OFFICE OF RAIL AND ROAD

Annual efficiency and finance assessment of Network Rail 2017-18

23 July 2018

Contents

Summary

Purpose of this document

This document explains our assessment of Network Rail's efficiency and wider financial performance across Great Britain as a whole, and separately for Scotland, Wales and each of its routes in England for the year ended 31 March 2018 (2017-18)[1], the fourth year of Control Period 5 (CP5). It provides detailed support to our recent Network Rail Monitor publication[2]. It is intended to help customers, funders and other interested parties gain a better understanding of Network Rail's efficiency and its financial performance compared with the financial assumptions that we set out in our 2013 periodic review of Network Rail's access charges for CP5 and against its internal budget. It also provides important context for our current 2018 periodic review of Network Rail[3].

Unless otherwise stated, our analysis refers to Network Rail's activities across Great Britain. Numbers may not sum due to rounding.

Key findings

The key findings from our assessment are:

1) Efficiency is lower than expected and renewals have been deferred

We monitor the efficiency of Network Rail's core business activities. These are operations, support, maintenance and renewals.

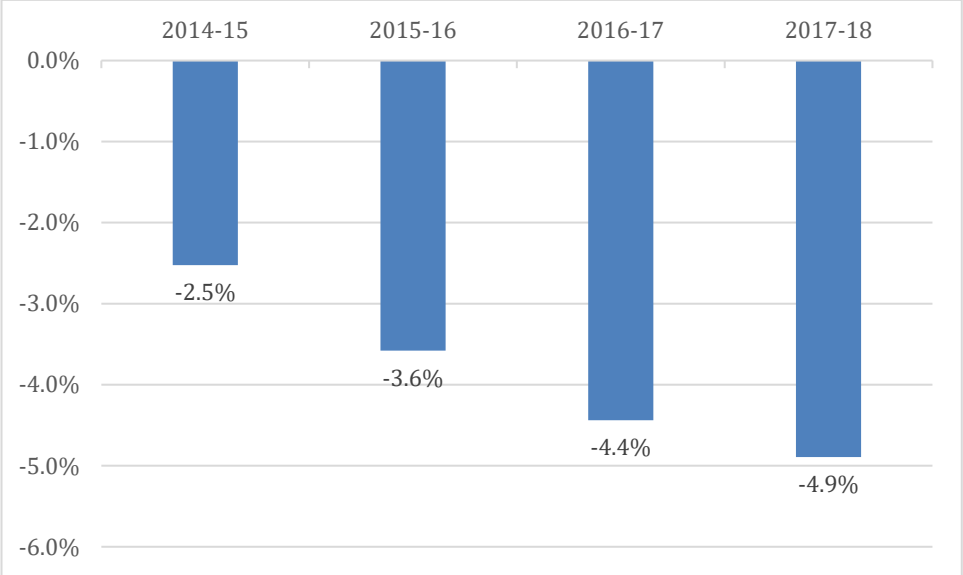
Network Rail's efficiency declined by £4m (0.4%) in 2017-18, compounding the 4.4% decline across the first three years of CP5. However, in Scotland, Network Rail's efficiency improved by 0.7% in 2017-18, adding to 11.2% of efficiency improvements in the first three years of CP5.

[1] Financial information is shown in 2017-18 prices unless otherwise stated.

[2] See http://orr.gov.uk/rail/economic-regulation/regulation-of-network-rail/monitoring-performance/network-rail-monitor.

[3] The 2018 periodic review (PR18) is the process through which we determine what Network Rail should deliver in respect of its role in operating, maintaining and renewing its network in control period 6 (CP6) and how the funding available should be best used to support this. CP6 will run from 2019-2024. See http://orr.gov.uk/rail/consultations/pr18-consultations/pr18-draft-determination for further details.

Figure 1: Network Rail's efficiency compared to the start of CP5, Great Britain



Source: Network Rail and own analysis

Network Rail's declining efficiency across the first four years of CP5 has been largely due to a £322m (15.6%) decline in renewals efficiency. This has been partially offset by a £100m (4.0%) increase in efficiency across operations, support and maintenance activities. We examine the problems with Network Rail's efficient delivery of renewals in CP5 in this assessment and comment on the company's preparedness for delivering renewals more efficiently from the start of CP6[4].

Network Rail did not undertake £441m of planned renewals in 2017-18, mostly due to planned deferral of work. It has built up a substantial backlog of work across CP5 that now needs to be caught up in CP6 and beyond[5]. We discussed this issue in our recent PR18 draft determination.

Using the CP5 efficiency measure, Network Rail is forecasting that its efficiency will be 10.7% percent lower in 2018-19 compared to the start of CP5 and 0.1% lower in Scotland[6]. Caution needs to be applied in interpreting the effect of the forecast for 2018-19 on the cumulative number for the whole of CP5. Network Rail has said that the forecast decline in 2018-19 for Great Britain is partly due to cost increases (£65m), reversal of beneficial one-offs (£40m) and also because Network Rail has decided that to best prepare for CP6, it has chosen to spend more money on operations, support and maintenance activities (£179m). This shows as inefficiency in CP5 but may overall generate efficiency savings when looked at over both control periods.

[4] Our consultation on these problems is available at http://orr.gov.uk/rail/consultations/pr18-consultations/consultation-on-improving-network-rails-renewals-efficiency.

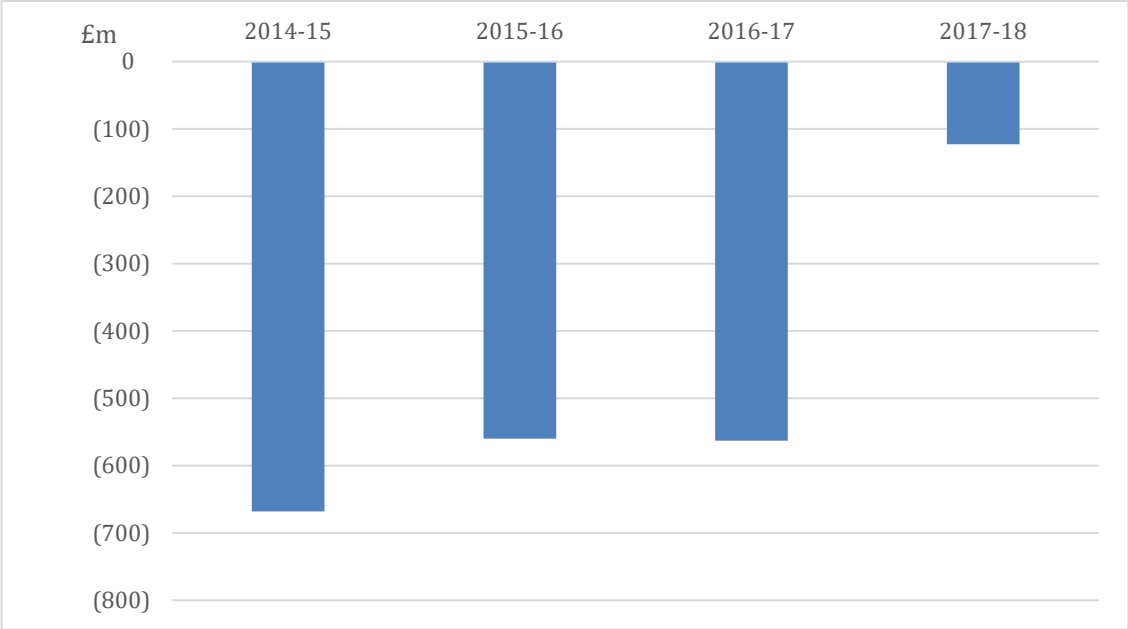
[5] Network Rail has undertaken £3.0bn less renewals work over the first four years of CP5 than assumed in our PR13 determination.

