SFN) schemes to support future rail freight growth.

A number of freight enhancement schemes have been developed in 2016/17 including allowing longer freight trains between Southampton Port and the West Midlands and enhanced gauge clearance

on routes to Yorkshire freight terminals allowing transportation of larger containers.

In March 2017 we published the Freight Network Study, which outlined the industry's view of priorities for future investment. The priorities highlighted in the study are around capacity and capability enhancements to support access to the major ports, as well as gauge clearance to allow a wider range of containers on the Channel Tunnel route to London.

### **Train performance**

FDM measures the percentage of commercial freight trains that arrive within 15 minutes of booked arrival time, or with less than 15 minutes delay caused by Network Rail or a non-commercial freight operator.

We achieved 94.3 per cent FDM against our scorecard target of 93.5 per cent and the regulatory output of 92.5 per cent.

We continue to work with ports and terminals across the network to improve right time departures. For example, we have implemented visualisation and a performance control room at the Port of Felixstowe which includes the operators and the port. This will help drive improvements in performance to and from the port, which is responsible for 10 per cent of freight movements on the network. We have also worked collaboratively with British Steel and Freightliner Heavy Haul on a project to improve performance of their steel traffic from Immingham Dock, which was regularly failing to meet the right time departures target. Before the improvement work this flow of traffic had a significant impact on the national Arrival to Fifteen (A2F) and right time departures targets. The project successfully delivered a step change in performance.

We have not achieved the PPM year-end target of 90 per cent for CrossCountry. We have worked with geographic routes to identify schemes to improve PPM and focus on key issues affecting CrossCountry. Work has been completed to understand the mitigation of fatality and trespass incidents across the CrossCountry network, particularly on LNE & EM, and the reaction when an incident does take place. This has led to new initiatives such as the introduction of a "rolling road block" on the East Coast. Rather than blocking stations with services which increases delay to CrossCountry services, they are run as close to the obstruction as possible to keep services moving.



Off track issues, such as vegetation and animal incursion, continue to impact performance. With many of CrossCountry services operating off of some routes' core sections the management of the line side has been challenging. This has led to an increase in vegetation issues (such as poor adhesion) and reduced fleet availability, diminishing maintenance opportunities.

CrossCountry's customer scorecard includes a number of right time performance metrics at key areas of the network. These measures better represent the impact of lateness on passengers as many change trains at these locations. Work has been ongoing since early 2016/17 to improve results for these measures. Despite missing our targets for these measures, improvements have been seen over the past year. Work will continue in this area through newly established forums to continue improvements delivered throughout 2017/18.

Caledonian Sleeper's franchise with Transport Scotland has a target of 75 per cent right time arrival at destination, which we have achieved. Since FNPO has taken on responsibility, our Freight

Service Delivery Team have taken on monitoring and support to the Caledonian Sleeper, helping to deliver more robust right time performance. Further work with the Route controls to focus on right time performance of Caledonian Sleeper and to review regulation (for right time as opposed to PPM) will be ongoing throughout 2017/18.

#### **Locally driven customer measures and scorecards**

We have achieved our customer satisfaction and are looking to improve our customer focus and continue our positive collaborative approach with the sector and stakeholders. We have developed customer specific scorecards with all FNPO Operators for 2017/18, including for the first time West Coast Railways, focussing on Charter Operations. This is in addition to the tracking of outputs from the Charter Industry Conference in April 2017, which saw charter operators, promoters, Network Rail and other stakeholders come to discuss very constructively how to address the strategic challenges and opportunities facing the sector.



# Glossary

Acronym	Meaning	Acronym	Meaning
ORR	Office of Rail and Road	ECI	Early Contractor Involvement
CP5	Control Period 5	FWI	Fatalities and Weighted Injuries
DfT	Department for Transport	FPM	Financial Performance Measure
TfN	Transport for the North	TAWS	Transport and Works Scotland
DPI	Delay Per Incident	E&P	Electrification and Plant
RDG	Rail Delivery Group	LNE & EM	London North Eastern & East Midlands
LTIFR	Lost Time Injury Frequency Rate	MML	Midland Main Line
CRI	Composite Reliability Index	ECML	East Coast Main Line
S&C	Switches and Crossings	TRU	TransPennine Route Upgrade
SEU	Signalling Equivalent Units	TPE	TransPennine Express
PPM	Public Performance Measure	EMT	East Midlands Trains
CaSL	Cancellations and Significant Lateness	VTEC	Virgin Trains East Coast
FDM	Freight Delivery Metric	PPE	Personal Protective Equipment
PLPR	Plain Line Pattern Recognition	HS2	High Speed 2
RIDDOR	Reporting of Injuries, Diseases, and Dangerous Occurrences Regulations	GSMR	Global System for Mobile Communications - Railway
WARA	Work Activity Risk Assessments	WCML	West Coast Main Line
BCR	Business Critical Rules	ATO	Automatic Train Operation
RM3	Risk Management Maturity Model	CASR	Cardiff Area Signalling Renewals scheme
IP	Infrastructure Projects	GWR	Great Western Railway
LNE	London North Eastern	VSWS	Vehicle Speed Warning Systems
ROC	Rail Operating Centre	PDSW	Planning and Delivering Safe Work
TfL	Transport for London	IET	Intercity Express Trains
EGIP	Edinburgh Glasgow Improvement Programme	DBC	DB Cargo
OLE	Overhead Line Equipment	GBRF	GB Railfreight
EDP	Enhancements Delivery Plan	FLIM	Freightliner Intermodal
GRIP	Governance of Railway Investment Project	FLHH	Freightliner Heavyhaul
EIS	Entry into Service	DRS	Direct Rail Services
EIP	Enhancement Improvement Programme	FOC	Freight Operating Company
TSR	Temporary Speed Restriction	TOC	Train Operating Company
LNW	London North Western	SFN	Strategic Freight Network
SANOS	Scotland Area National Operating Strategy	SPAD	Signal Passed at Danger
SSM	Station Stewardship Measure	SPR	Service Plan Reviews
AMEM	Asset Management Excellence Model	SNC	Short Notice Change
AMCL	Asset Management Consulting Limited	VSNC	Very Short Notice Change
ORBIS	Offering Rail Better Information Services	LTP	Long Term Planning
CSAMS	Civils Strategic Asset Management Solution	SQUIRE	Service Quality Incentive Regime
INM	Integrated Network Model		
GTR	Govia Thameslink Railway		
MAA	Moving Annual Average		
PDI-P	Possession Disruption Index - Passenger		
PDI-F	Possession Disruption Index - Freight		
NARS	Network Availability Reporting System		
NRPS	National Rail Passenger Survey		
IVR	Interactive Voice Response		
WRCCA	Weather Resilience and Climate Change Adaptation		
RSSB	Railway Safety and Standards Board		
ETCS	European Train Control System		

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