



Network Rail Monitor

Quarters 3-4 of Year 2 of CP5
18 October 2015 to 31 March 2016

5 July 2016

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Overview



Health and safety

In 2015-16 there were no industry-caused workforce or passenger fatalities on Network Rail's infrastructure – a notable achievement and an important step towards the realisation of ORR's vision of zero industry-caused deaths. Network Rail should also take credit for the leadership it has shown during the year in pushing forward the first industry-wide health and safety strategy, launched in April 2016.

The final two quarters of the year saw a continuation of this positive trend with many health and safety performance measures still improving. Network Rail met its year-end targets for reduction in [Train Accident Risk](#) and [Workforce Lost Time Injuries](#). Measures for infrastructure-related precursors to risk are, in many cases, on a downward trend.

Our inspection and investigation work however, shows that there is no room for complacency. Significant initiatives designed to improve the control of risk – such as [Business Critical Rules \(BCR\)](#) and [Planning and Delivering Safe Work \(PDSW\)](#) have not gained the traction needed

We have measured Network Rail's management maturity using the [Risk Management Maturity \(RM3\)](#) model. Whilst there were areas of improvement since last year there were also some worsening scores. Overall the ratings are static with scores remaining at the mid-range '*managed*' and '*standardised*'

levels. We had expected to see more elements of the [Safety Management System \(SMS\)](#) moving towards the higher ratings of '*predictable*' and '*excellent*'.

Two themes emerged:

- firstly, there has been better safety leadership and governance at a senior level within Network Rail, although this does not always translate into implemented improvement on the front line; and
- secondly, there is some variation across the network in levels of management maturity, with route level assessments ranging from '*ad hoc*' at the lower end to '*excellent*' at the top.

This variety in maturity scoring shows that Network Rail does not yet have a consistently reliable and predictable safety management system, calling into question the sustainability of its improved recent safety performance. This will be particularly important as Network Rail plans its future renewals and maintenance activities to stay within its funding envelope for [Control Period 5 \(CP5\)](#).

The second half of 2015-16 also showed that external factors have had a significant influence on safety performance. The [Railway Safety and Standards Body \(RSSB\) Precursor Indicator Model \(PIM\)](#) shows that at the end of 2015-16 there had been an overall 31% decrease during the year in

infrastructure-related precursor risk. However, within that overarching grouping, earthworks risk had risen 63% compared to the previous year. This is largely as a result of the adverse weather experienced this year in comparison to previous winters.

More positively, although earthworks and structures failures were similar in number to previous bad weather periods, there were no derailments associated with these failures. We reviewed the company's response to the storms and found that there were further improvements that Network Rail could make to ensure consistency across the network. The failure of Lamington viaduct due to [scour](#), for example, revealed that good practice in relation to structures at most risk was not adopted by every route.

Our inspections of Maintenance Delivery Units (MDUs) as well as Network Rail's own [bow tie analysis](#) showed that the management of risk from [track geometry](#) precursors is more dependent than it should be on the knowledge, competence and expertise of individual staff. More robust application of a risk control framework would reduce vulnerability to error, violation of procedure and mishap.

Although Network Rail routinely identifies failures to follow risk control processes and puts actions in place to address these, the level of repeat findings (for example, 1,868 repeat twist faults in March 2016) and our own inspection outcomes suggest that routes are not embedding findings and sharing learning between MDUs. This will become more important if

Network Rail plans more maintenance activity in response to deferring renewals.

Train service performance

Passenger

Network Rail's worse than expected performance in [Control Period 4 \(CP4\)](#) meant that it entered CP5 at a lower level of performance than anticipated. On that basis, the company proposed to return performance to targeted levels from 1 April 2016 and we agreed to monitor delivery against its plan to achieve this during the first two years of CP5.

Although Network Rail has delivered most of the milestones in that plan, performance has not returned to targeted levels. At the end of 2015-16 [Public Performance Measure \(PPM\)](#) [Moving Annual Average \(MAA\)](#) in England and Wales stood at 88.9%, 0.7 percentage points (pp) below Network Rail's internal target. The MAA for [Cancellations and Significant Lateness \(CaSL\)](#) was 3.1%, 0.2pp above (i.e. worse than) Network Rail's internal target. In the South East route, Govia Thameslink Railway (GTR) and Southeastern customers in particular have experienced train performance well below expected levels.

We recognise that some of the reasons for this shortfall, such as traincrew and fleet delays, are outside the company's direct control. However, Network Rail has acknowledged that performance has not met the expectations of the industry. We consider that it has a good understanding of the issues

impacting on performance and is working hard with train operators to address them.

Freight

Performance for the freight sector was relatively strong. The [Freight Delivery Metric \(FDM\)](#) MAA at the end of the year stood at 94.3%, 1.8pp above the regulatory target of 92.5%. This was 0.7pp below Network Rail's more stretching internal target of 95%.

Asset management

Asset performance has continued to improve this year, extending the long term positive trend. The [Composite Reliability Index \(CRI\)](#) reached 14.8% at year-end for the network as a whole, well above target (8.5%). The improvement is across all asset categories except earthworks and telecoms.

Delivery of renewals has improved this year, with the volume of work completed in all the major areas being ahead of or on plan. However £677m of capital spend has been deferred to future years. This includes work in areas such as signalling which span several years and were not due for completion in 2015-16. In total this amounts to around 23% of budget. The cost of the renewals work delivered was £386m (13% more than budgeted). To stay within its funding envelope for CP5 Network Rail is planning to defer some future renewals work to [Control Period 6 \(CP6\)](#) and beyond. The company has concluded that there will be a limited long run impact on

sustainability, providing renewals (and therefore potentially spend) is increased during CP6 and [CP7](#) to compensate. In the short term, deferrals will in general increase the whole life cost of the railway due to additional maintenance that may be required as a result. There is also a risk that asset performance deteriorates.

Developing the network

Following the licence breach decision on enhancements in October 2015, and the necessary re-plan of the CP5 projects through the Hendy Review, we have reset Network Rail's regulatory obligations in accordance with the post-Hendy *Enhancements Delivery Plan (EDP)* published in March 2016.

The delivery of Network Rail's obligations set out in the new EDP is not without risk: there are still challenges both in terms of demanding timescales to develop route upgrades such as the Trans Pennine upgrade programme (to be ready for CP6 delivery) and the completion of projects that are already in detailed design or construction. It will also take time for the improvements Network Rail is putting in place to its planning and delivery of projects to take full effect.

Nevertheless, the revised project dates are more achievable and provide a better baseline going forward, firstly as a public commitment from Network Rail to its customers and funders, and secondly as a point of reference against which to measure how effectively the company delivers projects for the benefit of fare-paying passengers, other rail users and the wider industry.

As reported in our last Monitor in relation to our licence breach decision in October 2015, we have accepted that Network Rail is taking reasonable steps to remedy the causes of the breach. It has made good progress against its *Enhancement Improvement Programme (EIP)*, for example agreeing more formal ways of working with the Department for Transport (DFT), putting in place better scrutiny of its projects, and introducing new processes for cost estimating.

We have asked Network Rail to set out more precisely how it will assure itself that these actions will deliver real improvements across the company, and how it will be able to demonstrate that the intended benefits have been realised.

With regard to projects at risk, we have noted in previous Monitors the challenges remaining on the electrification of the Great Western mainline. Network Rail is achieving better productivity rates but a key test will be its first targeted commissioning date of September 2016.

In terms of managing works during bank holidays, we have reported previously on Network Rail's improvements since the problems in December 2014 and we have scaled back our monitoring.

Easter 2016 saw a series of successful blockades, with approximately 15,000 people delivering £50m worth of engineering work at around 1,000 sites. This was all directed at increasing performance, adding capacity and improving reliability. Despite the impact of Storm Katie, which caused the cancellation of bridge work at Wandsworth, over 99% of [engineering possessions](#) were handed back on time.

Expenditure and finance

In 2015-16, Network Rail underspent its net budget of £4,907m in England and Wales by £718m. This underspend included £221m saved in financing costs, largely due to lower than expected inflation.

However, work to the value of £981m was not done and will be delivered at a later date (including £677m on renewals work, £266m on enhancements work and £38m on associated schedules 4 and 8 compensation payments for track possessions and delays).

Taking this into account, for the work delivered, Network Rail underperformed against its own budget by £386m on renewals (adjusted to £97m in line with the 25% sharing mechanism)¹ and £67m on enhancements (adjusted to £25m in line with the 25% sharing mechanism)². The renewals underperformance

¹ Network Rail generally retains 25% of any out/underperformance of the renewals and enhancement costs. This is consistent with our RAB roll forward policy.

² The interpretation of this variance now reflects the recommendations of the Hendy Report (November 2015) and the subsequent Enhancement Delivery Plan (EDP), which changed the baseline of the calculation of financial performance reflecting the increased anticipated final costs (AFC) for many enhancement projects. This has significantly reduced underperformance because adopting the Hendy baseline has changed the recognition of financial underperformance (from £534m to £67m) and, of the remaining budget variance, which is classified as FPM neutral (from £733m to £266m).

of £386m was largely due to supply chain issues, contractor performance, more work than expected to maintain assets in an appropriate condition, severe weather and reduced volumes in some areas resulted in increased unit costs. It has also not delivered its planned efficiency initiatives.

The enhancement underperformance is largely due to a £95m variance on Crossrail due to delays, extra station works, and more signalling contractor works.

The scale of these variances suggests that the budget for 2015-16 was probably too optimistic.

Following the company's classification to the public sector by the Office of National Statistics (ONS), Network Rail agreed to borrow from DfT instead of issuing bonds. The amount of new borrowing available from DfT is limited to £30.9bn across CP5 for Great Britain after this was increased by £0.7bn following the Hendy Review.

Compared to its forecast at the start of CP5, Network Rail has spent more on the renewals and enhancements work it delivered in 2014-15 and 2015-16 than it expected. It is also planning to spend more in the remainder of CP5. This means there is pressure on its borrowing facility with DfT.

Network Rail's latest business plan for England & Wales includes financial headroom of £0.2bn, i.e. it thinks it will not need to use that amount of the borrowing facility. The main financial risks to this forecast include the costs of renewals and enhancements, delivery of efficiency initiatives, interest rate

movements and Network Rail achieving suitable strategies for generating additional cashflows through disposing of non-core assets and encouraging alternative funding arrangements.

Network Rail is investigating the possibility of disposing of a number of property related assets with the objective of raising £1.8bn in England & Wales to support the railway enhancement programme in England & Wales in line with the Hendy report. It is also, along with DfT, considering better management options for stations and specifically options for its 18 managed stations and options for disposing of some or all of its electrical distribution and traction power assets.

At this point, there has been no decision by Network Rail to dispose of any specific assets under this programme and during September to December, the Network Rail Board and DfT will be considering whether or not to move into the next phase of work in terms of progressing any potential disposals.

Under its network licence, Network Rail will need ORR's specific consent for disposing of certain assets and ORR will be considering the regulatory implications of all these issues at the appropriate time.

Health and safety



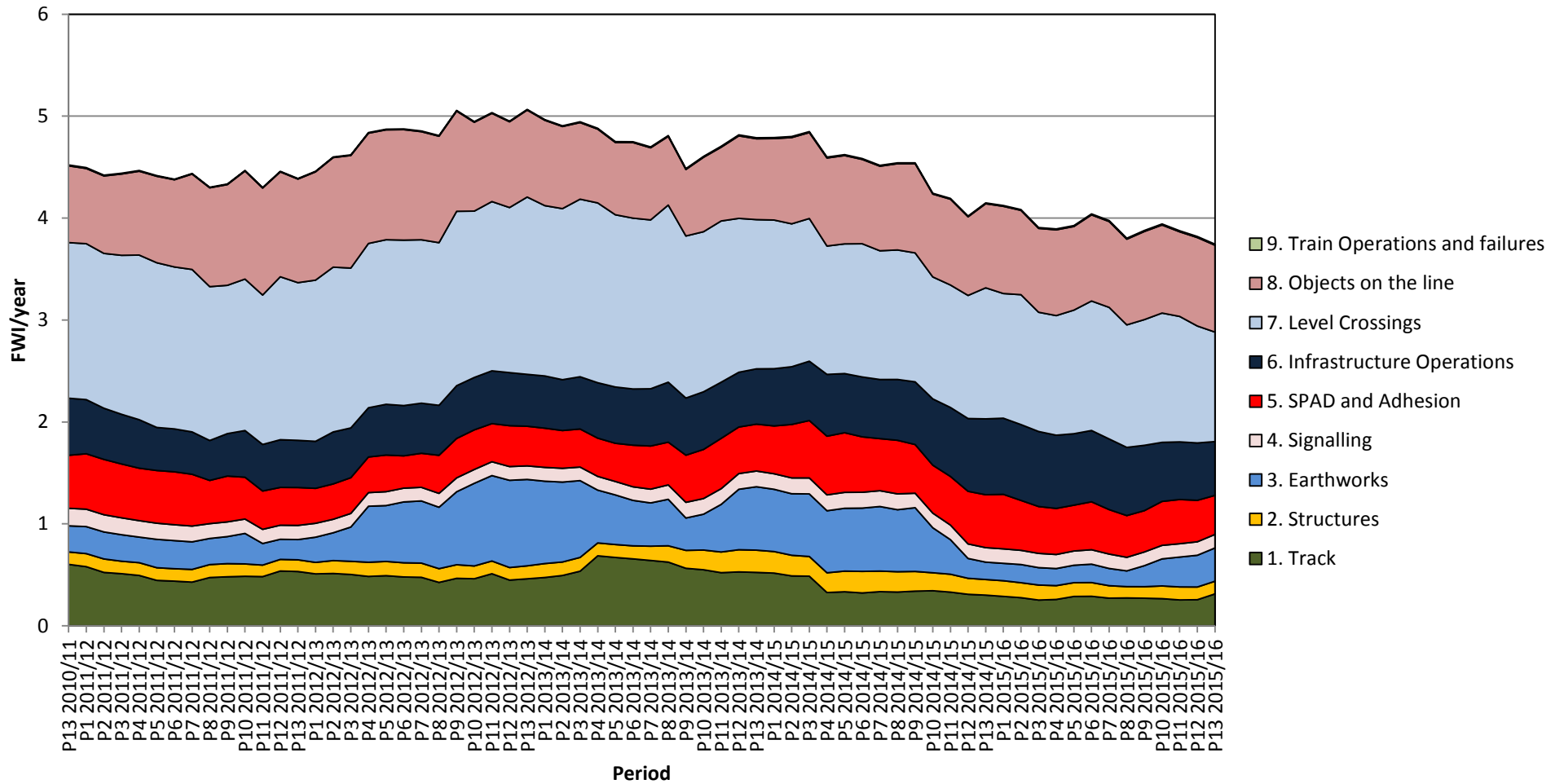
2015-16 has been a good year for safety performance. For the first time ever there were no worker fatalities and no industry-caused passenger fatalities. This is an important step towards the realisation of ORR's vision of zero industry-caused deaths.

Network Rail met its target for [lost time injuries](#): there was a 30% reduction in [RIDDOR](#) reportable injuries compared to 2014-15, from 100 to 70. It also exceeded its target of 80,000 close calls reported and acted upon. There were 125,005 calls reported, 58.5% of which were closed in 28 days against a target of 50%.

The RSSB [Precursor Indicator Model \(PIM\)](#) for Train Accident risk shows that Network Rail met its targeted reduction – the Infrastructure Operations group of precursors decreased 31% overall during 2015-16, despite significant weather-related increases in earthworks and structures failures. The adverse trend in [Signal Passed at Danger \(SPAD\)](#) risk seen in the first two quarters has halted in the second half of the year and the trend is now static. The chart on page 11 below provides further detail.

During the year Network Rail reviewed the suite of projects that formed the *Integrated Safety Plan* to ensure that it focused on the right areas which had the greatest risk. This review involved a detailed analysis of the risks and benefits provided by each of the projects. As a result Network Rail's plan has been rationalised into a priority list of 21 projects. One of these is the *Home Safe Plan* which has workstreams addressing key safety risks to passengers, the public and the workforce as well as occupational health priority areas and process and system improvements.

PIM landscape chart as of Period 13 2015/16
All Person Risk and Infrastructure Manager 'Risk Controller'



Risk Management Maturity Model (RM3)

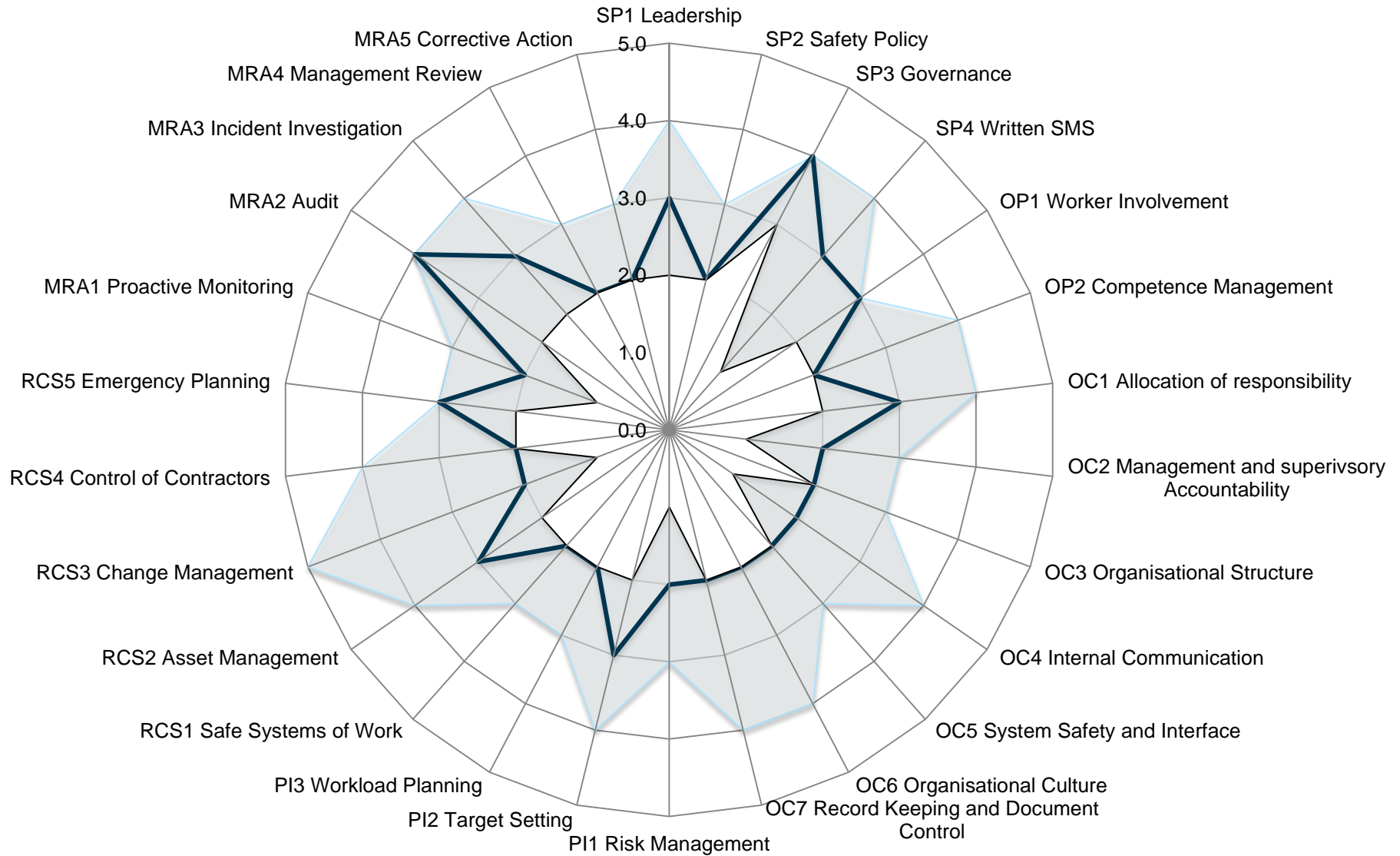
ORR uses the RM3 model to measure Network Rail's management maturity. We use the outputs from inspections and investigations to judge the effectiveness of a range of elements of its Safety Management System (SMS).