[6] Network Rail's forecast preceded the recent timetabling problems. These may adversely affect Schedule 8 costs and also renewals due to potentially more difficult network access.

2) Performance against internal budget has improved

Network Rail overspent its internal budget by £0.1bn in 2017-18 for the work that was delivered. This underperformance was largely because of higher than budgeted Schedule 8 payments for poor train performance and higher than budgeted costs for renewals. The level of underperformance against budget has improved compared to the first three years of CP5 (average £0.6bn annual underperformance against budget).

Figure 2: Network Rail's financial performance compared to internal budget, Great Britain



Source: Network Rail and own analysis

Network Rail underperformed the regulatory financial performance measure[7] by £2.1bn in 2017-18 largely because its internal budget was £1.7bn higher than our PR13 financial assumptions for the year[8]. It underperformed against its own budget by £0.1bn and the regulatory measure includes a £0.2bn downward adjustment for train performance being lower than the regulatory target.

Route performance

As expected, there were differences between the financial performance of routes. This reflects that although there are common drivers of performance across the network, local circumstances and performance can have a significant effect on routes' financial performance. Three routes had financial underperformance greater than 5 percent of budget (Anglia, LNW and Wessex). Two routes outperformed (South East and Scotland).

[7] Section 1 explains how we assess Network Rail's financial performance against its internal budget and against the financial assumptions in our PR13 determination of Network Rail's funding for CP5. Annex C shows the linkage between efficiency and financial performance for Network Rail's core business activities.

[8] The most notable differences were for renewals, enhancements and maintenance. Network Rail has underperformed the regulatory financial performance measure by £6.3bn in the first four years of CP5.

Better understanding and learning from route comparisons can help all routes improve their financial performance. Three routes had financial underperformance greater than 5 percent of budget:

- **Anglia** (£79m underperformance, 10% of budget): Enhancements overspent by £39m mostly due to Anglia's contributions to the Crossrail project and the Gospel Oak to Barking electrification scheme (see Enhancements section below). Schedule 4 costs were £13m over budget (the highest of any route) due to higher Schedule 4 costs per possession and the impact of Storm Emma[9]. Schedule 8 costs were £13m over budget due to infrastructure failures, the impact of Storm Emma and increased network traffic.

- **LNW** (£153m underperformance, 7% of budget): Enhancements overspent by £79m mostly due to overspend on the North of England programme and West Coast power supply upgrade (see Enhancements section below). LNW had by far the highest Schedule 8 underperformance of any route (£54m adverse to budget). Performance on this route has been affected by an increase in trespassing and fatalities at stations on the intensively used southern part of the West Coast mainline[10].

- **Wessex** (£51m underperformance, 7% of budget): Schedule 4 and 8 costs were significantly over budget due to infrastructure failures, the impact of Storm Emma and increased network traffic.

3) Significant enhancements work delivered on budget

Network Rail spent £4.1bn on enhancements in 2017-18. This is the largest annual investment in rail infrastructure in recent years[11]. This work was delivered slightly under budget (£4m). Network Rail's difficulties with its enhancements programme earlier in CP5 resulted in increased budgets and deferred milestones for delivery of schemes. Problems with delivering these enhancements have contributed to Network Rail's problems with delivering planned renewals in CP5[12].

4) Debt and borrowing – little headroom in 2018-19

Network Rail's debt increased by £5.6bn to £50.4bn in 2017-18. This was £0.6bn lower than budget largely due to underspend on renewals and enhancements projects.

Network Rail has fixed borrowing facilities with the Department for Transport (DfT) for CP5 for its activities in England and Wales, and in Scotland[13]. Network Rail expects to use all of its available

[9] Storm Emma produced heavy snowfall across much of Great Britain in February 2018.

[10] These can significantly disrupt intensively used parts of the rail network. Network Rail bears the cost of these events under the Schedule 8 regime. Network Rail introduced a number of initiatives to reduce these events during the year.

[11] This is 35% higher than the average annual enhancements spend over the previous five years and 68% higher than the average over the previous ten years.

[12] For example, network access has been re-prioritised towards the Great Western electrification programme in the Western route.

[13] There are separate limits for England and Wales, and for Scotland.

borrowing for its planned activities in England and Wales[14]. The lack of headroom means that the company will have no contingency in the event that income or expenditure outturns worse than planned. In light of Network Rail's underperformance against its own budget in each year of CP5 to date, we consider that this lack of contingency is risky. In practice, we expect that the company would need either to request additional funds from the DfT, or defer further renewals work into CP6, which would exacerbate the declining efficiency of its renewals activities.

5) Preparing for CP6

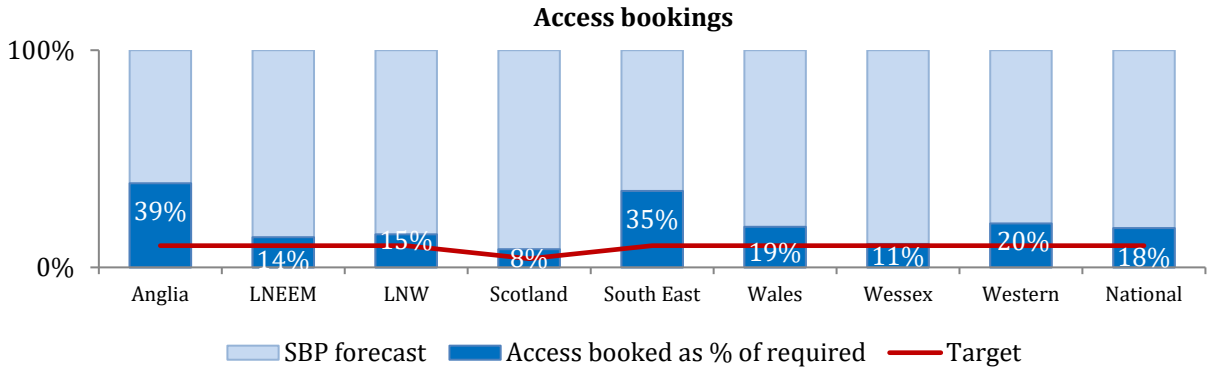
Leading indicators of performance

We asked Network Rail to demonstrate that it is better prepared to deliver efficiently from the start of CP6, because poor planning for CP5 has caused a number of the problems with its renewals delivery and efficiency.

Network Rail has analysed some of the key leading indicators of efficient delivery for each of its routes for 2019-20, the first year of CP6. We recognise that this is new management information (based on existing data sources). As such, there may be some inaccuracies and that this analysis is likely to evolve. However, in our view, the currently available information is a good start for assessing how well prepared routes are for the start of CP6, which starts in April 2019. We expect the analysis to evolve over time, for example, around target levels.

Given that it is around eight months before the start of CP6 we would not expect routes to have fully developed workbanks, contractual arrangements and resources. However, Network Rail's analysis shows that most routes still have a substantial amount of preparatory work to do:

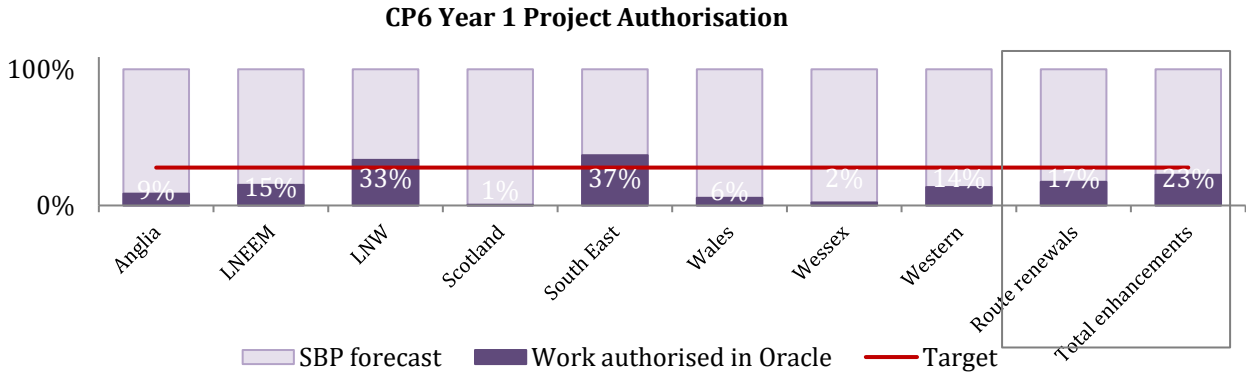
- *Network access:* Most routes have booked less than 20% of the network access that they think they will need to undertake planned engineering work in 2019-20. Network Rail considers that routes are ahead of where they were last year, with regional variations largely a result of the different levels of disruptive possessions[15].



[14] The position is better for Scotland. Network Rail expects to have £0.1bn of headroom for its activities in Scotland.

[15] Disruptive possessions have a significantly greater impact on train services. These need to be agreed with train operators much earlier in advance. Anglia and South East have higher levels of planned engineering works that will require more disruptive possessions and earlier booking than other routes.

- *Workbank planning:* Few CP6 projects have been booked in Oracle Projects (Network Rail's project management system) and received internal authorisation. There are significant regional variations. Network Rail has acknowledged that it is behind where it has been at this stage in previous years.



- *Efficiency plans:* Network Rail is currently making changes to its internal governance for delivering efficiency improvements. Routes will be primarily responsible for developing, implementing and tracking their efficiencies in CP6. Routes will be held accountable by an Efficiency Assurance Board that will be chaired by Network Rail's Chief Financial Officer, with additional oversight by Network Rail's Executive Committee and the Network Rail Board. We welcome these changes which should provide greater focus and visibility across Network Rail on the delivery of efficiency improvements. Network Rail has shared information on the progress of routes' efficiency plans. Most routes have not yet developed mature plans for how they will deliver efficiency improvements in CP6, and we would have expected routes' efficiency plans to be more advanced at this stage. We are expecting substantial progress over the next few months.

- *Renewals delivery contracts:* Network Rail has around 20 framework contracts for its renewals activities and it is currently in the process of renewing some and extending some of these contracts. This is important to avoid disruption to the supply chain. Network Rail appears on target to implement the new contracts on time.

- *Maintenance capacity:* Network Rail intends to recruit nearly 500 additional staff in 2018-19, to ensure that it has adequate resources to deliver its planned maintenance activities for 2019-20. It has recruited less than 10 percent of these additional roles so far.

It is difficult to draw firm conclusions from the current information on leading indicators. In our view, the current information does not clearly demonstrate that routes are better prepared to deliver efficiently from the start of CP6 than they were at this stage in their preparations for CP5. Network Rail needs to be clearer about its targets, and to improve its comparative analysis of the regional variations across its leading indicators. We will hold Network Rail to account through our regular director-level meetings with individual routes and report on progress in our next Monitor publication.

Changes to our monitoring approach for CP6

We consulted recently on changes that we intend to make to the way that we assess and report on Network Rail's efficiency and financial performance[16]. In CP6, we intend to make more informed forward-looking assessments of the efficiencies that Network Rail will likely deliver across the control period. We will also provide more rounded assessments that draw out key messages about the drivers of performance, recognising that different audiences want different levels of technical detail.

To support these changes, Network Rail will need to make changes to the information that it provides to us and is working with us to agree how this should work in practice. Network Rail has committed to:

- improve its communication of the reasons for cost changes due to changes to routes' efficiencies, the mix of work and external factors;
- provide a sharper focus on performance compared to delivery plans; and
- identify the most appropriate measures of routes' productivity and leading indicators of performance.

We will publish our finalised approach in regulatory accounting guidelines before the start of the control period.

[16] See http://orr.gov.uk/rail/economic-regulation/regulation-of-network-rail/price-controls/periodic-review-2018/pr18-consultations/our-approach-for-assessing-network-rails-efficiency-and-wider-financial-performance-in-control-period-6.