This chart on page 13 below shows the ratings for 2015-16 (bold blue line). The majority of the ratings are at levels 2 and 3 – '*managed*' and '*standardised*'. Two elements achieved a level 4 rating of '*predictable*': Audit and Governance. In both cases this was an improvement on 2014-15 which indicates good progress in these aspects of safety management.

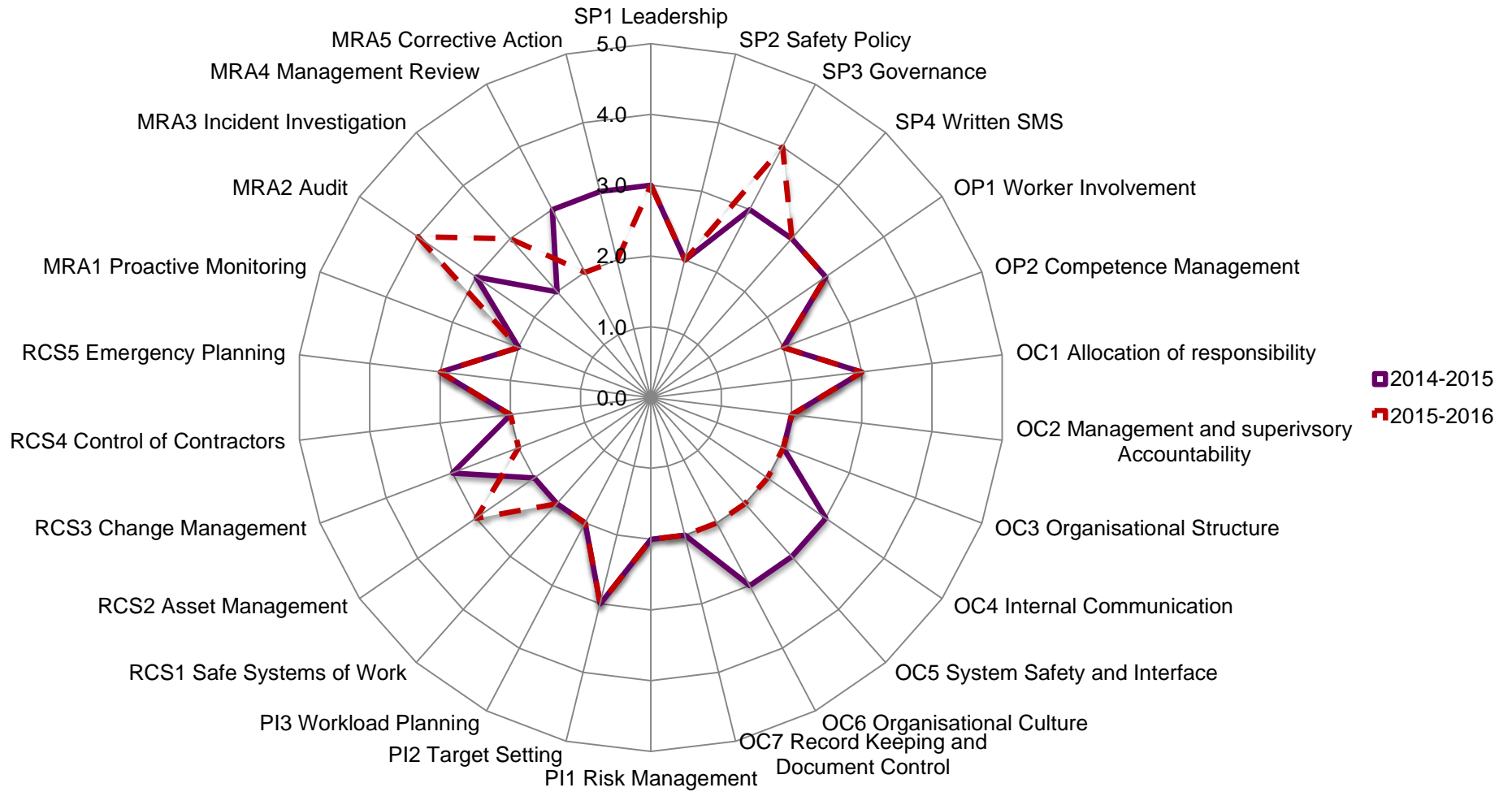
The shaded area describes the spread of ratings in each category. It illustrates the significant variation we found across the network. Element RCS3, for example, (Management of Change) ranges from the lowest level '*ad hoc*' (for the introduction of the [Mobile Maintenance Train](#)) to the highest of '*excellent*' (for the implementation of the Scotland Route/ScotRail Alliance). It is notable that the range of scores includes six instances of '*ad hoc*'. Even where the balance of evidence across the piece leads to a higher overall rating, a mature organisation should not be comfortable with this level of weakness anywhere in its SMS.

Of most concern is the consistent achievement of '*managed*' ratings in the parts of RM3 relating to delivery – the OC elements. The next chart (see page 14) shows that in three of these categories, OC4-OC6, Network Rail has actually gone backwards compared to 2014-15.

Network Rail 2015-2016



Year on Year Comparison 2014-2016



Track

Many of the performance measures for track geometry show an improving trend, with very few worsening. [Period 13](#) of 2015-16 (with a total of 109 broken rails) showed a moving annual average (MAA) for broken rails per 100kms of 0.026, almost identical to the figure (0.025) for 2014-15 (with a total of 98 broken rails). These are historically low rates. There were 16 broken [fishplates](#) in period 13, a decrease of five on the same period last year and the MAA per 100kms has improved from 0.534 to 0.503. The [Tubular Stretcher Bar](#) fitment is a key improvement in risk control at [Switches and Crossings \(S&C\)](#). At the end of 2015-16 some 1,600 bars had been installed. This follows the successful completion of the first stage in December 2015, at which point more than 2,700 bars had been fitted at priority sites.

There were nine track buckles reported in 2015-16, compared to 14 in 2014-15 and 21 in 2013-14. Six of the buckles occurred on one day – 30 June 2015 – when midday temperatures reached 28 degrees centigrade. ORR inspections of [Hot Weather Preparedness](#) showed an improvement on our previous findings – but, in common with other aspects of management of track geometry, a lack of consistently reliable compliance with standards and procedures was also noted.

2015-16 saw a total of 4,410 new and repeat track [twist faults](#) – a reduction of 5.7% on the total for 2014-15. Nationally, all twist faults have shown a 17.9% improvement on the CP4 exit

figure. There is however considerable variation within this overall trend. Wessex Route, for example, has made a 34.4% improvement, whilst Western has worsened by 5.5% since the end of the CP4. There were 1,868 repeat twist faults in 2015-16 - an 18.3% improvement on the figure for 2014-15. Nationally, repeat twist faults have improved by 20.2% since the end of CP4 – but, again, there is considerable variation across the network. London North Western (LNW) Route has improved by 35.3% since the end of CP4, whilst South East Route has worsened by 11%.

The latter half of 2015-16 saw Network Rail recover its delivery of track renewals volumes. Despite the High Output programme ending the year 9% below target, strong delivery through conventional methods meant that overall [plain line](#) volumes ended 2015-16 1% above target.

The revisions to the Network Rail's Business Plan mean that the company will not deliver the volume of renewals originally envisaged in the remainder of CP5. This places more reliance on maintenance activities. Our detailed inspections of management of poor track geometry revealed a common finding that the management of risk from track geometry precursors was heavily dependent on the knowledge, competence and expertise of individual staff rather than as a result of robust application of Network Rail's risk control processes. We also found that frontline [level 1 assurance](#) (by [Section Managers](#) and [Track Maintenance Engineers \(TMEs\)](#)) was not functioning effectively to identify and remedy non-compliances.

The adoption of more intelligent safety performance indicators will help to improve assurance. A number of Network Rail's current indicators are 'lagging', i.e. they measure the precursors to risk such as broken rails or twist faults. Where there are process measures they record only whether an action was taken within prescribed timescales. They do not evaluate the quality or effectiveness of that action.

Our inspections further found that *Business Critical Rules (BCR)* for plain line track was not being used consistently by front line staff as part of "business as usual". Neither was there the level of engagement expected with the new competency processes. These are examples of change that has not been managed well and Network Rail risks losing the opportunity to realise the benefits of these initiatives.

Civils and drainage

The latter half of 2015-16 illustrates the extent to which the risks associated with [civils](#) assets are weather-dependent. Due to the winter storms the year ended with a total of 162 earthworks failures, an increase on the 2014-15 total of 59. The five year annual average failure rate stood at 123 at the end of 2015-16, worse than Network Rail's target of 101.

Despite the number of earthworks failures, improved adverse weather arrangements implemented in 2012 meant that none of them resulted in a train derailment. However, our analysis of Network Rail's response to the 2015-16 winter storms shows that these processes are not yet consistently effective. The

failure of the Lamington viaduct on the West Coast Main Line (WCML), for example, was partly attributable to Scotland route not following the measures adopted elsewhere for management of structures at risk from scour. Network Rail has carried out its own review of the effectiveness of adverse weather arrangements and we expect improvements to follow.

In March 2016 Network Rail complied with an [Improvement Notice](#) on the management of risk from critical drainage components in soil cuttings. Our focus is now on ensuring Network Rail achieves the other commitments in its Drainage Asset Policy and in the specifically developed 10 Point Plan for drainage assets. Good drainage is fundamental to the management of risk for a range of track, civils and other assets. We welcome the appointment this year of a new Network Rail Head of Drainage and the commitment this shows to treating drainage assets as a system.

The second half of 2015-16 saw a recovery in the delivery of maintenance and renewals volumes nationally for both earthworks and structures – although some targets were still missed. However, the revised Business Plan means that much of the work envisaged in the [Civils Adjustment Mechanism](#) will not be completed in CP5. We have undertaken inspections on every route to scrutinise deferred renewals proposals. We found that route asset management staff were generally making sensible risk-based prioritisation decisions within significant constraints. They were less effective however in recording the justification for deferrals, assessing the risks and

identifying mitigations. We continue to press Network Rail in this area.

During the year Network Rail worked to reduce the number of overdue structures examinations, something ORR had flagged as a concern. Period 13 saw the number of open work items with a risk score ≥ 12 drop by 77. The figure at the end of the year was 1,230 open work items, significantly better than Network Rail's target of 2,168.

The latter half of 2015-16 saw a number of incidents involving failure of ancillary structures such as signal posts, OLE equipment and station signs and lampposts. Many of these assets have the potential for catastrophic consequences if they fail. We found that the management of risk was not as effective for these assets as for others in the civils portfolio. In some instances train operating companies (TOCs) have the lead responsibility, but Network Rail has responded quickly by devising an enhanced examination regime for ancillary assets – which number in the many thousands. This is an area we will keep under close scrutiny in 2016-17.

Electrification

Design of new and upgraded traction supply

Network Rail recognises the scale of the challenge it faces and has put in place workstreams to address these. The central Investment Projects (IP) group has mandated a company-wide approach to risk assessment and management, however, practice still seems to have varied between projects. A holistic

process based on the *Common Safety Method (CSM)* is being developed so that project designers can take a consistent approach to planning and compliance with legal obligations

There has been significant progress in work directed to achieving compliance with the *Electricity at Work Regulations 1989*. Priority workstreams include development of a single approach to isolations and earthing for AC and DC traction, as well as high voltage equipment.

Network Rail has moved away from the “more of the same” assumption that initially accompanied the drive for more electrification. The approach of individual projects, including electrification of the Great Western and Trans Pennine routes, has been positive on the whole, although particular problems remain. Specifically, electrical clearances to standing areas and how they can be maximised to ensure safety. If Network Rail's CSM approach is successfully introduced and embedded it will improve the situation significantly.

We continue to work with Network Rail at the centre and all projects to reach a satisfactory position which ensures safety but not at disproportionate cost. We have made it clear that reasonable practicability and evidence to support design judgements is what we expect to see, rather than a single all-defining measurement.

Network Rail has produced a set of *Electrical Principles for New AC Electrification*. These are realistic and achievable and provide clear guidance. They are being used to design isolation arrangements for new projects.

Safer, faster isolations

We have been closely monitoring the spend of ring-fenced funds.

On AC systems, the single approach to earthing and isolation is now undergoing small scale trial in LNW route and Scotland. We have seen indications of progress in terms of security of isolation but the efficiency benefits are not yet evident. Network Rail is piloting a single approach on the Great Western Electrification Programme (GWEP) from October 2016. In parallel the routes are being engaged to establish what hardware solutions can be installed to produce safer, faster isolations by the end of the current control period.

The DC solution is more advanced, with three trial sites providing valuable intelligence on the safety and efficiency benefits of different types of equipment. Network Rail is confident that improved third rail arrangements will be in place by the end of CP5.

Level crossings

2015-16 saw the lowest number of fatalities at level crossings ever recorded; three confirmed fatal events. None of the deaths was of an occupant of a vehicle and there has not been a motorist fatality at a crossing since May 2014. Pedestrian safety however continues to be a cause for concern. Despite the reduction in fatalities, overall risk has increased. The MAA for significant level crossing event risk increased by 6.7% over

2015-16. This was largely due to an increase in near-misses with pedestrians.

ORR's inspection priority over the year has been management of risk at [whistle board crossings](#). We have been working with Network Rail to facilitate improvements to the accuracy of its asset data, leading to better understanding of the risks and required mitigations.

As part of its strategy at these crossings Network Rail is introducing new [Covtech technology](#) to supplement the unpredictable control measure of reliance on a train driver to sound the horn on every occasion at the correct location. This technology also has potential to improve arrangements during the 'night time quiet period' when train horns are not sounded. This has been an issue of emerging significance during the year. Installation of cameras has enabled the collection of data to better understand night time use which has been underestimated at a number of locations. As well as the supplementary warning provided by Covtech, Network Rail is working to reduce the quiet period during which horns are not sounded.

ORR has been monitoring the spend of ring-fenced funds to reduce risk at level crossings. This will be achieved primarily by closing crossings. Network Rail has continued to make progress with crossing closures – though it is becoming a harder process as the target population grows smaller and local opposition becomes more significant. For 2015-16 Network Rail set its own internal target for progress - a

measured risk reduction of 1.893 [fatalities and weighted injuries \(FWI\)](#). At end of the year it had achieved a reduction of 1.564 missing the internal target by 17%. It is also spending on a number of other risk reduction measures, where closure is not reasonably practicable.

Worker safety

The implementation on East Midlands of PDSW revealed problems within the maintenance function and the national roll-out has been paused.

It is regrettable that a programme with this degree of potential for transformation in safety culture has not been implemented. Network Rail must learn the lessons from this and ensure that it finds a way to deliver the improvements in worker safety. We have seen encouraging signs in other parts of the network that Network Rail can find solutions to culturally rooted problems in planning safe systems of work. We have, for example, been impressed by the potential of London North Eastern (LNE's) *Safe and Efficient Work Sites* initiative.

Also, the ring-fenced fund for exploring new technology to improve worker warning and protection is progressing well. Both the [Remote Disconnection Device](#) and [Signal Controlled Warning System](#) have proved they have the capability to overcome weaknesses in current arrangements.

Occupational health

We have noted some significant improvements in the management of occupational health. In particular central initiatives have started to build in assurance regimes to check frontline compliance, and there has been better engagement with stakeholders – something that will be essential to driving further progress. However, we still see evidence of a significant and serious disconnect between the centre's strategies and procedures and effective route/site implementation, and overall progress remains frustratingly slow.

Asbestos management improved during 2015-16. A project was established to ensure progress with the production of asbestos management plans both at route and site level. However, ORR interventions in relation to Northern City Line tunnels and work on a keeper's cottage at Wadborough revealed serious deficiencies in the day to day handling of this topic.

2015-16 saw a reinvigoration of the *Ballast Dust Working Group* under Network Rail's leadership. There were welcome improvements to the information and procedures associated with High Output work. However, it is evident from a number of ORR construction site inspections that poor and unchallenging site supervision is failing to identify and correct dangerous behaviours. This suggests either that on-site supervisory staff do not understand the safety standards site operatives are expected to comply with, or that they feel unable to confront site operatives when they see non-compliance.

Hand Arm Vibration Syndrome (HAVS)

Network Rail has worked hard to develop risk reduction strategies and communicate the reasons for them, seeking to engage the routes. The next phase of the programme is to make the systems sustainable and to develop and implement an assurance framework so they become part of 'business as usual', in the routes. An improved standard, *HAVS health surveillance*, has recently been issued, giving guidance on HAVS investigations. ORR saw some evidence of improved awareness of HAV risks in MDUs, but still found poor compliance with goals that routes had been set – particularly on health surveillance.

Manual handling

While there are generic manual handling assessments in [Task Risk Control Sheets](#), we saw evidence that significant manual handling risks were still not being adequately addressed and as a result took further enforcement action (see below). There still appears to be tacit acceptance at all levels of lifting/handling very heavy materials and equipment.