1. Introduction

1.1 Our annual efficiency and finance assessments provide a snapshot of how Network Rail is financially performing at the end of each year within the control period. This 2018 publication covers the fourth year of CP5, April 2017 to March 2018. It provides detailed support for our recent Network Rail Monitor[17], which also covers Network Rail's operational performance, including in respect of safety risk[18], train performance and asset management.

1.2 Chapter 2 reports on Network Rail's efficiency and wider financial performance. It also provides an analysis of the financial performance of the company's routes and of its income and expenditure.

1.3 Chapters 3 and 4 report on Network Rail's financial performance in Scotland and Wales respectively.

1.4 Chapter 5 reports on Network Rail's regulatory finances. These are its borrowing, net debt, financing costs, the regulatory asset base (RAB) and financial indicators.

1.5 Annex A provides detailed financial tables for Network Rail's activities in Great Britain, and separately for Scotland and Wales. Annex B provides our analysis of routes' income and expenditure. Annex C shows the linkage between efficiency and financial performance. Annex D explains abbreviations and acronyms used in this report.

1.6 We will report on Network Rail's financial performance under the route-level efficiency benefit sharing (REBS) mechanism[19] later this year.

1.7 Financial information in this document is presented in 2017-18 prices with the exception of Network Rail's debt and borrowing which are presented in nominal (cash) prices.

Route level financial analysis

1.8 Network Rail started CP5 with ten regional operating routes, though these have subsequently been rationalised to eight[20]. Most of our route analysis is based on Network Rail's budgets for 2017-18 in accordance with the current structure. To aid comparability with Network Rail's CP5 business plan and our PR13 determination (including for REBS), Network Rail's regulatory financial statements are prepared for the ten routes and we have included analysis

[17] See http://orr.gov.uk/rail/economic-regulation/regulation-of-network-rail/monitoring-performance/network-rail-monitor.

[18] We also publish a more detailed annual health and safety report. See http://orr.gov.uk/rail/health-and-safety/annual-health-and-safety-report.

[19] Regional Efficiency Benefit Sharing (REBS) is a contractual arrangement for train operators to share a proportion of Network Rail's over/under financial performance in each of the ten original routes. It would have been difficult to change these contracts for the subsequent change to Network Rail's route structure.

[20] Network Rail merged the Sussex and Kent routes to form the 'South East' route and the London North Eastern and East Midlands routes to form the 'London North Eastern and East Midlands' route.

for the original ten routes where information is available. The current route geographies are shown in Figure 1.1.

Figure 1.1: Network Rail's routes

How we calculate Network Rail's financial performance

1.9 Network Rail's financial performance can be calculated in several ways. The factors to be considered when deciding how to carry out this calculation include:

(a) Do we compare the company's income and expenditure to its annual budget or to our 2013 Periodic Review (PR13) determination[21]?

(b) Adjusting for the amount of work undertaken.

(c) Including or excluding some types of income and expenditure that may be less controllable such as the income and expenditure associated with traction electricity.

(d) Adjusting for any under-delivery of required outputs such as the public performance measure (PPM) of train performance.

(e) Aligning with the regulatory asset base (RAB) financial incentive mechanism.

1.10 To be as informative as possible, our primary measure of Network Rail's financial performance, the *financial performance measure* (FPM) takes each of the above matters into account. FPM compares Network Rail's income and expenditure to its annual budget and our PR13 determination. It adjusts for the amount of work done and excludes income and expenditure that is not controllable. FPM is shown both gross and net of RAB sharing

[21] See PR13 Final determination of Network Rail's outputs and funding for 2014-19.

mechanism adjustments and regulatory output adjustments. The CP5 regulatory accounting guidelines explain how FPM is calculated[22].

Feedback

1.11 We welcome comments on the content of this report. These should be sent to:

Customer Correspondence Team
Office of Rail and Road
One Kemble Street
London WC2B 4AN
Email: contact.cct@orr.gsi.gov.uk

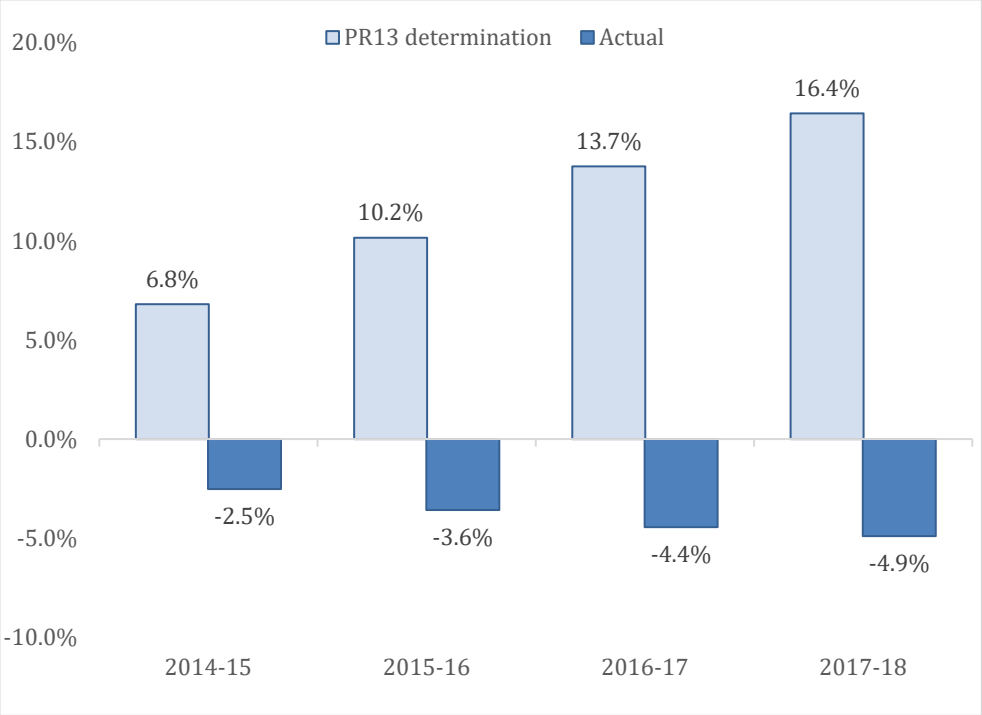
[22] See http://orr.gov.uk/rail/economic-regulation/regulation-of-network-rail/network-licence/regulatory-accounts.

2. Efficiency and financial performance

Efficiency

2.1 We assess changes to the efficiency of Network Rail's core business activities. These are its operations, support, maintenance and renewals (OSMR) activities.

Figure 2.1: Actual and expected efficiency improvements compared to the start of CP5, Great Britain



Source: Network Rail and own analysis

2.2 In determining the funding that Network Rail would require to deliver its required outputs in CP5, we made an assessment of the efficient level of expenditure that it should need to incur[23]. Our PR13 determination concluded that Network Rail should improve its efficiency by 19.4% by the end of CP5, including a 3.1% improvement in 2017-18.

2.3 As shown in Figure 2.1, Network Rail's efficiency has declined in each of the first four years of CP5. Efficiency declined by £4m (0.4%) in 2017-18 and by £222m (4.9%) across the first four years of CP5. The reasons for this declining efficiency are examined in the Expenditure section below.

2.4 Using this measure, Network Rail expects that it will be 10.7% less efficient at the end of CP5 than the start. Caution needs to be applied in interpreting the effect of the forecast for 2018-

[23] The detailed assumptions underlying these projections were set out in our 2013 Periodic Review (PR13) final determination. See http://orr.gov.uk/__data/assets/pdf_file/0015/456/fd-chapters-3-11.pdf.

19 on the cumulative number for the whole of CP5. Network Rail has said that the forecast decline in 2018-19 is partly due to cost increases (£65m), reversal of beneficial one-offs (£40m) and also because Network Rail has decided that to best prepare for CP6, it has chosen to spend more money on operations, support and maintenance activities (£179m). This shows as inefficiency in CP5 but may overall generate efficiency savings when looked at over both control periods.

Financial performance

2.5 Our primary measure of Network Rail's financial performance, the *financial performance measure* (FPM), provides a better understanding of Network Rail's financial performance than simple income and expenditure variances. FPM compares actual income and expenditure to Network Rail's annual budget, and then to the financial assumptions in our PR13 determination (which underpin the company's level of funding)[24]. The regulatory measure ensures that Network Rail does not benefit from delaying work to a later date if that work will still need to be done and it adjusts for the value of any outputs that Network Rail was funded to deliver, but has not delivered, such as reliability of train performance. A positive FPM means that Network Rail has outperformed and vice versa[25].

Table 2.1: Network Rail's financial performance in 2017-18, Great Britain

£m	Budget variance better / (worse)	Of which out / (under) performance
Turnover	19	(4)
Schedule 4	15	5
Schedule 8	(98)	(98)
Operations	(3)	(19)
Support	68	57
Maintenance	(23)	(17)
Capex – Renewals	391	(50)
Capex – Enhancements	311	4
Total	**680**	
Financial performance against budget[26]		**(123)**
Budget vs. PR13		(1,749)
Adjustments for missed regulatory outputs		(203)
Financial performance (regulatory)[27]		**(2,075)**

Source: Network Rail and own analysis

[24] It excludes some 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 (see Annex A).

[25] Annex C explains the linkage between Network Rail's financial performance and its efficiency.

[26] Neutral differences including deferral of work represent the £803m difference between the £680m of cumulative income and expenditure variances and the £123m of financial underperformance against budget.

[27] This does not include the effect of the 25% renewals RAB incentive. Including that adjustment, the regulatory measure is an underperformance of £1,203m. See our regulatory accounting guidelines and Network Rail's regulatory financial statements for further details.

2.6 Network Rail underperformed against its budget by £0.1bn in 2017-18. This was largely because of higher than budgeted Schedule 8 payments as a result of poor train performance and higher unit rates for renewals. The level of underperformance has improved compared to the first three years of CP5 (average £0.6bn annual underperformance against budget).

2.7 Network Rail underperformed the regulatory financial performance measure by £2.1bn largely because its internal budget was £1.7bn higher than our PR13 financial assumptions for the year[28]. It underperformed against its own budget by £0.1bn and the regulatory measure includes a £0.2bn downward adjustment for train performance lower than the regulatory target.

2.8 We summarise the main differences in routes' financial performance below. We report on the financial performance of Network Rail in Scotland and in Wales in chapters 3 and 4. Further details about the financial performance of England routes are provided in Annex B.

Table 2.2: Routes' financial performance compared to budget

£m	Financial performance b/(w)	Percentage of budget
Anglia	(79)	-10%
London North East & East Midlands	4	0%
London North West	(153)	-7%
South East	56	4%
Western	(55)	-3%
Wessex	(51)	-7%
England	**(278)**	**-3%**
Scotland	**31**	**3%**
Wales	**1**	**0%**
Central services[29]	105	8%
Great Britain	**(123)**	**-1%**

Source: Network Rail

2.9 As shown in Table 2.2, there were significant differences between the financial performance of routes. This reflects that although there are common drivers of performance across the network, local circumstances and performance can have a significant effect. Better understanding and learning from route comparisons can help all routes to improve their financial performance.

[28] Network Rail's internal budget was higher than our PR13 financial assumptions across most items of expenditure. Network Rail's budget for the year reflected inefficiencies that have accumulated in CP5 to date. In contrast, PR13 assumed that Network Rail would achieve efficiency improvements in each year of CP5. See Annex C for further details.

[29] Network Rail's internal budget analysis does not allocate central services to routes. Our analysis for Scotland and Wales in chapters 3 and 4 includes their portion of the costs of these activities. This results in differences between our analysis in chapters 3 and 4 and the financial performance of Scotland and Wales in this table.

2.10 Three routes had financial underperformance greater than 5 percent of budget:

- **Anglia** (£79m underperformance, 10% of budget): Enhancements overspent by £39m mostly due to Anglia's contributions to the Crossrail project, and to the Gospel Oak to Barking electrification scheme (see Enhancements section below). Schedule 4 costs were £13m over budget, the highest of any route, due to higher costs per possession and the impact of Storm Emma. Schedule 8 costs were £13m over budget due to infrastructure failures, the impact of Storm Emma and increased network traffic.

- **LNW** (£153m underperformance, 7% of budget): Enhancements overspent by £79m mostly due to overspend on the North of England programme and West Coast power supply upgrade (see Enhancements section below). LNW had by far the highest Schedule 8 underperformance of any route (£54m adverse to budget). Performance on this route has been affected by an increase in trespassing and fatalities around stations on the southern part of the West Coast mainline[30].

- **Wessex** (£51m underperformance, 7% of budget): Schedule 4 and 8 costs were significantly over budget due to infrastructure failures, the impact of Storm Emma and increased network traffic.

2.11 Central services encompasses Network Rail's corporate services and other activities that are not devolved to routes. It also includes centrally held budget contingencies. Central services outperformed by £105m, largely due to reduced performance pay, re-organisation costs and less use of contingency than expected. This is examined in Annex B.