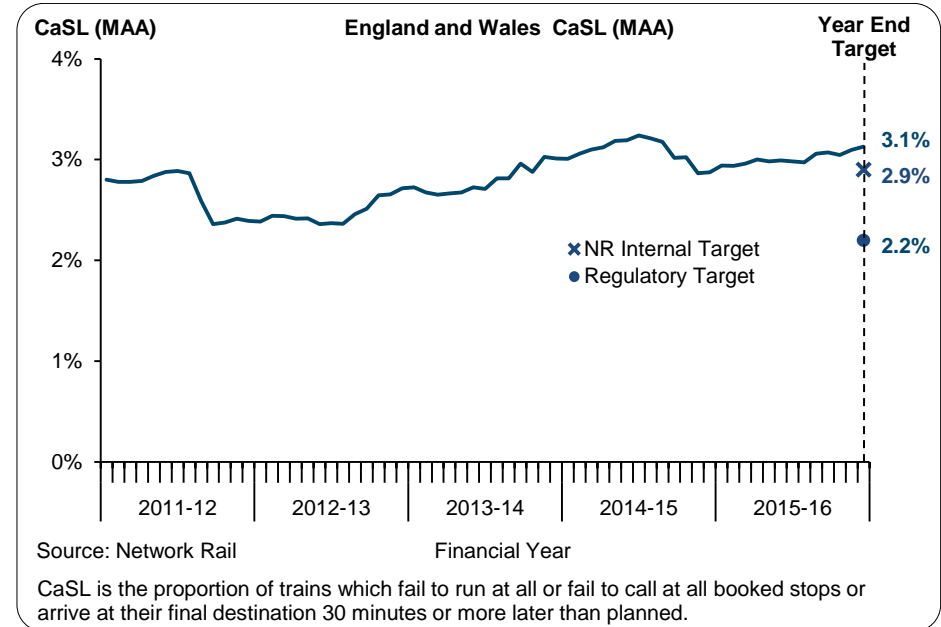
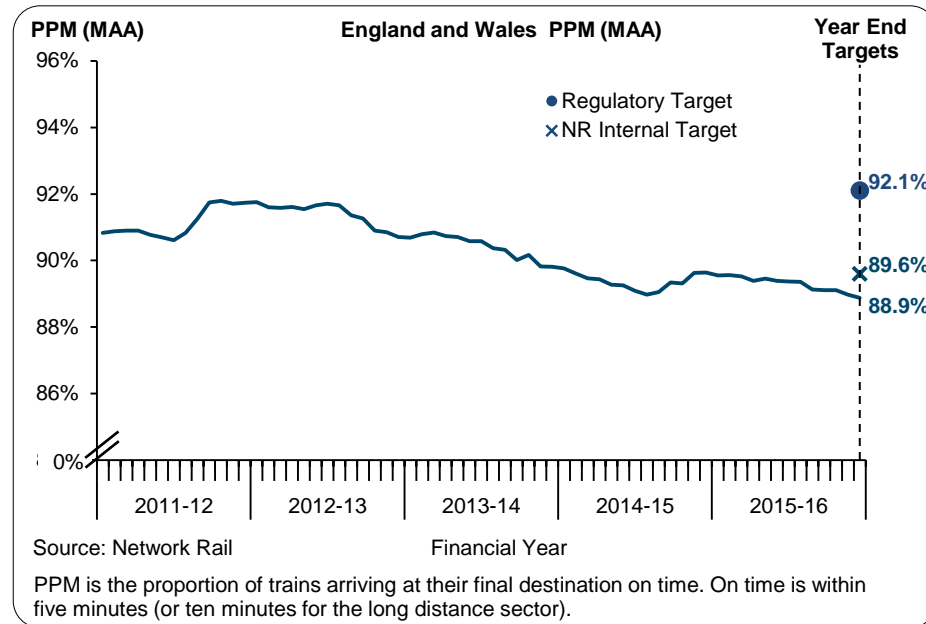
ORR served a prohibition notice, prohibiting the lift and carry of a 110kg [MC3 frog & switch grinder](#) by just two employees or contractors (see “The Railway in Wales” below). This enforcement combined with action taken earlier in the year reflects national findings on Network Rail’s non-compliance with requirements on manual handling.

Train service performance



National level performance

At the end of 2015-16, PPM MAA was 88.9%. There has been a slow decline since the end of 2011-12. CaSL MAA has also followed a worsening trend in 2015-16, ending the year at 3.1%. There had been an improvement towards the end of 2014-5, but the gains made during this period were reversed over 2015-16.



Possible explanations for the decline

We regularly discuss the underlying issues affecting train performance with Network Rail and the wider industry. A number of these issues are outside Network Rail's direct control, for example delays and cancellations caused by traincrew or fleet problems. However, Network Rail is accountable for several issues which have impacted the company's ability to deliver performance to the required level. These include:

- the **CP5 Performance Plan** which has not delivered the anticipated overall performance improvements – see below;
- the impact of **major projects**, for example Thameslink, which Network Rail believes added multiple challenges to effective service delivery including the removal of one of the approach lines to London Bridge and reduced availability for base operational maintenance and renewals with the requirements for Thameslink work taking precedence in limited available track access. These projects also consume limited skilled resource. Given the complexity of interactions between major projects and the operational railway, it is very difficult to give a definitive answer on the impact of major projects on performance;
- **passenger growth**. Network Rail has observed that the numbers of passengers has increased in excess of the rate of growth expected at the start of CP5, having a negative effect on performance. Although we accept that passenger growth has impacted on [station dwell times](#)

at some locations, we are yet to see convincing analysis to calculate the system-wide impact on performance.

Approach in years one and two of CP5

Network Rail entered year one of CP5 (2014-15) at much lower levels of performance than anticipated in our [CP5 Final Determination](#). The company forecast that it would miss a number of regulated performance outputs during the first two years of CP5.

Network Rail developed the CP5 Performance Plan, which brought together a number of initiatives to improve train performance in the first two years of the control period. We agreed that in years one and two delivery of the plan would indicate that Network Rail was doing everything reasonably practicable to comply with its licence obligations. So in 2014-15 and 2015-16 we held Network Rail to account for delivery of the CP5 Performance Plan, and its delivery of the PPM and CaSL targets it had agreed with operators in their [Performance Strategies](#).

The CP5 Performance Plan

At the end of 2015-16, Network Rail reported that out of 449 milestones in the plan, 287 were complete, 69 were on track for delivery, 22 were late and 71 were either on hold or cancelled for valid reasons. Although this is satisfactory progress, it has not translated into the anticipated overall performance improvements. We will continue to liaise closely with Network Rail for assurance that the improvements are being delivered.

Approach in year three of CP5

The recently published Shaw report recommended using scorecards to place the needs of passengers and freight customers at the heart of rail infrastructure management. Network Rail had already introduced a corporate scorecard but has also introduced route scorecards as part of its [Annual Incentive Plan](#). They are designed to link the interests of employees to those of Network Rail as a whole and its stakeholders and customers. For 2016-17 each Route Managing Director has a scorecard that has been agreed with their customers, the train operators, and which will be used to judge their end of year performance. They include a number of categories, one of which relates to train service performance. We have been exploring whether our approach to holding Network Rail to account for the regulated targets could be framed around the delivery of these locally agreed measures. We did some analysis to understand the level of challenge in the scorecards, discussed with train operators the level of engagement they had had with Network Rail and ran through some scenarios to explore whether such an approach was workable. We have concluded this work and have decided that for 2016-17 we will use Network Rail's delivery of its route scorecards as leading indicators as to whether it is doing all it should to meet the regulated performance targets. We will revisit this approach next year to see if it should be adopted for the remainder of CP5 and, if successful, how the approach could be expanded for CP6.

Delivery of performance at TOC level

We are monitoring Network Rail's delivery of the regulated performance outputs (PPM and CaSL) at TOC level as specified by the targets in the Performance Strategies Network Rail has agreed with each operator.

PPM

c2c recorded the highest absolute PPM MAA score (96.7%), and one of the worst performers identified in our last Monitor. Great Western Railway, improved by 0.5pp in the last 6 months of 2015-16.

We set a threshold for possible regulatory intervention at 2.0pp for PPM MAA below the Performance Strategy target. Before any mitigations were applied, four operators, Southeastern, Heathrow Express, Govia Thameslink Railway (GTR) and First Transpennine Express were outside this threshold at the end of 2015-16. GTR recorded the lowest absolute PPM score (81.5%). However, after mitigation for factors outside Network Rail's control (such as train crew shortages and extreme weather) GTR, Southeastern and Heathrow Express remained outside the threshold.

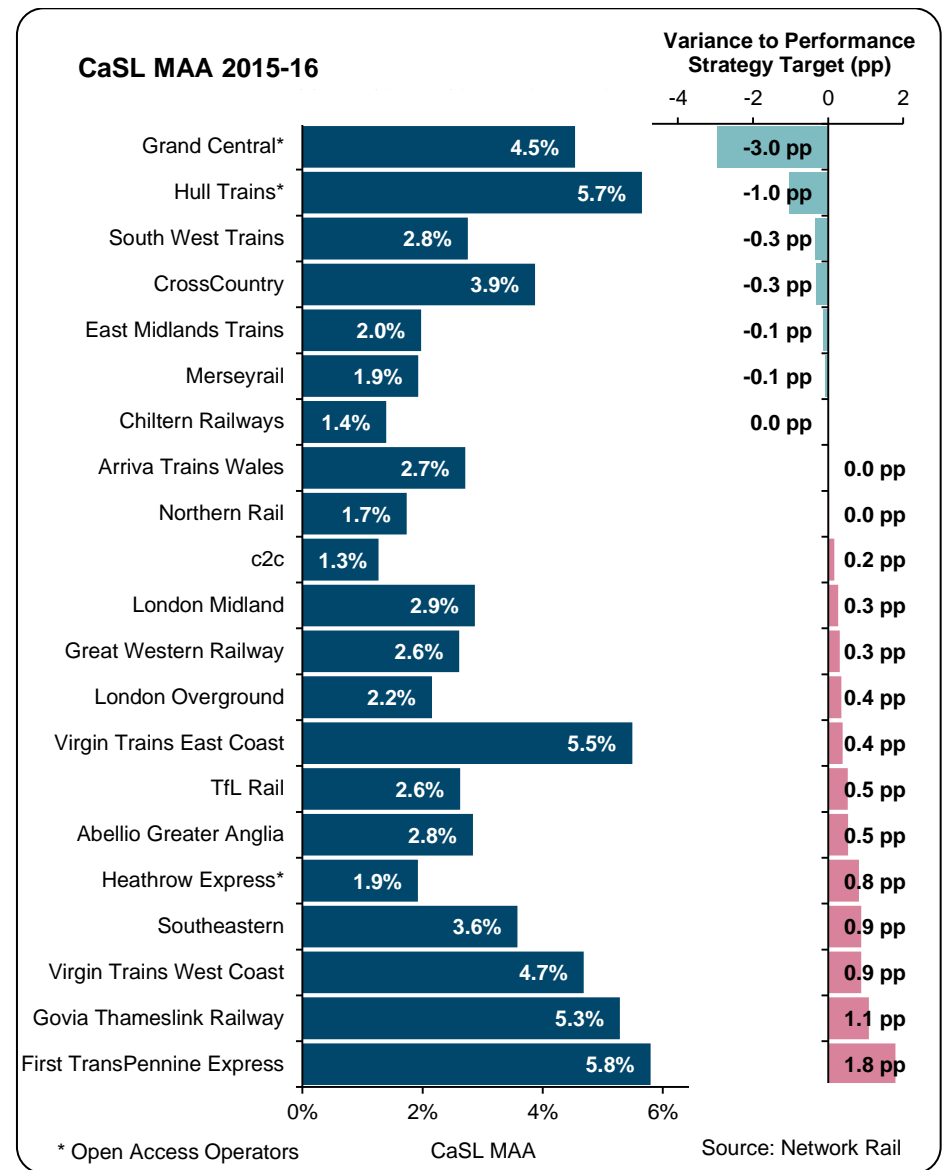
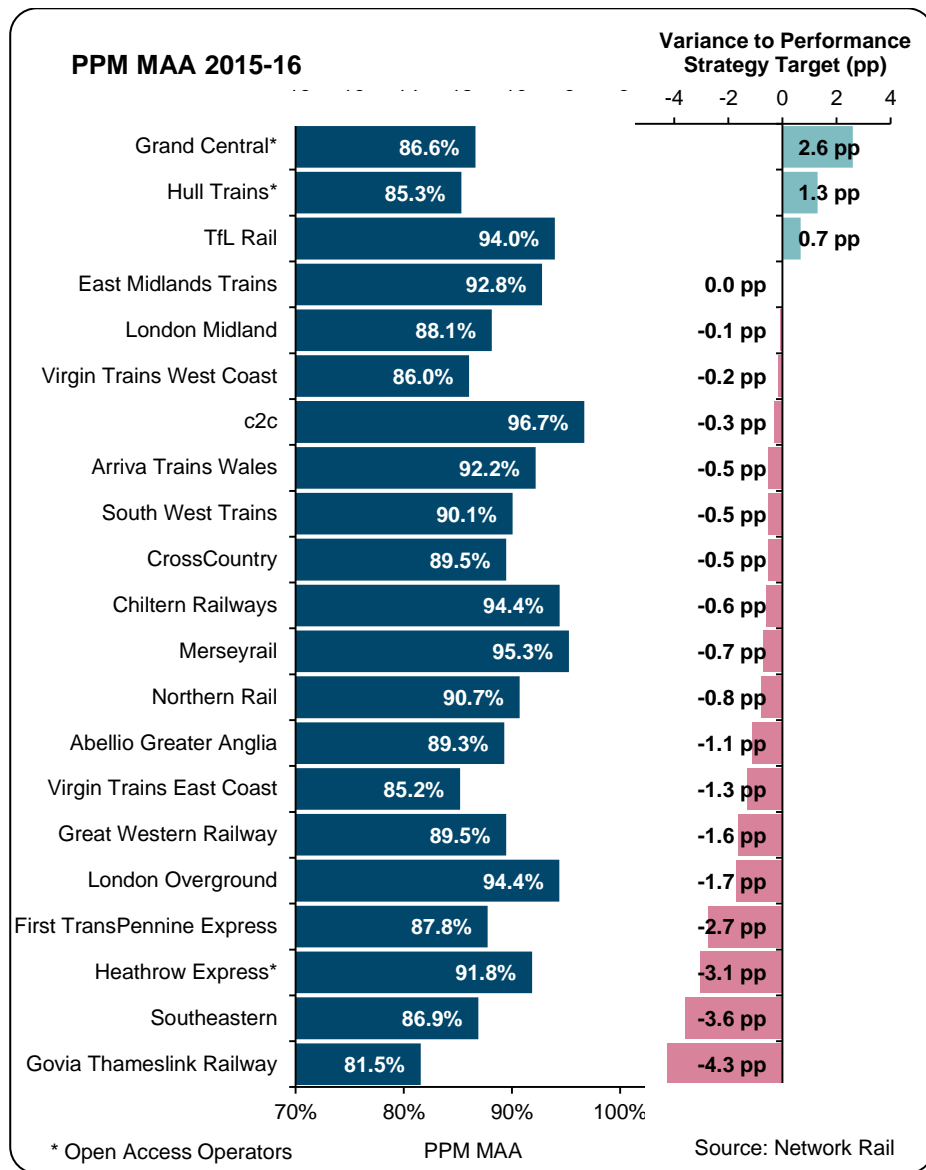
Having analysed the data, listened to the views of train operators, and scrutinised Network Rail's delivery we have decided not to start a formal licence investigation into 2015-16 performance for these TOCs. We have concluded that Network Rail has a good understanding of what went wrong and is doing the right things with train operators to address these issues. We will however, continue to monitor delivery of performance in the current year (2016-17) very closely. If we consider that Network Rail is losing focus and the 2016-17 targets are at risk, we will move quickly to intervene as appropriate.

CaSL

Grand Central beat its target by the greatest amount (3.0pp). c2c recorded the lowest (i.e. best) absolute CaSL result (1.3%).

As with PPM, we set a threshold for possible regulatory intervention at 0.2pp for CaSL MAA. Before any mitigations were applied, eleven operators were outside this threshold. First Transpennine Express missed target by the greatest amount (1.8pp). However, after mitigation for factors outside Network Rail's control Southeastern, First Transpennine Express and Heathrow Express remained outside the threshold. For the same reasons we outline above for PPM, we have decided not to start a formal licence investigation into 2015-16 performance for these TOCs.

The charts below show all operators' performance ranked by variance to their Performance Strategy targets at the end of 2015-16.



Other performance interventions and measures

Delay minutes

We monitor Network Rail delay minutes as a key indicator of train performance. As the chart on page 28 shows, in 2015-16, 60% of delay minutes were attributable to Network Rail, 28% were “TOC on Self” (delays to a passenger train operating company's services caused by that company) and 11% were “TOC on TOC” (delays to a passenger train operator's services caused by another train company). The position is broadly consistent with previous years.

South East reparations fund

In response to a previous ORR intervention, Network Rail instituted a reparations fund to improve performance in the South East route. This includes a number of initiatives, such as more station staff at Network Rail managed stations, more focused asset management teams and investment in a new system to improve incident response. We are closely monitoring Network Rail's implementation of these schemes. It seems to be making reasonable progress although we are aware of some issues with the business case for the incident management system.

London and South East resilience fund

Network Rail is also on course to complete further flood, high wind and cold weather mitigation schemes during 2017 funded through the London and South East resilience fund as well as coastal defence works at Folkestone Warren³.

Delay attribution in the South East route

Since autumn 2015, there has been a large increase in the amount of train delays in the South East route to which a root cause has not been attributed. This makes it much harder to analyse performance and identify what remedial action to take in response. Network Rail has identified a lack of delay attribution staff as a key contributory factor and we will continue to monitor how the company manages this situation.

³ This is separate from the much larger project currently underway to repair the Dover sea wall.

Network capability

Network capability describes the capability of the network in terms of track mileage and layout, line speed, gauge, route availability and the amount of electrified track. Network Rail's network licence requires the company to accurately describe and maintain (subject to network change) the baseline capability for which it is funded for the benefit of its stakeholders. For CP5, we said that the baseline capability of the network would be that in place as at 1 April 2014.

The industry's Network Capability Steering Group continues to provide a forum for engagement between Network Rail and a range of industry stakeholders. A number of stakeholders have raised concerns informally about Network Rail's compliance with its network capability obligations but we have not received any formal complaints.

Network availability

Network availability is a measure of the impact of planned engineering work on passengers and freight customers.