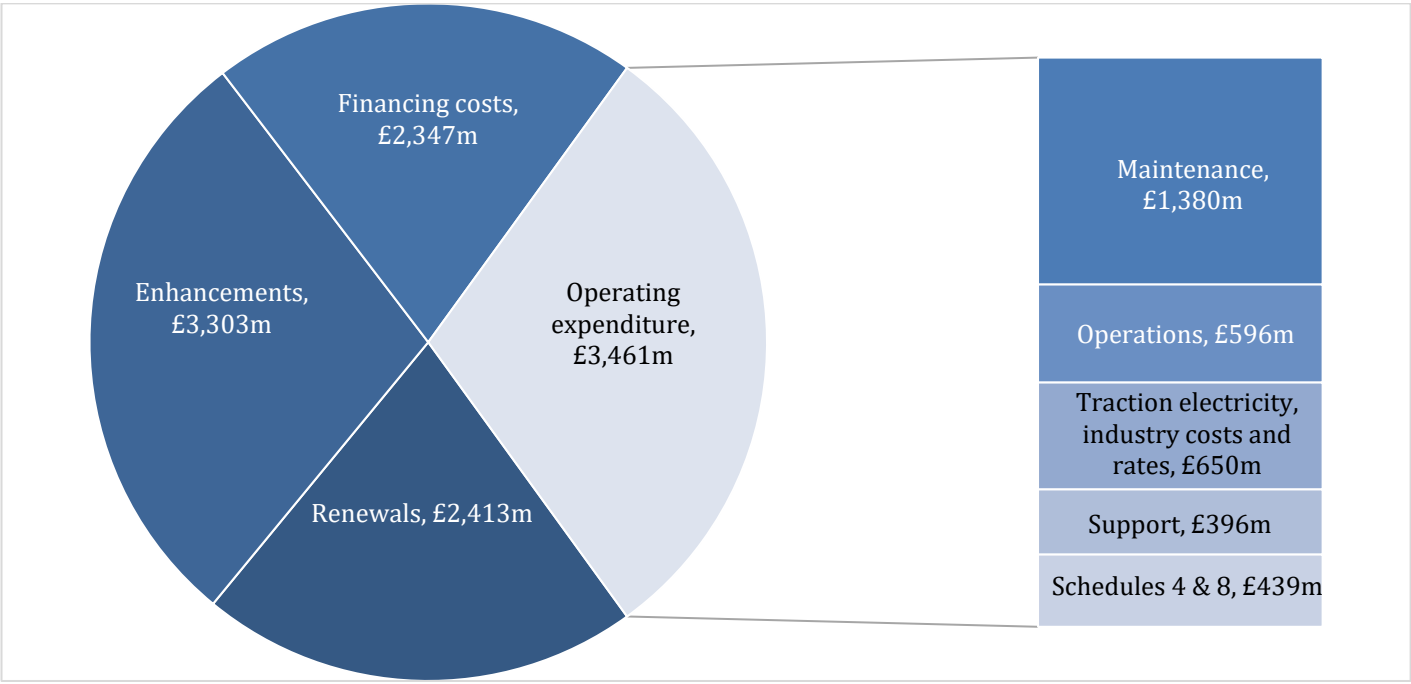
Expenditure

2.12 This section examines the main categories of Network Rail's expenditure in 2017-18. It underpins the reporting of Network Rail's efficiency and financial performance.

2.13 Network Rail spent £11.5bn in 2017-18. Figure 2.2 shows this split by major expenditure category. These are operating expenditure (covering maintenance, operations, support costs, Schedule 4 and 8 payments and other), renewals, enhancements and financing costs. Network Rail's expenditure in these categories is summarised in Annex A and examined below.

[30] These can significantly disrupt intensively used parts of the rail network. Network Rail bears the cost of these events under the Schedule 8 regime. Network Rail introduced a number of initiatives to reduce these events during the year.

Figure 2.2: Network Rail's expenditure in 2017-18



Source: Own analysis of Network Rail's 2017-18 Regulatory Financial Statements

Renewals

2.14 Renewals expenditure relates to activities to replace in whole, or in part, network assets that have deteriorated so that they can no longer be economically maintained. Renewal of an asset does not result in any change to the performance of the original asset.

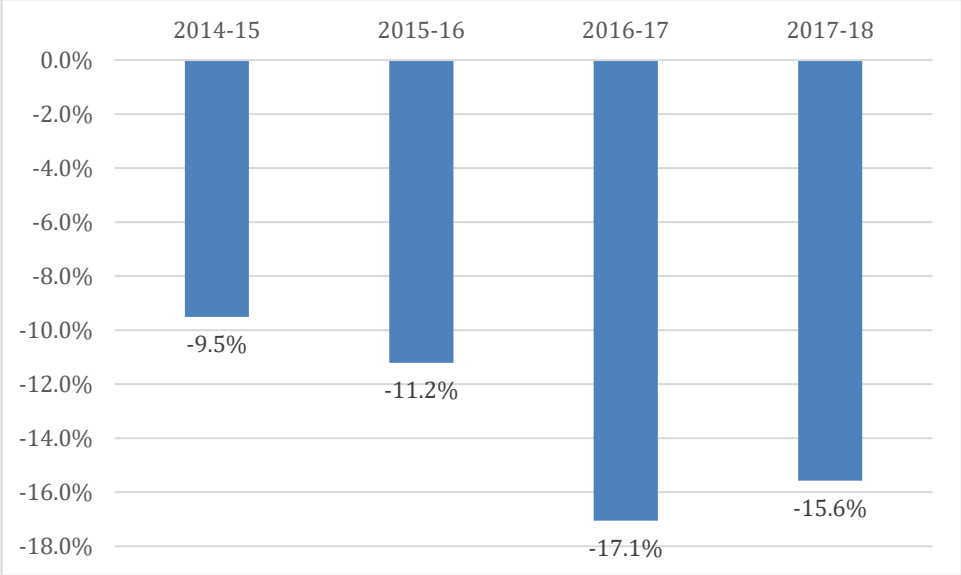
2.15 Network Rail spent £2,413m renewing the rail network in 2017-18. It spent £391m less but delivered £441m less work than its own budget. For the work that it delivered, Network Rail spent £50m more on renewing the network than it budgeted for and £857m more than we assumed in our PR13 determination.

Renewals efficiency

2.16 The efficiency of Network Rail's renewals activities improved by £91m (1.3%) in 2017-18 compared to 2016-17. However, as shown in Figure 2.3, renewals efficiency declined by 17.1% in the first three years of CP5. The forecast improvement for 2018-19 is largely due to planned improvements for the cost of delivery of plain line track.

2.17 The overall decline in renewals efficiency means that for the amount of work done, Network Rail has spent £3.6bn more than we expected across the first four years of CP5 for the amount of work undertaken.

Figure 2.3: Efficiency of Network Rail's renewals activities compared to the start of CP5



Source: ORR analysis

2.18 We consulted on and held an industry workshop about the problems with Network Rail's efficient delivery of renewals in CP5 in the autumn of 2017[31]. As set out in our consultation, in our view Network Rail:

- was poorly prepared to deliver renewals at the start of CP5 and consequently its efficiency improvement plans were not well founded. The volumes of renewals delivered have been considerably lower than set out in Network Rail's CP5 delivery plan. This has reduced productivity directly within Network Rail and through its impact on the supply chain;
- reacted slowly to the problems on efficiency reflecting the fact that Network Rail has been focused for much of CP5 on the related challenges of delivering its enhancements programme;
- has experienced increased pressure on access to the railway to carry out work. Network Rail assumed that network access would increase by 25% in CP5, but it has actually fallen. The relationship between access duration and productivity is not straightforward, however, other factors being equal, reduced access will tend to reduce productivity. Network Rail has also become more risk averse so that it plans to do less work in the access that is available to prevent overruns;
- was affected by its reclassification into the public sector with the introduction of fixed borrowing limits. Inefficiency at the start of CP5 led to cost pressures and repeated re-planning of renewals projects, reducing the volume of work to keep spending within the

[31] See http://orr.gov.uk/rail/consultations/pr18-consultations/consultation-on-improving-network-rails-renewals-efficiency.

borrowing limits. This re-planning created further cost pressures, leading to a downward spiral of deferred work and higher costs for the work done; and

- devolution to Network Rail's routes initially led to above budget increases in the scope of work in some areas. Route managers made use of local opportunities to increase the scope of some renewals work to secure additional local benefits. The additional costs of doing so have put pressure on available funding.

2.19 Because poor planning for CP5 caused a number of the problems with Network Rail's renewals efficiency, an important part of our current PR18 programme of work is to assess whether Network Rail's routes have developed robust expenditure plans for CP6[32].

Deferral of renewals work

2.20 Network Rail has deferred £3.0bn of renewals work that we expected it to undertake in the first four years of CP5. This has had a beneficial effect for the company's short term financial position (see Chapter 5) but has worsened efficiency. However, the reduced volume of work is not what Network Rail's supply chain planned for and means that more work will need to be undertaken in CP6 and beyond.

Operating expenditure

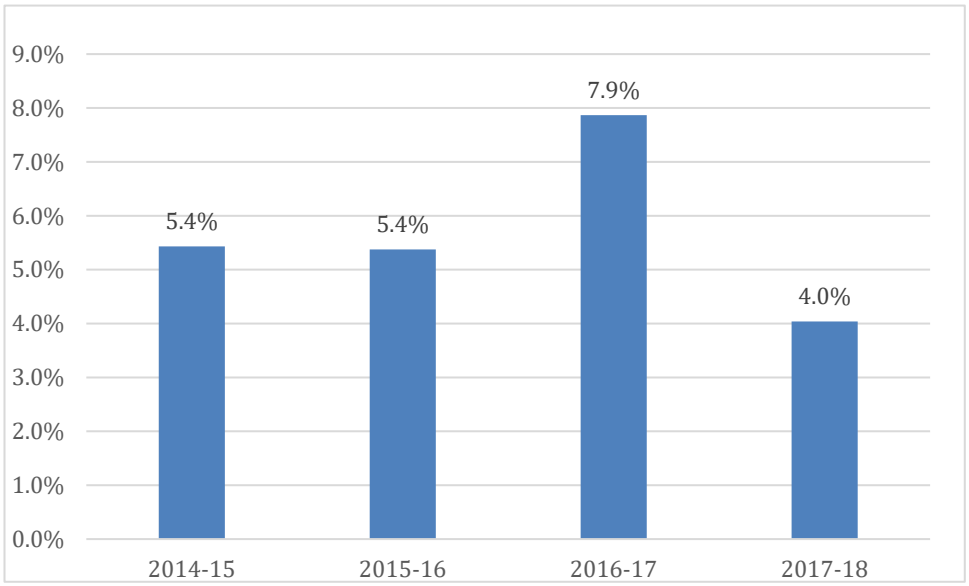
2.21 Operating expenditure relates to operations, maintenance, support costs, Schedule 4 and 8 payments, and traction electricity, industry costs and rates. These expenditure items are examined below.

Operations, maintenance and support activities efficiency

2.22 The efficiency of Network Rail's operations, maintenance and support (OMS) activities declined by £96m (4.2%) in 2017-18 compared to 2016-17, partially offsetting the 7.9% efficiency improvement in the first three years of CP5. The underlying cost increases are examined below.

[32] See our PR18 draft determination for further details: http://orr.gov.uk/rail/consultations/pr18-consultations/pr18-draft-determination.

Figure 2.4: Efficiency of Network Rail's operating activities compared to the start of CP5, Great Britain



Source: Network Rail and own analysis

Maintenance

2.23 Maintenance expenditure relates to activities that sustain the condition and capability of the existing infrastructure to the previously assessed standard of performance.

2.24 Network Rail spent £1,380m maintaining the rail network in 2017-18, £10m more than in 2016-17. Pay costs were affected by a recent employment appeal tribunal ruling that voluntary overtime should be taken into account when calculating holiday pay. Costs have also increased, particularly in the Western route due to the cost of putting in place maintenance facilities for newly electrified railway.

2.25 Network Rail is forecasting to spend £147m more on maintaining the network in 2018-19 compared to 2017-18. This includes increased vegetation clearance, particularly in Scotland, and planned increases to headcount to undertake additional maintenance work in CP6.

Operations

2.26 Operations expenditure relates to activities to operate the rail network. These include signalling and running Network Rail managed stations.

2.27 Network Rail spent £596m operating the rail network in 2017-18, £21m more than in 2016-17. Pay costs were affected by the recent employment appeal tribunal ruling that voluntary overtime should be taken into account when calculating holiday pay.

2.28 Network Rail is forecasting to spend £55m more on operations in 2018-19 compared to 2017-18. The increase includes the recruitment of additional local operations managers and mobile operations managers in preparation for CP6, and the costs of operating Clapham and

Guildford stations. Network Rail took over the operation of these stations from train operators during the year. These stations costs are offset by increased stations income.

Support costs

2.29 Support costs relate to activities that are generally centrally managed and facilitate Network Rail's core business. These include information management and corporate functions.