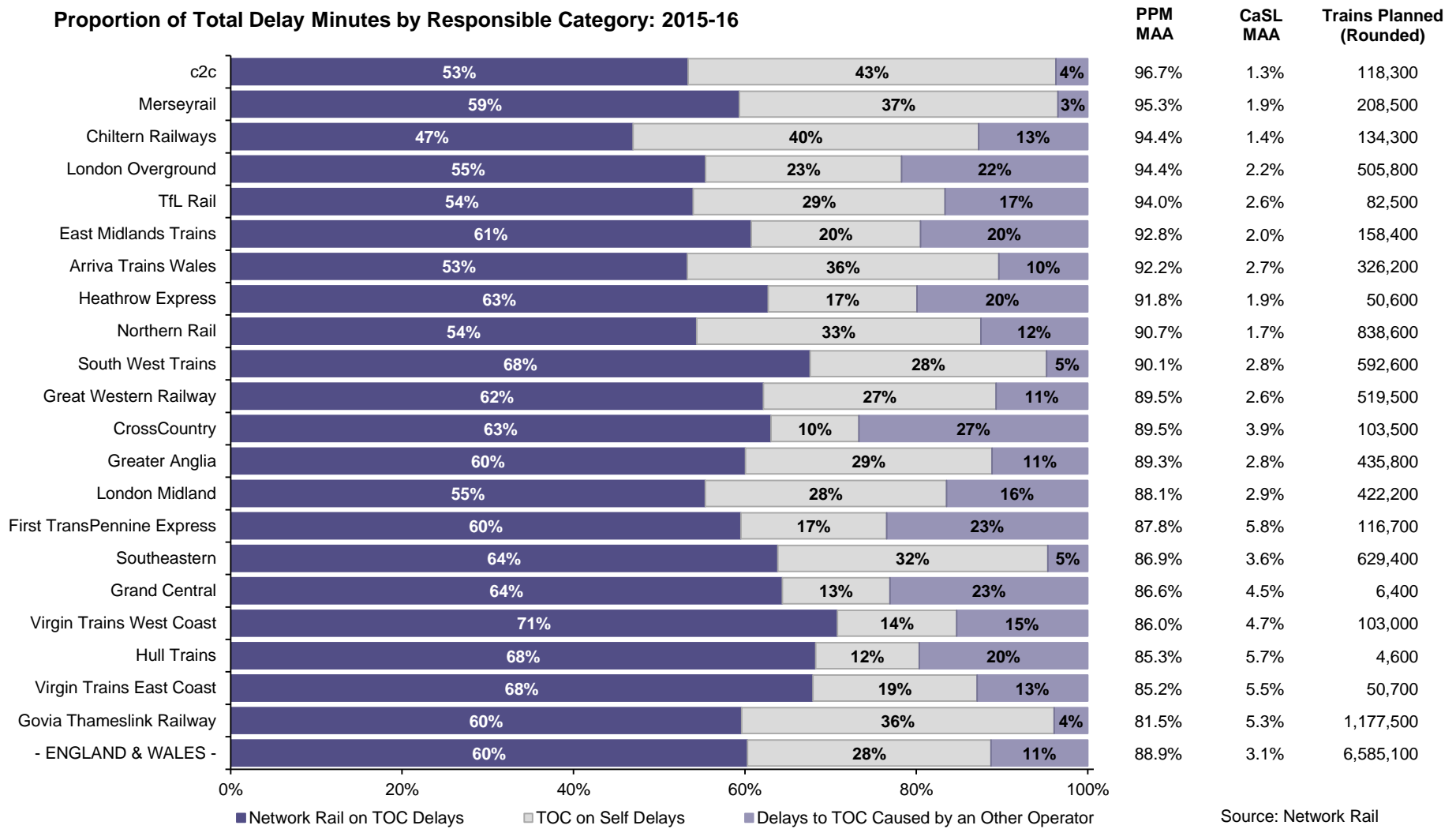
On the passenger side, Network Rail recommenced reporting on the [Possession Disruption Index for Passengers \(PDI-P\)](#) in January 2016, following a lengthy period during which the reports were unavailable. There are still some continuing problems with some aspects of the data including the service group definitions which need to be addressed. Network Rail is developing a proposal for an alternative network availability measure. We will review and assess this once it has been provided.

As far as freight customers are concerned, Network Rail is currently on track to meet its CP5 target for the [Possession Disruption Index for Freight \(PDI-F\)](#).

Freight performance

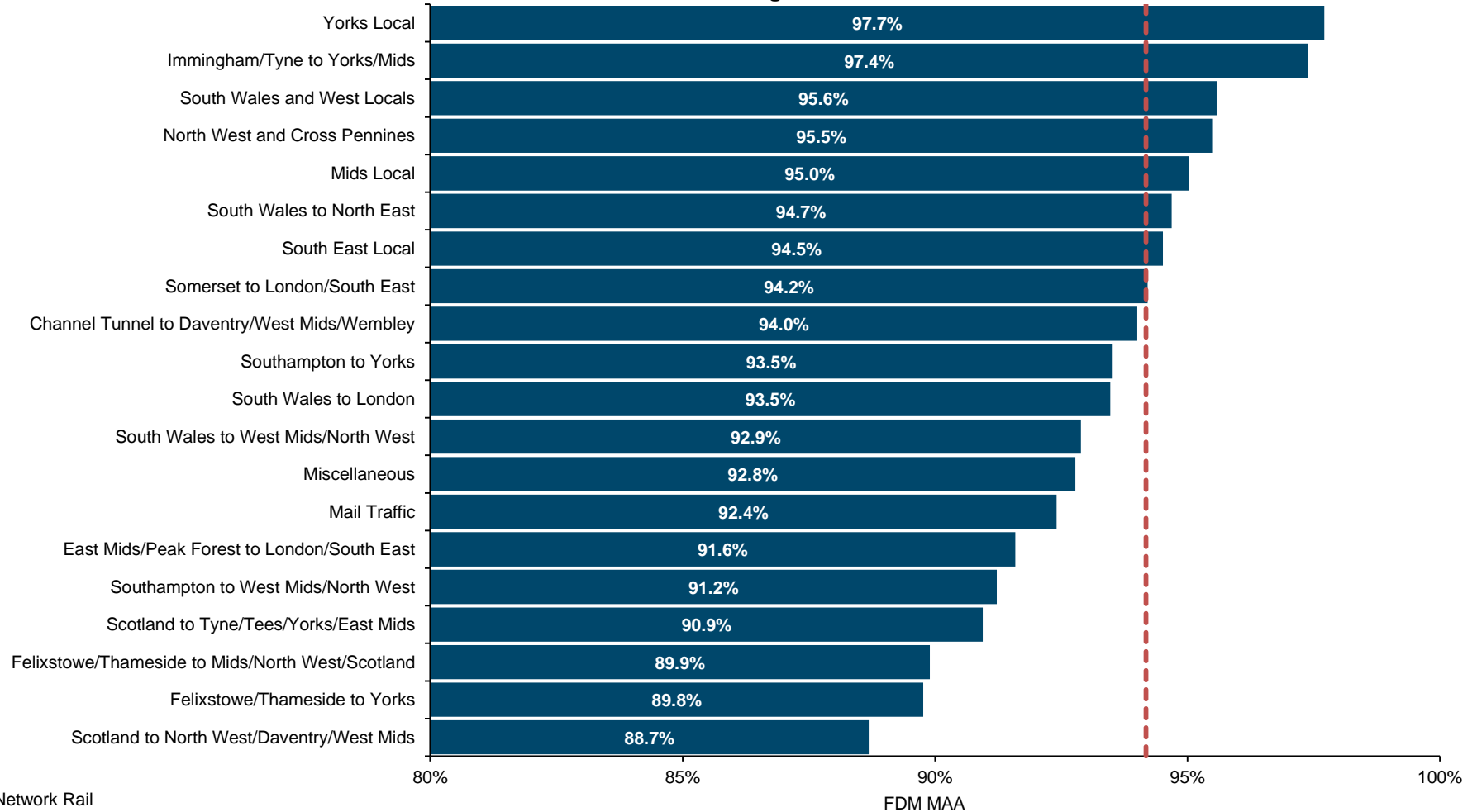
The regulatory performance measure for freight is the Freight Delivery Metric (FDM). This measures the percentage of freight trains arriving at their destination within 15 minutes of scheduled time. FDM covers delays for which Network Rail is responsible - i.e. not those caused by train operators. The chart on page 29 shows the FDM MAA at the end of 2015-16 standing at 94.2%, 1.7pp ahead of the annual target of 92.5%.

Proportion of Total Delay Minutes by Responsible Category: 2015-16



FDM by Strategic Freight Corridor - 2015-16

England and Wales: 94.2%



Asset management



Maintenance and renewals volumes

Maintaining and renewing the network is fundamental to Network Rail's responsibilities. Regular maintenance counters the effects of wear and aging to keep the assets safe and performing as intended. But eventually they do have to be renewed when it becomes uneconomic or impractical to maintain them any longer.

Network Rail's approach to maintaining and renewing the network sustainably and at least cost is set out in its asset policies. The volume of work required during CP5 in accordance with these policies was set out by Network Rail in its 2014 Delivery Plan, so we monitor the actual volume of work delivered, and compare against the delivery plan to understand whether Network Rail is doing enough to sustain the network. During the first year of CP5 (2014-15) the volume of renewals delivered by Network Rail was significantly less than planned, creating a backlog of work to be caught up during the rest of the control period.

Renewals

Network Rail has done much better at delivering the renewals required during year two. Both [plain line](#) and switches and crossings renewals finished the year slightly ahead of plan. Signalling renewals also recovered to finish the year slightly

ahead of plan. In civils, [underbridges](#) finished the year 15% behind plan, and earthworks slightly ahead of plan. In electrification, overhead line renewals were delivered on plan, and conductor rail 63% ahead of plan.

This is a positive picture overall, but we are still concerned that in total £677m worth of renewals work planned during 2015-16 has been deferred to future years (23% of budget). All asset areas are affected by these deferrals, but signalling and civils account for the majority.

Although the volume of signalling renewal schemes commissioned during the year was ahead of plan, work on schemes not yet due for commissioning fell behind, with approximately £300m of work deferred into future years (40% of the 2015-16 budget). In civils, approximately £130m of renewals was deferred (24% of the 2015-16 budget), reflecting underdelivery of work across this area as a whole, including footbridges and overbridges.

[High output track renewal](#) has continued to underdeliver, finishing 11% behind plan at year end, and there was also a shortfall in plain line refurbishment. These shortfalls were offset by overdelivery of conventional renewals, including delivery of work deferred from the previous year. But the different mix of work has resulted in a deferral of £38m of work to future years.

The cost of the renewals work delivered during the year was £386m (13%) more than budgeted. This continues the trend from last year. At the time of the last periodic review, the settlement was intended to incentivise Network Rail to improve its efficiency, but following reclassification the settlement became a ceiling on Network Rail's expenditure. The continued overspending on renewals puts pressure on this ceiling.

To stay within its funding envelope for the control period, Network Rail has developed proposals to defer some future renewals work to CP6 and beyond to achieve an affordable balance of priorities across all asset types. Through this process we have challenged Network Rail where we had concerns about the impact on sustainability, and we are now waiting to see Network Rail's revised delivery plan for the remainder of CP5. Network Rail has concluded that there will be only a limited long run impact on sustainability, providing renewals volumes are increased during CP6 and CP7 to compensate. In the short term the deferrals will create a risk that asset performance and condition (and hence network performance) deteriorates. In general, deferring renewals beyond the optimum point of intervention will increase the whole life cost of the railway as additional maintenance (both planned and reactive) is required in the interim.

Maintenance

Maintenance delivery remains variable compared to plan, with more work delivered in some areas and less in others. Variances between planned and actual maintenance volumes

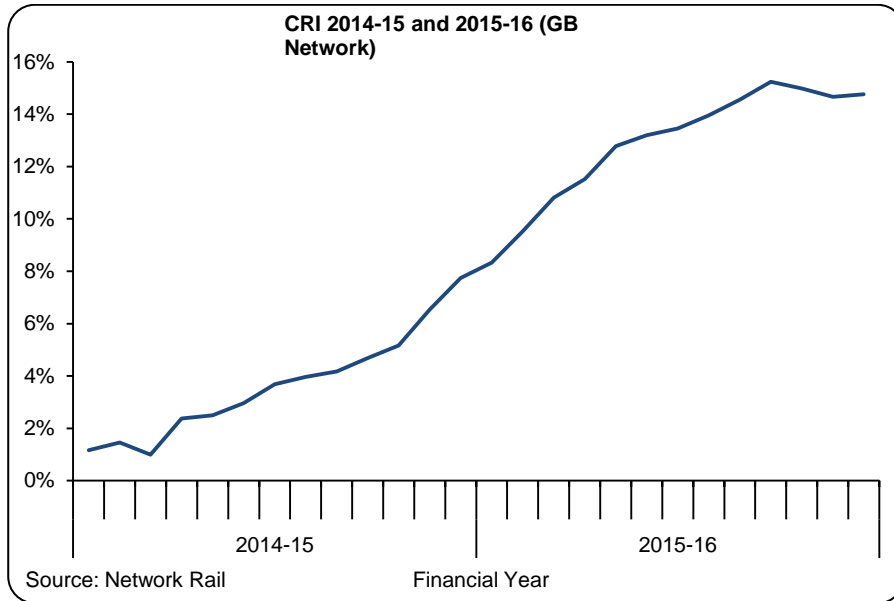
can arise where part of the work is reactive, but the overall picture suggests weaknesses in the maintenance plans themselves. The routes are working with their MDUs to develop asset management plans at delivery unit level, so that in future plans better reflect local knowledge of maintenance needs.

Reporting

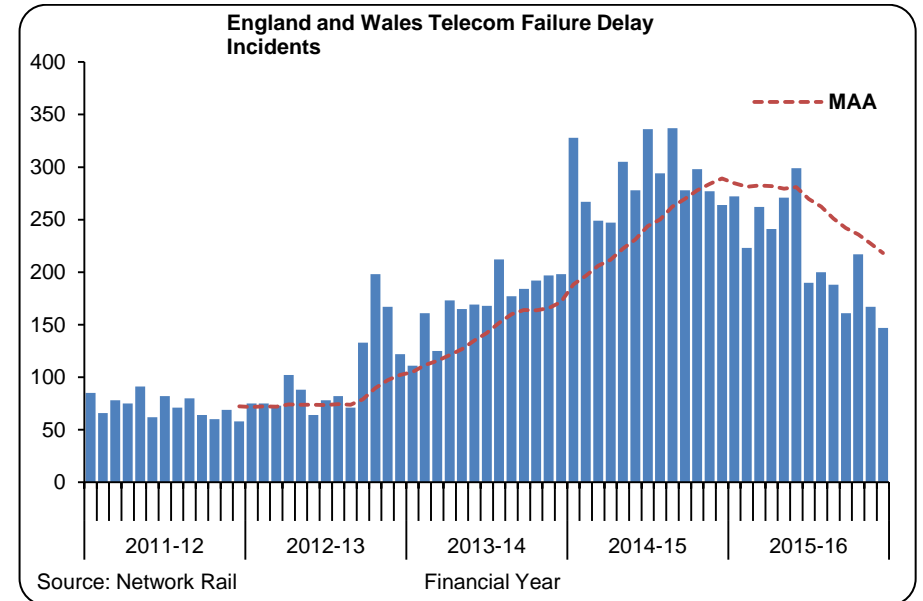
For CP5, we required Network Rail to report in more detail on the work delivered. This has exposed shortcomings with the quality of the company's systems for capturing and reporting work done. Problems in this area also impair the company's ability to plan and estimate the cost of future work. To improve the situation Network Rail set up an Activity Based Planning project. During 2015-16 the project prioritised improvements to its system for recording and reporting maintenance activity that could be implemented quickly. This was a welcome first step. The project plans to deliver further significant improvements during 2016-17.

Asset performance

Network Rail has again reduced the incidence of service-affecting asset failures this year, continuing the long-term trend. At the end of 2014-15, the Composite Reliability Index (CRI) showed an overall improvement of 7.7% for the GB network on the end of CP4 baseline, exceeding target (5.7%). This year the CRI has further improved, reaching 14.8% for the network as a whole, well above target (8.5%).



The improvement is in all areas except earthworks and telecoms. During the winter the number of earthwork failures exceeded the five-yearly average, contributing -0.7% to CRI across the GB network. In telecoms the problems that have occurred during the migration to [GSM-R](#) are gradually being resolved with the rollout of software updates, and greater effort to manage local interference problems with mobile network operators. Even so the telecoms contribution to CRI across the GB network was -0.6%.



ORBIS milestones

ORBIS stands for *Offering Rail Better Information Services*. It is an ambitious programme aimed at improving asset management capability through improved information management. It involves adopting consistent data specifications, providing simpler mobile data capture tools, replacing outdated asset information systems, and providing improved decision support tools. For CP5 we set specific milestones to help ensure it delivers all the benefits expected.

At the end of 2015-6 all milestones had been achieved on schedule, including the national rollout of the *Electrification & Plant Decision Support Tool* in December 2015. The next milestone is the adoption of the Ellipse asset management system for civils structures in place of the existing Civils Asset Register and Reporting System (CARRS). This was due in June 2016. However Network Rail has indicated that delays in upgrading core systems have impacted delivery timescales and it is now putting together a revised delivery plan for this output.

Electrification asset measurement fleet

During the year Network Rail took steps to reinstate the measurement fleet which had been out of service for some months. It is also undertaking a project to develop the capabilities of the fleet to ensure sufficient resilience in the systems and equipment and to meet the increased demand for monitoring with the expansion of the electrified network.

In addition, Network Rail has enhanced its standards and assurance regime to mitigate future poor performance/non-availability of the fleet to ensure compliance is managed effectively. The company is in the process of developing robust plans for those areas of the network that cannot effectively be covered by the fleet.

Asset management capability

For this control period we set Network Rail the target of achieving excellence in asset management capability in time for its Strategic Business Plan for CP6 due for publication in 2017. At the beginning of CP5 we commissioned a review of Network Rail's asset management capability improvement programme. The review concluded that the programme would enable Network Rail to achieve excellence when implemented. We have now initiated an interim assessment of Network Rail's capability, to provide assurance that the programme is delivering the improvements expected. The assessment will use the same [AMEM](#) methodology we have used previously, which is based on the ISO55000 standard for asset management, and will report in September.

Developing the network



Licence breach and re-plan of CP5

As reported in the last monitor, Network Rail missed a number of regulated outputs for projects in the first year of the control period, and we found the company in breach of its licence in October 2015. In its response, Network Rail set out the steps it was taking to improve its capability in the planning and delivery of enhancement projects. We have subsequently accepted that the company is taking reasonably practicable steps to remedy the breach through its *Enhancements Improvement Programme (EIP)* (see below).

It is in this context that Network Rail conducted a re-planning exercise to establish a new baseline of projects that were both deliverable and affordable within CP5 (“the Hendy review”).

The Hendy review concluded in November 2015. It aimed to:

- take a view on the deliverability and affordability of Government infrastructure schemes with due consideration to franchise and commercial commitments;
- reflect more achievable completion dates that Network Rail had a higher confidence of being able to deliver; and
- represent an affordable portfolio of projects within the funding that Government had available for CP5.

The review resulted in a revised Enhancements Delivery Plan (EDP⁴), which we established in March 2016 as representing Network Rail’s new regulated outputs for the remainder of the control period.

As expected, the new EDP has substantially re-cast project dates, with all projects taking longer to develop, and the majority of projects being completed later in the control period. A minority of projects span into CP6.

⁴ The Department for Transport has consulted separately on the Hendy review and is currently considering its response. Any subsequent changes resulting from its consultation will be subject to future change control

This is consistent with the findings of our 2015 licence breach investigation, which found that previous project dates did not reflect all known risks. Therefore by establishing this new EDP as Network Rail's regulatory commitments, we have accepted that the re-planned CP5 milestones that are now planned later in the control period will not be treated as missed regulated outputs, because they are illustrations of the weaknesses that led to the licence breach decision itself.

Therefore, in terms of measuring whether Network Rail delivered its regulated outputs in 2015-16, we are using the EDP that was in place between March 2015 and June 2015 (prior to the re-planning exercise). In future monitors we will report against the March 2016 EDP, taking into account changes as agreed through the usual regulatory change control process.

Delivery Progress

There were several notable project completions in the full year to March 2016. These are listed in the table below.

Redevelopment work at Reading and Birmingham New Street stations in particular has brought significant benefit to passengers.

EDP Ref	Project Name	Milestone Date
CR002	Reading Station Area Redevelopment- Key Output 4:	April 2015
CR005	NW Electrification Phase 2c configuration state 5	April 2015
S005	Balcombe to Copyhold Bi-directional Signalling Upgrade	April 2015
F006	Strategic Freight Network (SFN) – Peak Forest	August 2015
LNW007	Chiltern Main Line Train Lengthening – High Wycombe	August 2015
CR002	Reading Station Area Redevelopment: Non Key Output 4	Sept 2015
LNW005	Birmingham New Street Gateway Project	Sept 2015
K003	East Kent Resignalling Phase 2: Enhancements	Feb 2016
LNE002b	Intercity Express Programme (IEP) – ECML Upgrade Phase 1 – Corey's Mill to Welwyn	March 2016

During the same period, Network Rail missed one project completion milestone: Westerleigh to Barnt Green linespeed improvement project. This is a project that was already partially commissioned in December 2012 to introduce a new timetable with improved journey times. Outstanding work has yet to be completed and this has delayed the benefits of improved timetable resilience for Cross Country trains. The outstanding work includes signalling commissioning, track renewals and level crossing works. We believe the concerns identified in this project should be dealt with through the EIP improvements explained in more detail below.

Projects at risk

As explained above the Hendy Review has re-planned many project dates to be more achievable. There are however still delivery and cost challenges as reported in the overview section of this monitor.

The most high profile project at risk remains the electrification of the Great Western mainline although there are now positive signs – in particular during 2015-16, Network Rail has made improvements to its productivity rates. However the company still faces a substantial challenge to maintain consistent progress with all the activities needed to commission the overhead electrification system, particularly around complex locations and areas where local consents are needed. In addition there is the schedule risk around the successful testing and commissioning of the novel ‘series 1’ overhead line

system between Tilehurst and Didcot in time for [IEP](#) testing on 30 September 2016.

The achievement of this milestone will be the clearest indicator of whether or not there is confidence around Network Rail’s ability to meet the re-planned regulated outputs for the first stage of route electrification to Swindon (Wootton Bassett) by December 2017.

Enhancements Improvement Programme (EIP)

As mentioned above we have accepted that Network Rail was taking reasonably practicable steps to remedy the earlier licence breach through its *Enhancements Improvement Programme (EIP)*. The EIP addresses the root causes of the weaknesses that led to the breach and we are holding Network Rail to account for the delivery of the improvements that the plan is intended to deliver.

Network Rail baselined the EIP in October 2015. It has since made good progress with each of the improvement initiatives, summarised below.

1. Clienting and governing the enhancement portfolio

Network Rail and DFT have jointly established a memorandum of understanding which clarifies accountabilities and governance structures for rail investment. This provides greater clarity around roles and gives structure to the

previously informal relationship with DfT – a significant point given DfT's range of responsibilities.

2. Project sponsorship and transition management

Network Rail is developing a structured approach to improving the competency of project sponsors across the organisation. Training academy modules have been developed that are now underway.

3. Cost planning, estimating risk and value management

Network Rail's cost planning improvement plan is now achieving improved consistency and capability in its cost estimating and risk evaluation methodology for all projects. Training and recruitment is now underway to spread the application of best practice in these areas.

4. Project governance and gateway assurance.

Network Rail has established a process to peer-review projects at set points in their lifecycles. This is in addition to the company's project investment 'stage gates' that occur at different project lifecycle stages. The aim is to provide additional assurance of the likelihood that projects will achieve their requirements on time and to budget. 36 such peer reviews are scheduled in 2016-17.

5. Project and portfolio monitoring

Network Rail has improved reporting for major schemes by implementing earned value (good practice project reporting) for most major schemes in delivery. The company has produced scorecards for 21 enhancement programmes based on measures identified as key to the business. This helps to drive consistency of information reported through all levels.

6. Project and portfolio delivery capability

Network Rail has taken early steps in changing the organisation of central development teams after mapping their purpose against its top risks.

7. Safety by design

A strategy and policy for implementing safety by design across the business has been drafted with a steering group established and a communications plan created.

The challenge for Network Rail is now to embed the new approaches into its business, so that the intended benefits are realised. Some activities will take time, for example assessing staff competency against new skills frameworks and identifying training and recruitment needs. Many will also require cultural and behavioural change so that improved practices become part of "business as usual". With this in mind we have asked Network Rail to develop and share its plan on how and when it will check that intended improvements have been achieved across the business.

Incentivising and measuring efficient project delivery

In our CP5 Final Determination, we said we would not be able to set efficient expenditure levels for Network Rail's enhancements because too many projects were not yet sufficiently developed or defined. We had to assume a level of expenditure in the Final Determination, until such time that it could be adjusted (through the [Enhancements Costs Adjustment Mechanism \(ECAM\)](#) process) when the investment portfolio was better developed.

In practice, there were significant delays to Network Rail's development of projects, together with some substantial upward adjustments of forecast costs.

This is best illustrated by the delivery delays and consequential cost escalation on the Great Western Electrification Programme (GWEP), where outturn costs are already substantially greater than the efficient baseline set through the ECAM process – rendering the incentive mechanism ineffective for the CP5 enhancements portfolio.

Therefore the need to conclude ECAM and adjust the portfolio funding (to create a more effective incentive for the remainder of CP5) is less relevant. This means that the incentive mechanism will not be applied as originally intended through ECAM. We are currently discussing with DfT ending the ECAM process in England & Wales but will only do so once an alternative mechanism is in place for determining the efficient costs of projects. This ties in with our more general approach to Network Rail's efficiency discussed more fully below. There remains however a strong imperative for Network Rail to deliver the CP5 projects in the EDP within the revised level of funding, which remains a challenging target.

Expenditure and finance



Overall financial performance

We consider Network Rail's financial performance in two different ways; firstly by providing a simple comparison of spend against its own budget and secondly by considering our regulatory performance measure.

Financial performance against budget

Table 1: Income and expenditure for England & Wales in 2015-16 – a simple comparison of all Network Rail income and expenditure

£m	2015-16 Full Year		
	Budget	Actual	Variance b/(w)
Turnover	5,895	5,933	38
Schedule 4	-228	-229	-1
Schedule 8	-124	-105	19
Operations	-477	-489	-12
Support ⁵	-928	-877	51
Maintenance	-1,045	-1,134	-89
Capex - Renewals	-3,060	-2,769	291
Capex – Enhancements	-3,445	-3,246	199
Financing Costs	-1,495	-1,274	221
	-4,907	-4,190	718

⁵ This includes traction electricity, industry costs and business rates.

In 2015-16, Network Rail underspent its own net £4,907m England and Wales budget by £718m. This was largely because of:

- higher maintenance costs (£89m) arising from the difficulty of achieving efficiency targets and over optimistic pay award assumptions;
- lower renewals costs of £291m. Lower volumes have been delivered than expected (the value of the renewals that have not been delivered is £677m) and this work will be delivered at a later date. Taking this into account the cost of the work Network Rail has done was £386m higher than expected (adjusted to £97m in line with the 25% sharing mechanism⁶). This is largely due to supply chain issues, delays in programmes, contractor performance, more work than expected to maintain its assets in an appropriate condition, in some areas lower volumes of work than expected so higher unit rates and the effect of severe weather. It has also not delivered its planned efficiency initiatives;

⁶ Network Rail generally retains 25% of any out/underperformance of renewals and enhancements cost. This is consistent with our RAB roll forward policy. So for renewals, the amount included in financial performance is £97m = £386m x 25%.

- lower enhancements costs of £199m. Lower volumes have been delivered than expected (this work is valued at £266m⁷) and will be delivered at a later date. The cost of the work Network Rail has delivered was £67m higher than expected. This was largely due to an overspend of £95m on Crossrail because of delays, extra station works and more signalling contractor works; and
- £221m saved in financing costs, largely due to lower than expected inflation.

The scale of these variances suggests that the budget for 2015-16 was probably too optimistic.

Overall regulatory financial performance

We also use our regulatory performance measure to monitor Network Rail's performance against our CP5 Final

⁷ The interpretation of this variance now reflects the recommendations of the Henty Report (November 2015) and the subsequent Enhancement Delivery Plan (EDP), which changed the baseline of the calculation of financial performance reflecting the increased anticipated final costs (AFC) for many enhancement projects. This has significantly reduced underperformance because adopting the Henty baseline has changed the recognition of financial underperformance (from £534m to £67m) and, of the remaining budget variance, which is classified as FPM neutral (from £733m to £266m). But the overall enhancement underspend remains £199m.

Determination⁸. The steps in our calculation are shown in Table 2 below. This measure provides a better calculation of Network Rail's performance because it:

- excludes certain types of income and expenditure that are not as controllable by Network Rail. These include network grant, fixed track access charges, traction electricity income and costs and business rates;
- ensures that Network Rail does not benefit by simply delaying work to a later date as it is just a timing difference, i.e. the work still needs to be done in the future;
- we adjust the out/under performance on renewals and enhancements to be consistent with our RAB roll forward policy. We do this by limiting the financial reward/penalty to generally 25% of the under/overperformance. For example in Table 2 below, the gross underperformance on renewals is £386m, so we limit it to 25% by deducting 75% in the line "Capex adjustment - Renewals", i.e. £290m = £386m x 75%; and
- Network Rail should not benefit by not delivering its outputs, so we adjust for the value of the output not delivered.

⁸ The financial measures in Network Rail's performance related pay scorecards are also based on our regulatory financial performance measure.

Financial performance for the year was £164m adverse to Network Rail's own budget⁹. But Network Rail had already budgeted its performance to be £334m worse than our determination.

Network Rail has also included a £129m estimate of an anticipated ORR adjustment for its underdelivery of the PPM and CaSL train performance regulatory output requirements in 2015-16¹⁰. In total this means that Network Rail underperformed the regulatory financial performance measure by £627m in 2015-16.

The total value of volumes that have not been delivered in 2015-16 but will be delivered at a later date is £981m (£677m on renewals, £266m on enhancements and £38m on associated schedules 4 and 8 compensation payments for track possessions and delays).

⁹ The RAB roll forward Capex adjustments for Renewals and Enhancements are £290m and £42m. Therefore, the total financial underperformance compared to Network Rail's budget before the RAB roll forward adjustments is £496m (£164m + £290m + £42m).

¹⁰ We review this and other issues in our annual finance and efficiency assessment, so the final adjustment may be different.

Table 2: Income and expenditure applicable for FPM for England & Wales in 2015-16 – a comparison of the income and expenditure used in our FPM calculation

£m	2015-16				
	Budget	Actual	Variance b/(w)	FPM neutral incl. timing b/(w)	(Under)/out performance
Turnover	1,518	1,553	35	-2	37
Schedule 4	-228	-229	-1	20	-21
Schedule 8	-124	-105	19	18	1
Operations	-477	-489	-12	0	-12
Support	-493	-443	50	13	37
Maintenance	-1,045	-1,134	-89	-4	-85
Capex - Renewals	-3,060	-2,769	291	677	-386
Capex adjustment - Renewals					290
Renewals net of Adjustment					-97
Capex – Enhancements	-3,445	-3,246	199	266	-67
Capex adjustment - Enhancements					42
Enhancements net of Adjustment					-25¹¹
Capex - Net Total					-122
Financial performance measure compared to Network Rail budget					-164
Less: Network Rail budget compared to PR13					-334
Less: Adjustments for missed regulatory outputs					-129
Total financial performance measure (FPM)					-627¹²

¹¹ Prior to the Hendy baseline changes to the budget, enhancements financial underperformance before the RAB roll forward adjustment would have been £534m instead of £67m, after the RAB roll forward adjustment it would have been £198m instead of £25m. This means that the financial underperformance compared to Network Rail's own budget would have been £337m and not £164m as shown above.

¹² The financial underperformance for the control period to date is -£1.1bn.

Efficiency

Network Rail is continuing to work on plans to address the problems arising from cost escalation on enhancements and underperformance on efficiency in the core business.

Network Rail needs to focus on cost efficiency and effectiveness to address the challenges set out in the regulatory settlement. It needs to do this while delivering record levels of enhancement activity, high levels of renewals activity to improve long term asset sustainability and, ultimately, performance of the network. But the cost effectiveness of renewals activity is proving particularly challenging.

Network Rail's efficiency¹³ in 2015-16 for the core business was -5.6% for England and Wales. This is largely due to the same reasons identified above for expenditure being higher than budget (after taking account of delays in the delivery of renewals volumes).

¹³ Our measure of efficiency is a simple measure of the reduction over time in support, operations, maintenance and renewals expenditure. This measure compares actual expenditure in 2015-16 with actual expenditure in 2014-15 adjusted for the level of activity undertaken. Please see next footnote for a numeric example explaining the control period to date figure.

For the control period to date its efficiency is -9.2%¹⁴. Its forecast efficiency for the whole of CP5 is 3.1%.

Network Rail's debt, RAB and borrowing

Network Rail's debt for England & Wales at 31 March 2016 is £36.6bn. This is £0.7bn better than budget largely due to lower capital expenditure and an underspend on financing costs. Compared to the PR13 determination, debt is higher by £981m (see Table 3) largely because of additional investment (approx. £0.7bn) undertaken at the end of CP4. Since then there has been additional enhancements expenditure and higher operating costs.

Table 3: Net debt and borrowings for England & Wales in 2015-16

£m	2015-16 (as at 31 March 2016)		
	PR13 Determination	Actual	Variance b/(w)
Net Debt	35,591	36,572	-981
Closing RAB	49,618	51,533	-1,915
Gearing (net debt/RAB)	71.7%	71.0%	0.7%

¹⁴ This measure compares actual expenditure in 2015-16 with actual expenditure in 2013-14 (the last year of control period 4) which was £4,266m. This expenditure was adjusted for the level of activity undertaken. Actual expenditure in 2015-16 was £4,659m. This includes (as shown in Table 1) operations (£489m), support (£877m), maintenance (£1,134m) and renewals (£2,769m) and includes a deduction of £610m for CP4 rollover costs and traction electricity, rates & industry costs. Expenditure has therefore risen by £393m (£4,659m - £4,266m). As an efficiency percentage this is -9.2% (-£393m/£4,266m).

Following the company's classification to the public sector by the Office of National Statistics (ONS), Network Rail agreed to borrow from DfT instead of issuing bonds.

The amount of new borrowing available from DfT is limited to £30.9bn across CP5 for Great Britain after this was increased by £0.7bn following the Hendy Review.

Compared to its forecast at the start of CP5, Network Rail has spent more on the renewals and enhancements work it delivered in 2014-15 and 2015-16 than it expected. It is also planning to spend more in the remainder of CP5. This means there is pressure on its borrowing facility with DfT.

Network Rail's latest business plan for England & Wales includes financial headroom of £0.2bn, i.e. it thinks it will not need to use that amount of the borrowing facility. The main financial risks to this forecast include the costs of renewals and enhancements, delivery of efficiency initiatives, interest rate movements and Network Rail achieving suitable strategies for generating additional cashflows through disposing of non-core assets and encouraging alternative funding arrangements.

As well as agreeing the maximum amount of borrowing across CP5 for Great Britain with DfT it also agrees an amount for each year. For 2015-16, Network Rail borrowed £7.5bn from DfT in line with its forecast.

Originally forecast at £8.0bn, Network Rail reduced it to £7.6bn in December 2015 and reduced it again in January 2016 to £7.5bn as the profile of the capital expenditure spend for the

year became clearer and collateral payments to counterparties were reduced compared to 2014-15.

Asset disposals

Network Rail is investigating the possibility of disposing of a number of property related assets (freight sites, light maintenance depots and the commercial estate portfolio) with the objective of raising £1.8bn in England & Wales to support the railway enhancement programme in England & Wales in line with the Hendy report. The current focus is on reviewing potential disposal structures for each portfolio to achieve the objectives of:

- protecting the safe and efficient operation of the railway;
- meeting UK Government accounting requirements;
- satisfying UK Government policy; and
- delivering value for money (VfM).

At this point, there has been no decision by Network Rail to dispose of any specific assets under this programme. The review being undertaken includes continuing Network Rail ownership as well as various sale options. During September to December, the Network Rail Board and DfT will be considering whether or not to move into the next phase of work in terms of progressing any potential disposals.

There has been some discussion of the future options for freight sites with the Rail Freight Group but less engagement with TOCs and freight operating companies (FOCs). Network Rail will seek to strengthen its stakeholder engagement with TOCs, FOCs and with other industry parties as well as potential interested investors.

Network Rail is also, along with DfT, looking at better management options for stations and specifically options for its 18 [Managed Stations](#). Again, NR has made no decision to sell these assets. Network Rail is currently in the design phase looking at the optimum long term ownership models for stations with the key objectives of improving the passenger experience, unlocking capacity and supporting regeneration of local station neighbourhoods and localities and this may include the introduction of third party capital. Network Rail is aiming to complete this work and present it to its Board in December 2016. The company has also been looking at options for disposing of some or all of its electrical distribution and traction power assets, but again no decision to sell these assets has been made.

Under its network licence, Network Rail will need ORR's specific consent for disposing of certain assets and ORR will be considering the regulatory implications of all these issues at the appropriate time.

Route level expenditure and financial performance (excluding central unit cost allocations)

This section provides a simple comparison of route level expenditure compared to Network Rail's budget in the year 2015-16 and in Table 5 a route level comparison of financial performance. The data is not normalised to reflect differences in characteristics of routes, such as length of track, electrification, geography and types of services. Therefore this analysis cannot be used to draw conclusions about the relative performance of the routes. But it can highlight particular issues at a route level or the differing impact of challenges faced across Network Rail.

Central unit costs, such as various HQ costs and some property, are allocated to the routes. In 2015-16, these central costs of £1.5bn came to approximately 16% of total route expenditure. These include traction electricity costs which are recovered through income, business rates & other industry costs as well as centrally managed capital projects such as IT, ORBIS and Plant & Machinery. Table 4 below provides a breakdown of route level expenditure against budget for operations, support, maintenance, renewals and enhancements.

Table 4: Route level expenditure against budget

£m	Operations	Support	Maintenance	Renewals	Enhancements	Total
Anglia	-5	1	-4	80	18	90
LNE/EML	0	0	-13	32	58	77
LNW	-14	0	-24	4	95	61
S. East	9	3	-41	12	5	-12
Scotland	-4	0	-1	-1	-32	-38
Wales	-1	0	-1	52	-53	-3
Western	5	0	-5	-12	-63	-75
Wessex	-1	0	1	7	-22	-15
Total	-11	4	-88	174	6	85
Central Units	-1	46	-1	116	193	343
Grand Total	-12	51	-89	291	199	441

Note 1: A positive variance reflects an underspend against budget. A negative variance reflects an overspend.

Note 2: Including the variances on finance costs of £221m and on turnover, schedules 4 and 8 of £56m equals the variance of £718m in Table 1.

Note 3: The numbers in this table are before Network Rail's central business unit's allocations to routes.

Note 4: The cost variances are expressed in percentages in the charts on the following pages.

Route level expenditure against budget

The charts below show on a percentage basis the actual expenditure of each route compared to its budget.

Chart 1: Operations, support and maintenance

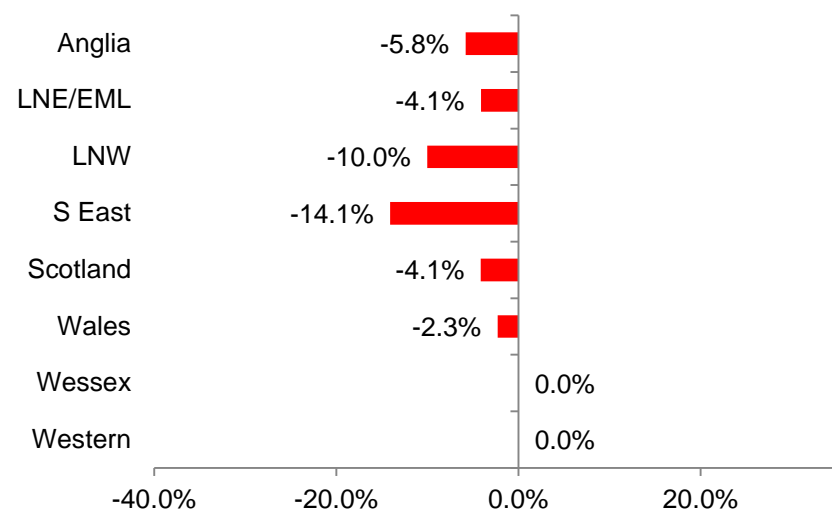
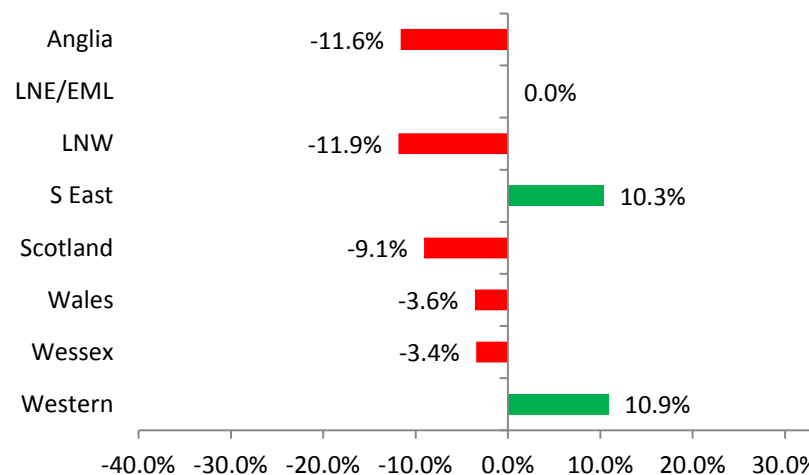


Chart 2: Operations



Network Rail has spent more than its opex budget on all routes in 2015-16, except for Western and Wessex (as shown in Table 4 and Chart 1). In proportion to the total opex cost, the significant overspends are in the South East and LNW. These were largely due to higher staff costs, efficiencies not achieved and expenditure on performance recovery initiatives.

Chart 3: Support

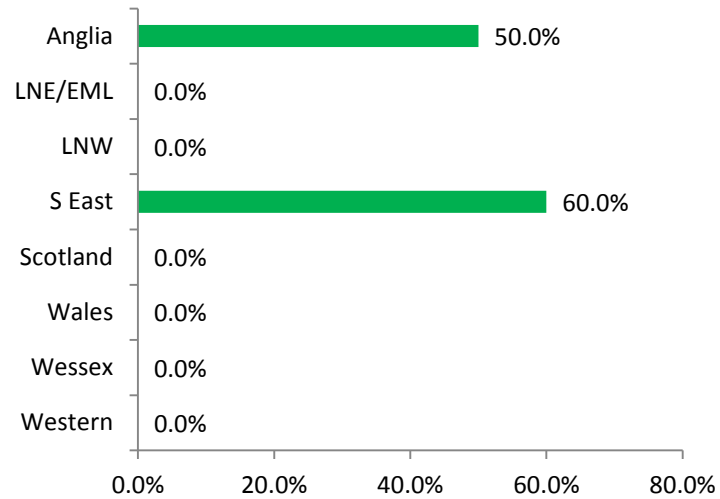


Chart 4: Maintenance

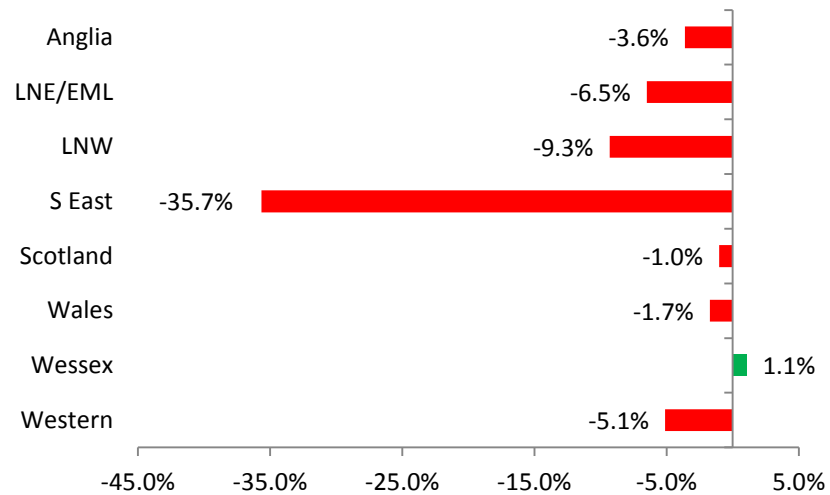


Chart 5: Renewals

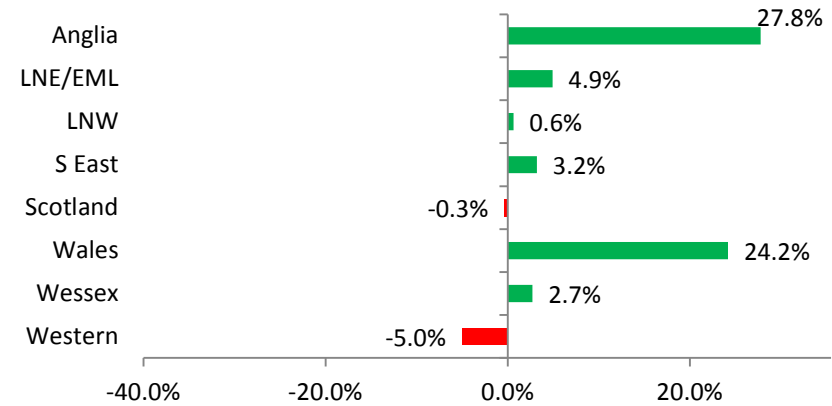


Chart 5 shows variances on renewals spend before adjusting for deferrals. As we noted in the commentary to Table 1, the total deferral was £677m, which is why most of the routes are shown as underspending in this chart. But once we have taken account of volumes not being delivered all routes in the chart are underperforming on the work done. In total this underperformance is £392m including Scotland and excluding that relating to central units.

Chart 6: Enhancements

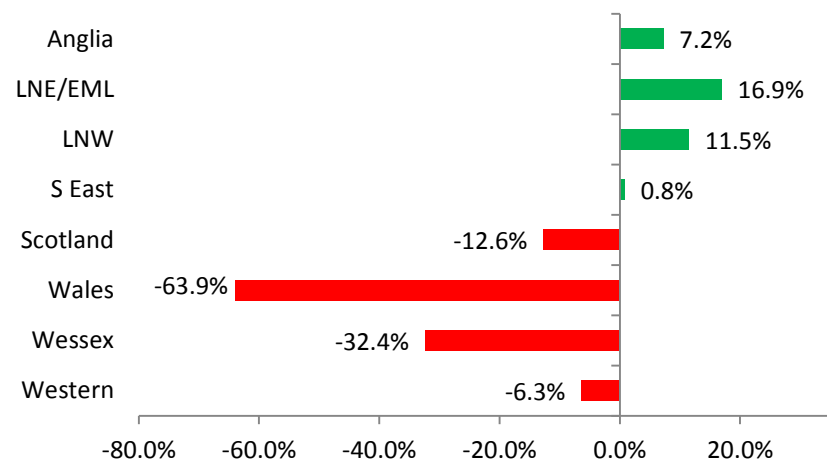


Chart 6 shows that Western is also overspending on enhancements (GWEP £77m and Crossrail £56m partially offset by delays to later years). However, the most significant overspends in proportionate terms are in Wales (£22m rollover of Welsh Valley lines electrification activity from 2014-15, £20m of work brought forward on GWEP) and Wessex (£22m acceleration from later years including the Waterloo project).

The most significant underspends are in LNE/EML and LNW largely because:

- in LNE/EML, £61m of projects were put on hold as a result of the Hendy review; and
- in LNW, there was a £51m underspend on Birmingham New Street due to a change in funding arrangements and a £44m favourable variance as Network Rail did not invest in commercial property schemes as planned.

Route level analysis of financial performance

Table 5 below is a route-level breakdown of the financial performance shown in Table 2 for all routes, i.e. this is a GB level analysis. The financial performance shown in this table is after the adjustments described on page 38 above.

Table 5: FPM - Route level cost (under)/outperformance (before allocation of central unit costs)

£m	Income variances		Cost variances	
	FPM variances (turnover, schedules 4 & 8)	FPM (under)/out performance as % of actual income	FPM variances (opex, renewals, enhancements)	FPM (under)/out performance as % of actual cost
Anglia	3.6	4.2%	-16.3	-2.4%
LNE/EML	14.5	4.9%	-32.0	-2.4%
LNW	-14.8	-4.6%	-79.6	-4.3%
S. East	-4.5	-3.1%	-48.3	-3.7%
Scotland	6.0	4.0%	-19.6	-2.9%
Wales	6.8	18.5%	-9.0	-2.3%
Western	2.7	1.8%	-21.2	-1.5%
Wessex	-7.0	-6.9%	-2.2	-0.5%
Total	7.4	0.6%	-228.3	-2.8%
Central Units	2.9	10.0%	32.1	2.5%
Grand Total	10.3	0.8%	-196.2	-2.1%

The total financial underperformance of -£186m in this table (i.e. -£196.2+£10.3m) includes Scotland underperformance (£13m in the route and £9m on Central Units) partly due to the effect of the failure of Lamington viaduct. The overall overperformance in Central Units is largely due to additional property sales only in England & Wales. Excluding Scotland, the total financial performance in the England and Wales routes including Central Units is £164m.

Table 5 shows that all routes are underperforming on costs

The most significant underperforming routes are in LNW and Western. For LNW, this is due to high expenditure on opex and renewals. Relatively high negative financial underperformance in Western is largely due to Crossrail enhancements (£25m).

There was £1.5bn of expenditure in the Central Units including traction electricity costs (which are recovered through income), business rates & other industry costs as well as centrally managed capital projects such as IT, ORBIS and Plant & Machinery. This favourable 2.5% variance has mostly been achieved through savings in corporate functions opex costs.

The railway in Wales

As for the Q1-2 Monitor, we are reporting separately on the Wales route in line with our commitment to providing information at a more disaggregated level. We believe this will provide greater clarity for the industry, customers and funders and we will continue to develop this approach.

Health and Safety

Track

Wales route has made progress in improving track geometry, which is now better overall than at the beginning of the control period. Track geometry on the busy South Wales corridor is good, in line with Network Rail's asset policy. More lightly used track elsewhere in Wales receives targeted maintenance and renewals interventions depending on asset condition and consistent with maintaining a safe railway.

Challenges for the route as a whole include:

- reduced access to the track due to enhancements work underway around Cardiff;
- maintenance train availability;
- the large proportion of low criticality, but ageing rail; and
- staff retention.

While progress is being made, further initiatives to improve management of track need to be developed and implemented.

Off-track

During the year Wales route developed a new way of prioritising the large workload to bring forward safety-critical items. The route has led the way here for Network Rail in developing a risk-based approach to the off-track work bank. Work arising from drainage inspections has now been integrated into the work bank.

Civils

Following our recent intervention, Wales route took the decision that all drainage, irrespective of the asset owner, would be managed as a system. Track and civils drainage are now managed together to ensure that the system is fit for purpose. This is a pioneering approach and Wales route is leading the way nationally on drainage asset management. The route also piloted the *MyWorkApp – Drainage* to record drainage assets and inspections.

Wales route is currently compliant with the earthworks examination standard and expects to remain so. Structures examinations were falling behind but backlogs are now being addressed and the route is working towards compliance early in 2017. Wales route has developed a *Coastal Asset Management Plan* which has won two local awards. It includes a coastal warning service to protect vulnerable coastal sites, by providing up to 36 hours warning of storm conditions which may threaten the integrity of an asset. It has been used along the North Wales corridor and coastal sections of the Cambrian Line.

Signalling

There have been incidences in the route of failure of tubular steel signal posts through corrosion. As a result Network Rail Wales, aided by ORR, developed a plan to improve inspection of these assets. This is one of a number of examples where the route has sought to work with us to drive improvements in asset management rather than waiting for formal enforcement. Improvements introduced this way generally have better buy-in and as a result achieve more significant change.

Level crossings

Against the background of our intervention at Barmouth User Worked Crossing in 2014, we inspected similar crossings on the Cambrian Line where safety of vehicle drivers depends on their sighting of on-coming trains. We found the sighting to be deficient. Prompt action by Network Rail, including the imposition of temporary speed restrictions (TSRs), meant that formal enforcement action was not required.

Operations

During the year ORR noted a significant number of operational incidents on the Newport – Shrewsbury line due to signaller error. We investigated, and drew the route's attention to the pattern. Network Rail is now working to improve signaller performance. We will be monitoring this programme and paying close attention to any further operational incidents.

The Network Rail Wales adverse weather procedure has proved effective in preparing for significant weather events, and enabling successful management of operations.

Enforcement

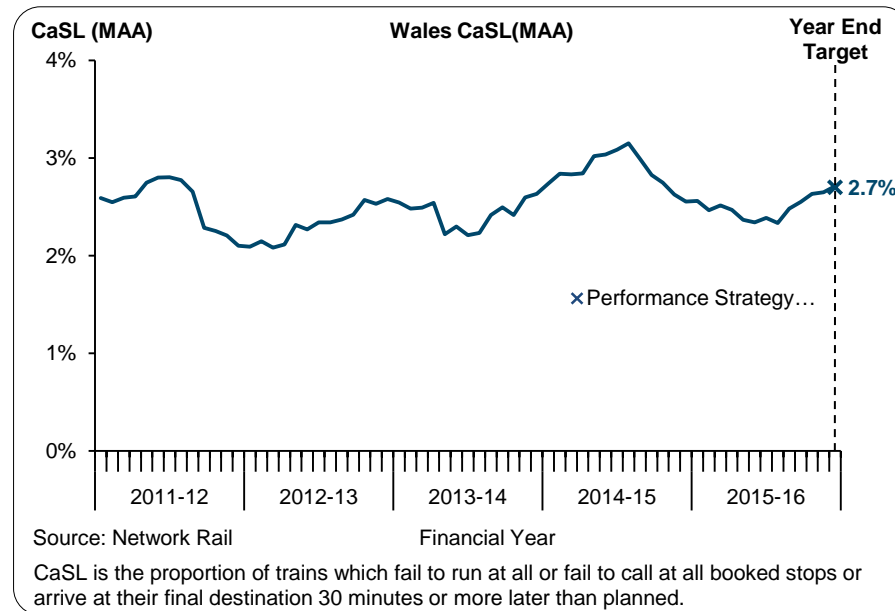
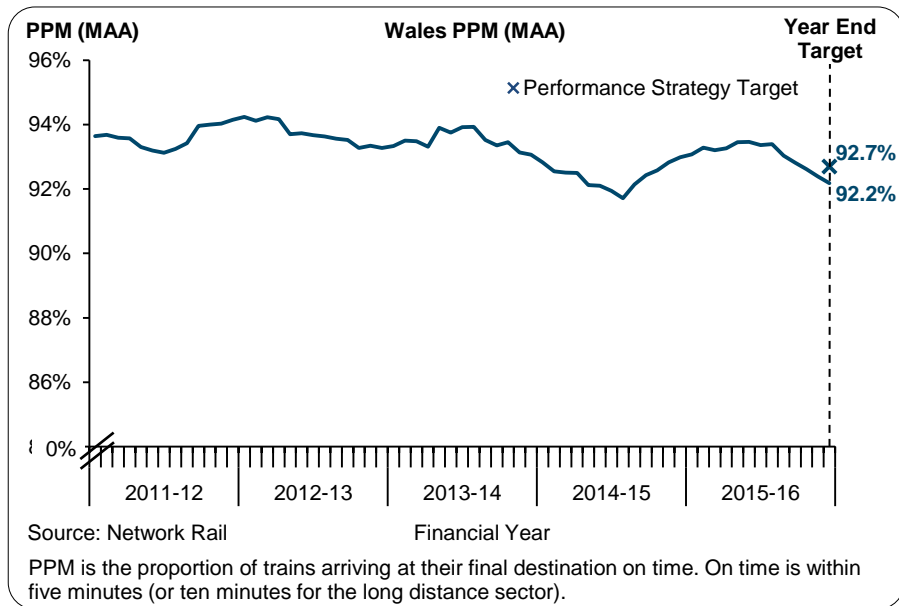
As mentioned above (see page 20) at a recent inspection at Newport depot it was noted that an MC3 Frog & Switch Grinder, weighing 110kg, was routinely lifted and carried by just two people on and to site. This was an unacceptably heavy load for two people, and warranted the Prohibition Notice which was served. Many other examples of heavy lifts were identified, leading to current ORR action at national level.

Workforce safety

ORR carried out inspections of Network Rail maintenance and Infrastructure Projects (IP) depots in Wales. General standards at the smaller route depots were good, but Crindau IP depot required significant attention, particularly with respect to the unsafe storage of gas cylinders, untidiness of walking routes and lack of management of redundant electrical cables.

Train performance

Arriva Trains Wales' (ATW's) Public Performance Measure (PPM) Moving Annual Average (MAA) was 92.2% at the end of 2015-16, 0.5pp worse than the performance strategy target. CaSL MAA was 2.7%, achieving the performance strategy target.



For England and Wales, we agreed we would take an input-based approach to monitoring PPM and CaSL during the first two years of the control period. We have monitored (and continue to monitor) delivery of Network Rail's CP5 Performance Plan.

Although behind target for PPM and CaSL, performance for Arriva Trains Wales (ATW) was within the thresholds specified in the CP5 Final Determination. Feedback we have received from ATW suggests that there is a constructive working level relationship with Network Rail.

Asset management

Asset performance has deteriorated in Wales during the year with the Composite Reliability Index (CRI) falling to -5.4% from the end of CP4 baseline, against a target improvement of 6.2%. Track reliability has deteriorated markedly continuing the trend from last year, and now contributes -12.9% to CRI. Points and signalling have also deteriorated, contributing -2.4% and -4.8% to CRI respectively. In telecoms, the problems that have occurred during the migration to GSM-R are gradually being resolved with the rollout of software updates, and greater effort to manage local interference problems with mobile network operators, and the telecoms contribution to CRI in Wales has recovered to -4.1%.

Developing the network

Work has continued to deliver the Cardiff Area Signalling Renewal (CASR) scheme. Significant works took place over Easter 2015 and continued at Cardiff Central itself. After many previous delays, final commissioning is planned over the Christmas 2016 holiday although the new platform 8 will not be available for use until January 2017.

The project to modernise Cardiff's Valley lines is currently paused while options are being considered with the Welsh Government Transport Company. It is likely that the solution will form part of its Metro scheme which could drive different infrastructure requirements. The enhancements delivery plan

(EDP) currently shows the Valley lines electrification milestones as 'tbc' reflecting this uncertainty.

Electrification of the South Wales main line has seen its milestones re-planned as part of the Hendy review. The new EDP shows electrified infrastructure to Cardiff being authorised by December 2018. Work to electrify the line between Cardiff and Swansea will be completed in CP6 although bi-mode IEP trains could be used in the interim.

A Network Rail review of its performance on the North-South Wales journey time project (funded in cash by the Welsh Government) has identified significant issues that have affected delivery. We expect that these issues (principally governance, sponsorship and project planning) will be addressed by Network Rail as part of its *Enhancements Improvement Programme*, and we will be checking that improvements are made for future Welsh projects.

The *Welsh Route Study* was published in March 2016. It sets out a strategic vision for railways in Wales and the choices for funders over the medium term to meet capacity and connectivity challenges.

Expenditure and financial performance

Table 1: Income and expenditure for Wales in 2015-16 – a simple comparison of all Network Rail income and expenditure

£m	2015-16		
	Budget	Actual	Variance b/(w)
Turnover	332	329	-3
Schedule 4	-15	-6	9
Schedule 8	-2	-1	2
Operations	-29	-30	-1
Support ¹⁵	-33	-31	2
Maintenance	-69	-72	-3
Capex - Renewals	-233	-172	61
Capex - PR13 Enhancements	-84	-135	-51
Financing costs	-82	-70	12
	-215	-188	27

In 2015-16, Network Rail underspent its net £215m Wales budget by £27m (see Table 1). This is largely due to:

- lower renewals costs of £61m. Lower volumes have been delivered than expected (the value of the renewals that were not delivered was £88m) and this work will be delivered at a later date. Taking this into account, the cost of the work Network Rail has done was £27m higher than expected. This is largely due to supply chain issues, contractor performance, delays in programmes, lower volumes than expected which did not lead to lower costs and the effect of severe

¹⁵ This includes traction electricity, industry costs and business rates.

weather. It has also not delivered its planned efficiency initiatives;

- higher enhancement costs of £51m¹⁶. These higher costs were largely on GWEP and Welsh Valley Lines electrification, largely due to work brought forward offset by some work being delayed. The cost of the work done was in line with Network Rail's budget; and
- £12m saved in financing costs, largely due to lower than expected inflation.

Regulatory financial performance

Financial performance for the year was £3m adverse to Network Rail's own budget (see Table 2 below). But Network Rail had already budgeted its performance to be £14m worse than our determination.

Network Rail also included a £1m estimate of an anticipated ORR adjustment for missed regulatory outputs in 2015-16¹⁷. In total this means that Network Rail underperformed the regulatory financial measure by £18m in 2015-16. The financial underperformance on renewals is due mainly to an increased estimate of the cost of the CASR project (£25m) project costs.

¹⁶ The effect of the recommendations of the Hendy Report (November 2015) and the subsequent Enhancements Delivery Plan (EDP) has not changed the calculation of financial performance in Wales but it has changed the calculation of the value of the timing difference to the budget.

¹⁷ We review this and other issues in our annual finance and efficiency assessment, so the final adjustment may be different.

Table 2: Income and expenditure applicable for FPM for Wales in 2015-16 – a comparison of the income and expenditure used in our FPM calculation

£m	2015-16				
	Budget	Actual	Variance b/(w)	FPM neutral incl. timing b/(w)	(Under)/out performance
Turnover	45	43	-2	0	-2
Schedule 4	-15	-6	9	3	6
Schedule 8	-2	-1	1	0	1
Operations	-29	-30	-1	0	-1
Support	-23	-22	1	0	1
Maintenance	-69	-72	-3	-2	-1
Rates & Industry Costs	-13	-13	0	0	0
Capex - Renewals	-233	-172	61	88	-27
Capex adjustment - Renewals					20
Renewals net of Adjustment					-7
Capex - PR13 Enhancements	-84	-135	-51	-51	0
Capex adjustment - Enhancements					0
PR13 Enhancements net of Adjustment					0
Capex - Net Total					-7
Financial performance measure compared to Network Rail budget					-3
Less: Network Rail budget compared to PR13					-14
Less: Adjustments for missed regulatory outputs					-1
Total financial performance measure (FPM)					-18

Efficiency

Network Rail is continuing to work on plans to address the problems arising from cost escalation on enhancements and underperformance on efficiency in the core business

Network Rail needs to focus on cost efficiency and effectiveness to address the challenges set out in the regulatory settlement. It needs to do this while delivering record levels of enhancement activity, high levels of renewals activity to improve long term asset sustainability and, ultimately, performance of the network. But the cost effectiveness of renewals activity is proving particularly challenging.

Network Rail's efficiency in its core business in 2015-16 was -20.1% for Wales. This is largely due to the same reasons identified above for expenditure being higher than budget (after taking account of delays in the delivery of renewals volumes).

For the control period to date its efficiency is -28.9%. Its forecast efficiency for the whole of CP5 is 2.5%.

Network Rail's debt, RAB and borrowing

Network Rail's debt allocated to Wales at 31 March 2016 was £1,954m, which is in line with budget. The £134m variance to the determination is due to lower capital expenditure in 2014-15 and 2015-16 than had been assumed in the PR13 financial determination.

For similar reasons, its [Regulatory Asset Base \(RAB\)](#) at 31 March 2016 of £2,872m is £57m lower than our determination and its gearing of 68.0% is 3.3 percentage points better than our determination.

Table 3: Net debt and borrowings for Wales in 2015-16

£m	2015-16 (as at 31 March 2016)		
	PR13 Determination	Actual	Variance b/(w)
Net Debt	2,088	1,954	134
Closing RAB	2,929	2,872	57
Gearing (net debt/RAB)	71.3%	68.0%	3.3%

As we mention in the England & Wales section, following the Hendy review, Network Rail is investigating the possibility of disposing of a number of property related assets with the objective of raising £1.8bn in funds to support the railway enhancement programme in line with the Hendy report. Network Rail is also, along with DfT, considering better management options for stations and specifically options for its 18 managed stations as well as options for disposing of some or all of its electrical distribution and traction power assets.

At this point there has been no decision by Network Rail to dispose of any specific assets under this programme and during September to December, the Network Rail Board and DfT will be considering whether or not to move into the next phase of work in terms of progressing any potential disposals.

Under its network licence, Network Rail will need ORR's specific consent for disposing of certain assets and ORR will be considering the regulatory implications of all these issues at the appropriate time. This will include any effect on Wales.

As the table shows Network Rail is overspending on enhancements compared to budget mainly due to GWEP (£30m) and Welsh valley lines electrification (£8m).

Expenditure (excluding central unit cost allocations)

Central unit costs, such as various HQ costs and some property, are allocated to the routes. In 2015-16, these central costs of £1.5bn in Great Britain came to approximately 16% of the total route expenditure. These include traction electricity costs (though not for Wales) which are recovered through income, business rates & other industry costs as well as centrally managed capital projects such as IT, ORBIS and Plant & Machinery.

Earlier tables show figures after these allocations. But to be more comparable with other routes Table 4 looks at Wales' expenditure compared to Network Rail's budget before the allocation of central unit costs.

Table 4: Wales Expenditure v Budget - before allocation of central unit costs 2015-16

£m	Budget	Actuals	Variance b/(w)	Var/budget
Operations	28	29	-1	-3.6%
Support	2	2	0	0.0%
Maintenance	58	59	-1	-1.7%
Renewals	215	163	52	24.2%
Enhancements	83	135	-53	-63.9%

Rheilffyrdd Cymru

Wrth fonitro chwarteri 1 a 2 byddwn ni'n cyflwyno adroddiad ar rwydwaith Cymru ar wahân, yn unol â'n hymrwymiad i beidio â darparu ein holl wybodaeth gyda'i gilydd. Rydym ni o'r farn y bydd hyn yn rhoi gwybodaeth fwy clir i'r diwydiant, i'r cwsmeriaid a'r cyrff ariannu a byddwn ni'n parhau i ddatblygu'r dull hwn o weithio.

Iechyd a Diogelwch

Y traciau

Mae rhwydwaith Cymru wedi gwneud cynnydd yn gwella geometreg y trac sydd erbyn hyn yn well ar y cyfan na'r hyn yr oedd ar ddechrau'r cyfnod rheoli. Mae geometreg trac coridor prysur de Cymru yn dda ac yn cyd-fynd â pholisi asedau Network Rail. Mae traciau eraill llai prysur yng Nghymru yn cael eu cynnal a'u cadw yn ogystal â'u hadnewyddu yn ôl eu cyflwr ac yn unol â'r hyn sydd angen ei wneud i gadw'r rheilffyrdd yn ddiogel.

Mae problemau rhwydwaith ar y cyfan yn cynnwys:

- llai o fynediad i'r trac oherwydd gwaith gwella o amgylch Caerdydd;
- pa un ai ydy trenau cynnal a chadw ar gael;
- y nifer fawr o reilffyrdd sy'n heneiddio ond sydd ddim mewn cyflwr difrifol; a
- ceisio dal gafael ar staff.

Er bod pethau'n datblygu, mae angen cymryd camau pellach i wella a datblygu'r gwaith o rheoli'r traciau.

Oddi ar y trac

Yn ystod y flwyddyn bu i rwydwaith Cymru ddatblygu ffordd newydd o flaenoriaethu ei lwyth gwaith enfawr er mwyn medru rhoi sylw i faterion sy'n hanfodol er lles diogelwch. Mae'r rhwydwaith wedi gosod esiampl ar gyfer Network Rail wrth iddo ddatblygu dull sy'n canolbwyntio ar risgiau gwaith oddi ar y trac. Mae gwaith sy'n codi o arolygiadau draeniau bellach wedi dod yn rhan o'r gwaith hwn.

Gwaith peirianeg sifil

Ar ôl inni ymyrryd yng ngwaith y rhwydwaith yn ddiweddar penderfynodd rhwydwaith Cymru reoli'r holl ddraeniau fel system, waeth pwy ydy perchennog yr asedau. Mae draeniau trac a draeniau sifil bellach yn cael eu rheoli gyda'i gilydd er mwyn sicrhau bod y system yn gweithio fel y dylai. Mae hwn yn ddull arloesol o weithio ac mae rhwydwaith Cymru yn gosod esiampl i weddill Prydain ar sut i reoli draeniau. Bu i'r rhwydwaith hefyd roi'r ap MyWorkApp - Drainage ar brawf er mwyn cofnodi draeniau ac arolygiadau.

Ar hyn o bryd mae rhwydwaith Cymru yn cydymffurfio â'r safon archwilio gwaith cloddio ac mae disgwyl y bydd hyn yn parhau. Roedd archwiliadau is-strwythurol ar ei hôl hi ond mae'r rhain bellach yn cael sylw ac mae'r rhwydwaith yn anelu i gydymffurfio â'r gofynion sydd arno erbyn dechrau 2017. Mae rhwydwaith Cymru wedi datblygu Cynllun Rheoli Asedau

Arfordirol sydd wedi ennill dwy wobwr leol. Mae'r Cynllun yn cynnwys gwasanaeth rhybuddio ar yr arfordir er mwyn gwarchod safleoedd arfordirol bregus trwy roi rhybudd 36 awr o flaen llaw o storm fyddai'n gallu peryglu cyflwr unrhyw ased. Mae'r Cynllun wedi defnyddio hyn ar hyd llinell gogledd Cymru ac adrannau arfordirol llinell y Cambrian.

Arwyddion

Mae achosion wedi bod ar y rhwydwaith lle mae arwyddion pyst tiwb dur wedi methu oherwydd rhwd. O ganlyniad i hyn datblygodd Network Rail Cymru, gyda chymorth y Swyddfa Rheilffyrdd a Ffyrdd, gynllun i wella'r gwaith o arolygu'r asedau hyn. Dyma un o'r sawl enghraifft lle mae'r rhwydwaith wedi gweithio gyda ni er mwyn gwella'r ffordd y caiff asedau eu rheoli yn hytrach nac aros am orfodaeth ffurfiol i wneud hyn. Mae gwneud gwelliannau yn y modd hwn gan amlaf yn fwy effeithiol ac o ganlyniad mae'n creu mwy o newid arwyddocaol.

Croesfannau rheilffordd

Ar ôl inni ymyrryd gyda Chroesfan Hunanddefnydd Abermaw yn 2014 bu inni arolygu croesfannau tebyg ar linell y Cambrian lle mae diogelwch y gyrwyr yn dibynnu ar faint maen nhw'n gallu gweld y trenau sy'n dod i'w cyfeiriad. Bu inni ddarganfod bod y gyrrwyr yn methu â gweld y trenau'n hollol glir. Aeth Network Rail i'r afael â hyn yn syth, gan gynnwys gosod Cyfyngiad Cyflymder Dros Dro. Roedd hyn yn golygu nad oedd angen gorfodaeth ffurfiol i ymdrin â'r gwaith.

Gweithredu

Yn ystod y flwyddyn bu i'r Swyddfa Rheilffyrdd a Ffyrdd nodi nifer sylweddol o broblemau gweithredol ar y llinell o Casnewydd i'r Amwythig oherwydd camgymeriadau arwyddion. Bu inni ymchwilio i hyn a thynnu sylw'r rhwydwaith at batrwm y camgymeriadau. Mae Network Rail bellach yn ceisio gwella perfformiad arwyddwyr. Byddwn ni'n monitro'r cynllun hwn ac yn edrych yn ofalus ar unrhyw broblemau gweithredol eraill.

Mae gweithdrefn tywydd gwael Network Rail Cymru wedi bod yn effeithiol wrth baratoi ar gyfer tywydd garw a galluogi gwaith rheoli llwyddiannus.

Gorfodi

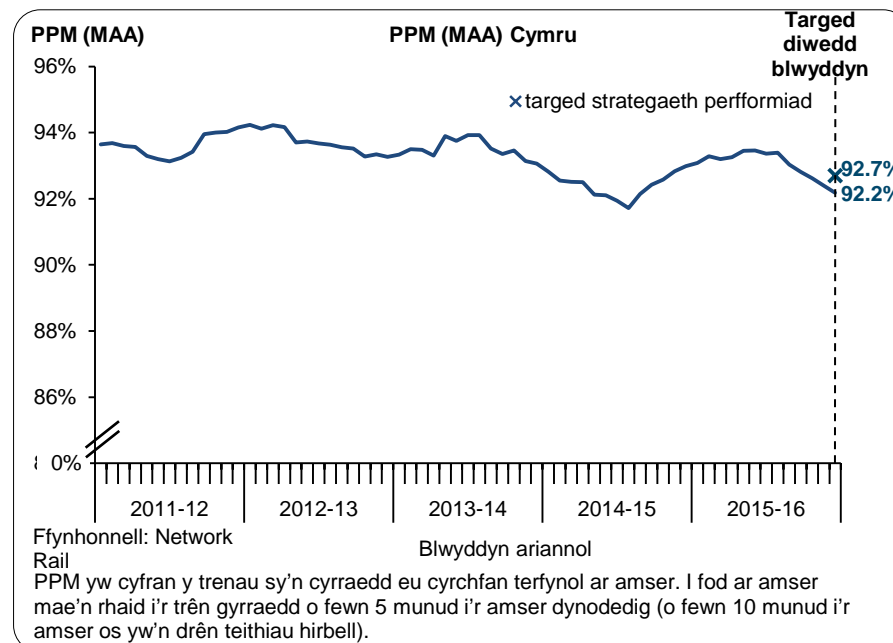
Fel sydd wedi ei nodi uchod (tudalen 20) mewn arolwg diweddar yng ngorsaf Casnewydd bu inni nodi bod dau berson yn unig yn codi ac yn cario peiriant llifanu MC3 Frog & Switch, sy'n pwysu 110cg, yn rheolaidd i'r safle ac ar y safle. Roedd hyn yn llwyth annerbyniol o drwm i ddau berson ac felly bu inni gyflwyno Hysbysiad Gwahardd. Bu inni ddod ar draws sawl enghraifft arall lle'r oedd pobl yn codi pwysau trwm a bu i hyn arwain at y Swyddfa Rheilffyrdd a Ffyrdd godi'r archos ar lefel cenedlaethol.

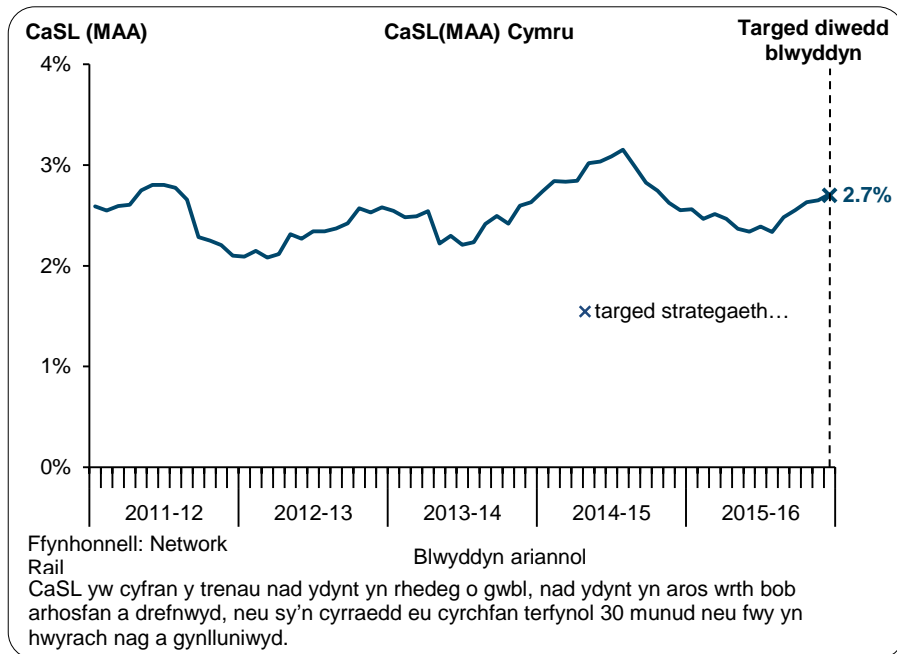
Diogelwch gweithwyr

Bu i'r Swyddfa Rheilffyrdd a Ffyrdd arolygu prosiectau cynnal a chadw a phrosiectau isadeiledd canolfannau Network Rail yng Nghymru. Roedd safonau cyffredinol canolfannau'r rhwydwaithau lleiaf yn dda. Ond roedd angen rhoi sylw sylweddol i brosiect isadeiledd gorsaf Crindau, yn arbennig y silindrau nwy oedd yn cael eu storio'n beryglus, llwybrau cerdded blêr a diffyg rheoli ceblau trydan diangen.

Perfformiad trenau

Roedd Cyfartaledd Symud Blyneddol (MAA) Trenau Arriva Cymru yng nghyswllt Mesur Perfformiad Cyhoeddus (PPM) yn 92.2% ar ddiwedd 2015-16, 0.5 pwynt canran yn is na'r targed. Roedd Cyfartaledd Symud Blyneddol y trenau oedd wedi eu dileu neu oedd yn sylweddol hwyr yn 2.7% yn cyrraedd y targed yn y strategaeth berfformiad.





Ar gyfer Cymru a Lloegr, bu inni gytuno i ddilyn dull gweithredu sy'n canolbwyntio ar fewnbnw er mwyn monitro Mesur Perfformiad Cyhoeddus a nifer y trenau oedd wedi eu dileu neu oedd yn sylweddol hwyr, yn ystod dwy flynedd gyntaf y cyfnod rheoli. Rydym ni wedi monitro (ac yn parhau i fonitro) sut mae Network Rail yn cyflenwi ei Gynllun Perfformiad Cyfnod Rheoli 5.

Er bod y berfformiad iTrenau Arriva Cymru heb gyrraedd ei darged Mesur Perfformiad Cyhoeddus na nifer y trenau oedd wedi eu dileu neu oedd yn sylweddol hwyr, roedd ei berfformiad o fewn y trothwy sydd wedi ei nodi yn Nyfarniad Terfynol y Cyfnod Rheoli 5. Rydym ni wedi derbyn adborth gan

Drenau Arriva Cymru sy'n awgrymu bod perthynas waith adeiladol gyda Network Rail.

Rheoli asedau

Mae perfformiad asedau wedi dirywio yng Nghymru yn ystod y flwyddyn gyda Mynegai Dibynadwyedd Cyfansawdd yn gostwng at -5.4% o ddiwedd gwaelodlin CP4, lle'r oedd targed gwella o 6.2%. Mae dibynadwyedd y traciau wedi dirywio'n sylweddol fel yn y flwyddyn flaenorol, ac mae bellach yn cyfrannu -12.9% at y Mynegai Dibynadwyedd Cyfansawdd. Mae pwyntiau ac arwyddion hefyd wedi dirywio gan gyfrannu -2.4% a -4.8% at y Mynegai Dibynadwyedd Cyfansawdd yn eu tro. Gyda thelecoms mae'r problemau oedd wedi codi yn ystod y cyfnod trosglwyddo i GSM-R yn cael eu datrys yn raddol trwy uwchraddio meddalwedd a mwy o ymdrech i reoli problemau ymyrraeth gyda'r cwmnïau sy'n cynnal y rhwydweithau ffonau symudol. Cafodd cyfraniad y telecoms at y Mynegai Dibynadwyedd Cyfansawdd yng Nghymru ei adfer at -4.1%.

Datblygu'r rhwydwaith

Mae'r gwaith wedi parhau er mwyn rhoi'r cynllun Adnewyddu Arwyddion Ardal Caerdydd ar waith. Bu gwaith sylweddol yn ystod Pasg 2015 a bu i hyn barhau yng ngorsaf Caerdydd Canolog ei hun. Ar ôl llawer o waith oedi blaenorol, mae disgwyl y bydd y comisiynu terfynol yn ystod gwyliau'r Nadolig 2016 er na fydd y plattform 8 newydd ar gael i'w ddefnyddio tan fis Ionawr 2017.

Mae'r prosiect i moderneiddio rhwydwaithau'r Cymoedd yng Nghaerdydd wedi oedi ar hyn o bryd tra bod Cwmni Cludo Llywodraeth Cymru yn ystyried y dewisiadau. Mae'n debyg bydd yr ateb yn rhan o'i gynllun Metro fyddai'n gallu gosod gofynion isadeiledd gwahanol. Mae'r Cynllun Cyflenwi Gwelliannau ar hyn o bryd yn dangos bod y cerrig milltir o ran trydaneiddio rhwydwaithau'r Cymoedd 'i'w cadarnhau' sy'n awgrymu bod ansicrwydd yn ei gylch.

Mae cerrig milltir trydaneiddio prif linell de Cymru wedi eu hail-gynllunio fel rhan o adolygiad Hendy. Mae'r Cynllun Cyflenwi Gwelliannau newydd yn dangos y bydd yr isadeiledd drydaneiddio yng Nghaerdydd wedi'i awdurdodi erbyn mis Rhagfyr 2018. Bydd gwaith trydaneiddio'r rhwydwaith rhwng Caerdydd ac Abertawe wedi'i gwblhau yn CP6 er gall trenau bi-mode Rhaglen Dinasoedd Cysylltiad Cyflym redeg yn y cyfamser.

Mae adolygiad perfformiad Network Rail ar brosiect amser teithio o ogledd i dde Cymru wedi nodi problemau sylweddol sydd wedi cael effaith ar y ddarpariaeth. Mae Llywodraeth Cymru'n ariannu'r prosiect hwn gydag arian parod. Rydym ni'n disgwyl i Network Rail fynd i'r afael â'r problemau hyn (yn bennaf materion llywodraethol, nodd i a chynllunio prosiect) fel rhan o'i Gynllun Gwella. Byddwn ni'n gwirio bod gwelliannau'n digwydd ar gyfer prosiectau Cymru yn y dyfodol.

Cafodd *The Welsh Route Study* ei gyhoeddi ym mis Mawrth 2016. Mae'n gosod gweledigaeth strategol i reilffyrdd yng Nghymru ynghyd â dewisiadau i noddwyr dros dro er mwyn cwrdd â heriau cynwysedd a chysylltedd.

Gwariant a pherfformiad ariannol

Tabl 1: Incwm a gwariant yng Nghymru yn 2015-16 - cymhariaeth syml o holl incwm a gwariant Network Rail

£m	2015-16		
	Cyllideb	Gwirioneddol	Amrywiaeth b/(w)
Trosiant	332	329	-3
Cynllun atodol 4	-15	-6	9
Cynllun atodol 8	-2	-1	2
Gweithredu	-29	-30	-1
Cefnogaeth ¹⁸	-33	-31	2
Cynnal a Chadw	-69	-72	-3
Capex - Adnewyddu	-233	-172	61
Capex – Gwelliannau PR13	-84	-135	-51
Costau ariannu	-82	-70	12
	-215	-188	27

Yn 2015-16, bu i Network Rail wario £27m yn llai na'r £215m oedd wedi ei gyllidebu ar gyfer Cymru. (gweler Tabl 1). Mae hyn yn bennaf oherwydd:

- £61m yn llai o gostau adnewyddu. Gwnaed llai o waith na'r disgwyl (ni wnaed gwerth £88m o waith adnewyddu) ac fe gaiff y gwaith hwn ei wneud yn ddiweddarach. O ystyried hyn, roedd cost y gwaith y bu i Network Rail ei wneud £27m yn fwy na'r disgwyl. Mae hyn i raddau helaeth oherwydd materion yn ymwneud â'r gadwyn gyflenwi, perfformiad

¹⁸ Mae hyn yn cynnwys trydan tyniad, costau diwydiant a threthi busnes.

contractwyr, oedi gyda'r rhaglenni, llai o waith na'r disgwyl ond nad oedd yn golygu llai o wariant ac effaith tywydd garw. Nid yw'r mentrau effeithlonrwydd oedd wedi eu cynllunio wedi gweithredu eto chwaith;

- costau gwella uwch o £51m¹⁹. Roedd y costau uwch hyn yn bennaf ar GWEP a thrydaneiddio rhwydwaithau Cymoedd, ac i raddau helaeth oherwydd bod peth gwaith oedd wedi ei ddal yn ôl yn gwrbyso'r gwaith a ddygwyd ymlaen. Roedd cost y gwaith gafodd ei wneud yn unol â chyllideb Network Rail,a;
- £12m wedi ei arbed mewn costau ariannu, yn bennaf oherwydd costau chwyddiant is na'r disgwyl.

¹⁹ Nid yw effaith argymhellion Adroddiad Hendy (Tachwedd 2015) a'r Cynllun Darparu Gwelliannau sy'n deillio o hynny wedi newid y ffordd o gyfrifo perfformiad ariannol yng Nghymru. Fodd bynnag, mae wedi newid y ffordd o gyfrifo gwerth y gwahaniaeth amseru i'r gyllideb.

Perfformiad ariannol rheoleiddiol

Roedd perfformiad ariannol Network Rail £3m yn llai na'r gyllideb (gweler Tabl 2 isod). Ond roedd perfformiad ariannol Network Rail oedd wedi ei gyllidebu ar ei gyfer £14 yn waeth na'n dyfarniad.

Bu i Network Rail hefyd cynnwys amcangyfrif o £1m fel addasaidd ORR oherwydd gwaith rheoleiddiol y methwyd â'i gyflawni yn ystod 2015-16²⁰. Yn gyfan gwbl felly, golyga hyn y bu i Network Rail berfformio £18m yn waeth na'r mesur ariannol rheoleiddiol yn 2015-16. Mae'r tanberfformio ar waith adnewyddu yn bennaf oherwydd amcangyfrif uwch o gostau prosiect CASR (£25m).

²⁰ Rydym ni'n adolygu hyn a materion erill yn ein hasesiad effeithlonrwydd ac ariannol blynyddol, felly fe all yr addasiad terfynol fod yn wahanol.

Tabl 2: Incwm a gwariant yn berthnasol i'r FPM yng Nghymru yn 2015-16 – cymhariaeth o'r incwm a'r gwariant a ddefnyddiwyd yn ein cyfrifiad Mesur Perfformiad Ariannol.

£m	2015-16				
	Cyllideb	Gwirion- eddol	Amrywiaeth gwell/ (gwaeth)	MPA niwtral yn cynnwys amseru gwell/ (gwaeth)	(tan) / gor berfformiad
Trosiant	45	43	-2	0	-2
Cynllun atodol 4	-15	-6	9	3	6
Cynllun atodol 8	-2	-1	1	0	1
Gweithredu	-29	-30	-1	0	-1
Cefnogaeth	-23	-22	1	0	1
Cynnal a Chadw	-69	-72	-3	-2	-1
Cyfraddau a Chostau'r Diwydiant	-13	-13	0	0	0
Capex - Adnewyddu	-233	-172	61	88	-27
Addasiadau Capex - Adnewyddu					20
Gwaith adnewyddu net unrhyw addasiad					-7
Capex - PR13 Gwelliannau	-84	-135	-51	-51	0
Addasiadau Capex - Gwelliannau					0
Gwelliannau PR13 net yr Addasiadau					0
Capex - Cyfanswm Net					-7
Mesur perfformiad ariannol o'i gymharu â chyllideb Network Rail					-3
Llai: Cyllideb Network Rail o'i gymharu â PR13					-14
Llai: Addasiadau oherwydd gwaith rheoleiddiol wedi ei gollu					-1
Cyfanswm y mesur perfformiad ariannol (MPA)					-18

Effeithlonrwydd

Mae Network Rail yn dal ati i weithio ar gynlluniau i fynd i'r afael â'r problemau sy'n codi o gostau cynyddol gwelliannau a thangyflawni ar effeithlonrwydd yn y busnes craidd.

Mae angen i Network Rail ganolbwyntio ar effeithlonrwydd ac effeithiolrwydd i fynd i'r afael â'r heriau sy'n cael eu gosod allan yn y setliad rheoleiddiol. Mae angen iddo wneud hyn ynghyd a gyflawni mwy o welliannau nac erioed o'r blaen, llawer iawn o waith adnewyddu i wella cynaliadwyedd hirdymor asedau, ac yn y pen draw, perfformiad y rhwydwaith. Ond mae effeithlonrwydd costau adnewyddu yn heriol.

Roedd effeithlonrwydd Network Rail yn ei fusnes craidd yn 2015-16 yn -20.1% yng Nghymru. Mae hyn i raddau helaeth oherwydd yr un rhesymau sydd wedi eu hadnabod uchod o ran fod y gwariant yn uwch na'r gyllideb (ar ôl ystyried yr oedi yn cwblhau'r gwaith adnewyddu.)

Ar gyfer y cyfnod rheoli hyd yma mae'r effeithlonrwydd yn -28.9%. Y rhagolygon effeithlonrwydd ar gyfer CP5 i gyd ydy 2.5%.

Dyled Network Rail, y Sylfaen Asedau Rheolaethol a benthyca

Ar yr 31ain o Fawrth 2016 roedd cyfran dyled Network Rail wedi ei briodoli i Gymru yn £1,954m, sydd yn unol â'r gyllideb. Mae'r amrywiad o £134m yn y dyfarniad oherwydd gwariant

cyfalaf llai yn 2014-15 a 2015-16 nac oedd wedi ei ragweld yn nyfarniad ariannol PR13.

Am resymau tebyg, ar yr 31ain o Fawrth 2016 mae ei Sylfaen Asedau Rheoleiddiol (SARh) gwerth £2,872m £57m yn llai na'n dyfarniad ac mae'r geriad o 68.0% 3.3 pwynt canran yn well na'n dyfarniad.

Tabl 3: Dyled a benthyciadau net ar gyfer Cymru yn 2015-16

£m	2015-16 (ar yr 31 o Fawrth 2016)		
	PR13 Dyfarniad	Gwirionedd	Amrywiad gwell/(gwaeth)
Dyled Net	2,088	1,954	134
SARh	2,929	2,872	57
GeRIAD (dyled/SARh net)	71.3%	68.0%	3.3%

Fel y soniwn ni yn yr adran ar Gymru a Lloegr, yn dilyn yr adolygiad Hendy, mae Network Rail yn edrych ar y posibilïadau o gael gwared ar sawl ased eiddo gyda'r amcan o godi £1.8bn i gefnogi'r gwaith o wella'r rheilffordd yn unol ag adroddiad Hendy. Mae Network Rail hefyd, ynghyd â'r Adran Drafnidiaeth, yn ystyried dewisiadau rheoli gwell ar gyfer gorsafoedd ac yn benodol dewisiadau ar gyfer y deunaw gorsaf reoledig sydd ganddo. At hyn, mae hefyd yn ystyried dewisiadau o ran cael gwared â rhai neu'r cwbl o'i asedau pŵer tyniant a darparu trydan.

Hyd yma nid yw Network Rail wedi penderfynu cael gwared ag unrhyw asedau penodol fel rhan o'r cynllun hwn. Rhwng mis Medi a mis Rhagfyr bydd Bwrdd Network Rail a'r Adran Drafnidiaeth yn ystyried pa un ai i symud i gam nesaf y gwaith o ran cael gwared ag unrhyw asedau ai peidio.

O dan ei drwydded rhwydwaith, bydd angen sêl bendith Swyddfa'r Ffyrdd a'r Rheilffyrdd ar Network Rail i gael gwared ag asedau penodol. Bydd Swyddfa'r Ffyrdd a'r Rheilffyrdd yn ystyried goblygiadau rheoleiddiol yr holl faterion hyn ar yr adeg priodol. Bydd hyn yn cynnwys unrhyw effaith ar Gymru.

Gwariant (heb gynnwys dyraniadau o ran costau unedau canolog)

Mae costau unedau canolog, fel costau pencadlys amrywiol a pheth costau eiddo, wedi eu clustnodi i'r rheilffyrdd. Yn 2015-16, roedd y costau canolog hyn o £1.5bn ym Mhrydain yn oddeutu 16% o gyfanswm y gwariant cyfan y rhwydwaith. Mae'r rhain yn cynnwys costau tyniant trydan (ond nid yng Nghymru) a geir yn ôl drwy incwm, trethi busnes a chostau diwydiannol eraill ynghyd â chostau cyfalaf sy'n cael eu rheoli'n ganolog fel Technoleg Gywbodaeth, ORBIS a Pheiriannau a Chyfarpar.

Mae tablau cynharach yn dangos y ffigyrau ar ôl y dyraniadau hyn. Ond i allu cymharu'n well gyda rheilffyrdd eraill mae Tabl 4 yn edrych ar wariant Cymru o'i gymharu â chyllideb Network Rail cyn dynodi'r costau unedau canolog.

Tabl 4: Gwariant Cymru o'i gymharu â'r gyllideb – cyn dyrannu costau unedau canolog 2015-16

£m	Cyllideb	Gwirionedd l	Amrywiad gwell/(gwaeth)	Amr/cyllide b
Gweithredu	28	29	-1	-3.6%
Cefnogaeth	2	2	0	0.0%
Cynnal a Chadw	58	59	-1	-1.7%
Adnewyddu	215	163	52	24.2%
Gwelliannau	83	135	-53	-63.9%

Fel mae'r tabl yn ei ddangos, mae Network Rail yn gorwario ar welliannau o'i gymharu â'r gyllideb yn bennaf oherwydd Prosiect Drydaneiddio'r Great Western (£30m) a phrosiect moderneiddio rheilffyrdd y Cymoedd (£8m).

We publish the *Network Rail Monitor* every six months, focusing on Network Rail's delivery of its obligations to its customers and funders, for which it is mainly accountable under its network licence.

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