2.30 Support costs were £396m, £46m more than in 2016-17. Support costs were affected by the introduction of the Government's apprentice levy and the unwinding of a beneficial one-off insurance revaluation in 2016-17.

2.31 Network Rail is forecasting to spend £102m more on support costs in 2018-19 compared to 2017-18. This includes additional expenditure on System Operator activities, information technology and vehicle leasing costs (Network Rail has decided to lease its fleet of vehicles, the leasing cost is reported in support costs resulting in an increase to support costs with an offsetting reduction in renewals costs).

Schedule 4 and Schedule 8 costs

2.32 The Schedule 4 regime compensates train operators for planned reductions to network availability. It incentivises Network Rail to plan engineering work early and efficiently, reducing disruption. The Schedule 8 performance regime compensates train operators for the impact of unplanned disruption.

2.33 Schedule 4 costs were £220m, £5m lower than in 2016-17. Schedule 8 costs were £219m, £25m higher than in 2016-17. Schedule 4 costs benefited from deferral of planned renewals activities. Both Schedule 4 and Schedule 8 costs were affected by the disruption from Storm Emma in February. Schedule 8 costs were also affected by an increase in trespassing and fatalities[33], and infrastructure failures across a number of routes. Network Rail outperformed on Schedule 8 costs in the South East. Performance improved on this route following investment in performance improvement schemes.

Traction electricity, industry costs and rates

2.34 Traction electricity provides power to electrically powered trains. Network Rail acquires electricity from providers and passes most of the costs onto train companies, retaining a small amount of the cost for electricity used by itself. Industry rates and other costs include Network Rail's share of British Transport Police costs, business rates, the ORR licence fee and railway safety levy, and RSSB costs.

2.35 Traction electricity, industry costs and rates were £650m, £45m more than in 2016-17. The increase was mostly due to increases to business rates, partly offset by lower British Transport Police costs.

[33] These can significantly disrupt intensively used parts of the rail network. Network Rail bears the cost of these events under the Schedule 8 regime. Network Rail introduced a number of initiatives to reduce these events during the year.

Enhancements

2.36 Enhancements are changes to improve network capacity or capability, for example enabling more train journeys or higher speeds.

2.37 Network Rail has undertaken a substantial amount of enhancements work in CP5, spending £4,055m in 2017-18. This is the largest annual investment in rail infrastructure in recent years (35% higher than the average annual enhancements spend over the previous five years and 68% higher than the average over the previous ten years). Table 2.3 summarises the main enhancements projects in 2017-18.

Financial performance of Network Rail's enhancements portfolio

2.38 Network Rail experienced significant cost overruns and delays on its enhancements programme earlier in CP5. Following a review of the affordability and deliverability of the England and Wales enhancements portfolio, the DfT agreed a revised expenditure profile for the rest of CP5 in 2015. We now monitor Network Rail against this revised baseline in England and Wales[34]. The Enhancements Cost Adjustment Mechanism (ECAM)[35] remains in place in Scotland to adjust the PR13 assumptions when projects reach a sufficient stage of maturity.

2.39 Network Rail's enhancement projects were delivered for slightly better (£4m) than budget for the work that was delivered in 2017-18. It spent £311m less than budget mostly due to £307m of deferral of work on some projects.

[34] Except for those projects governed by bespoke protocols such as Thameslink.

[35] See http://orr.gov.uk/rail/economic-regulation/regulation-of-network-rail/price-controls/periodic-review-2013/cp5-delivery-plan

Table 2.3: Enhancements expenditure in 2017-18, Great Britain

£m	Expenditure	Budget variance better/(worse)	Neutral including (acceleration) / deferral	(Under) / out performance
Great Western electrification	556	126	126	0
North of England programme	552	(40)	(4)	(36)
Thameslink	391	39	(5)	44
Rolling programme of electrification	131	(2)	(81)	79
Midland mainline electrification	120	24	18	6
Edinburgh Glasgow improvement programme	105	(10)	35	(45)
Other PR13 enhancements	1,357	399	447	(48)
Total PR13 enhancements[36]	**3,212**	**536**	**536**	**0**
Other schemes[37]	843	(225)	(229)	4
Total enhancements	**4,055**	**311**	**307**	**4**

Source: Network Rail management accounts and own analysis

2.40 The financial matters relating to key projects are summarised below:

- *Great Western electrification*: Network Rail's largest enhancement project in 2017-18 was the continuing electrification of the railway between South Wales and London Paddington. £556m was spent on the project, £126m lower than budget in 2017-18. Significant progress was made during the year including commissioning the Maidenhead to Didcot Parkway electrification in December 2017, enabling electrically powered trains to run between Paddington and Didcot. The underspend was due to deferral of overhead electrification in Wales.

- *North of England programme*: This comprises a number of projects to increase network capacity in the north of England. £552m was spent on the programme in 2017-18, £40m more than budget. The Ordsall Chord project completed on time and under budget. However, other parts of the programme have experienced technical difficulties with one material problem subject to an ongoing insurance claim by Network Rail. The programme has also been affected by the liquidation of Carillion. In total the underperformance was £36m.

- *Thameslink*: This programme involves changes to track layout, signalling and station upgrades to create new connections and increase capacity for north-south journeys through London. £391m was spent on the programme in 2017-18, £39m less than

[36] PR13 enhancements are shown as £3,153m in Annex A. The difference is that PR13 enhancements per Network Rail's management accounts (and Table 2.3) include work on three additional schemes including Gospel Oak to Barking. These schemes were not included in the PR13 baseline but included in the change-controlled Hendy baseline.

[37] These schemes include work on stations, car parks and other facilities undertaken on behalf of train operators and other parties. These are called pay as you go schemes.

budget mostly due to £44m of lower costs for the work undertaken. The Thameslink programme is nearing completion. Most major milestones were achieved in 2017-18 including the major remodelling of the track into London Bridge.

- *Rolling programme of electrification:* This consists of three projects electrifying the lines between Rutherglen and Coatbridge (completed December 2014), Stirling, Dunblane and Alloa, and the Shotts line (both due to complete in March 2019). £131m was spent on the programme in 2017-18, £2m higher than budget. This was due to a combination of £79m of financial outperformance and £81m of changes to the annual budget as a result of changes to the overall baseline funding for the project[38].

- *Midland Mainline electrification*: The Midland Mainline is being electrified from Bedford to Kettering and Corby to improve journey times, increase capacity and improve environmental performance. £120m was spent on the programme in 2017-18, £24m less than budget. The programme financially outperformed by £6m and £18m of work was deferred.

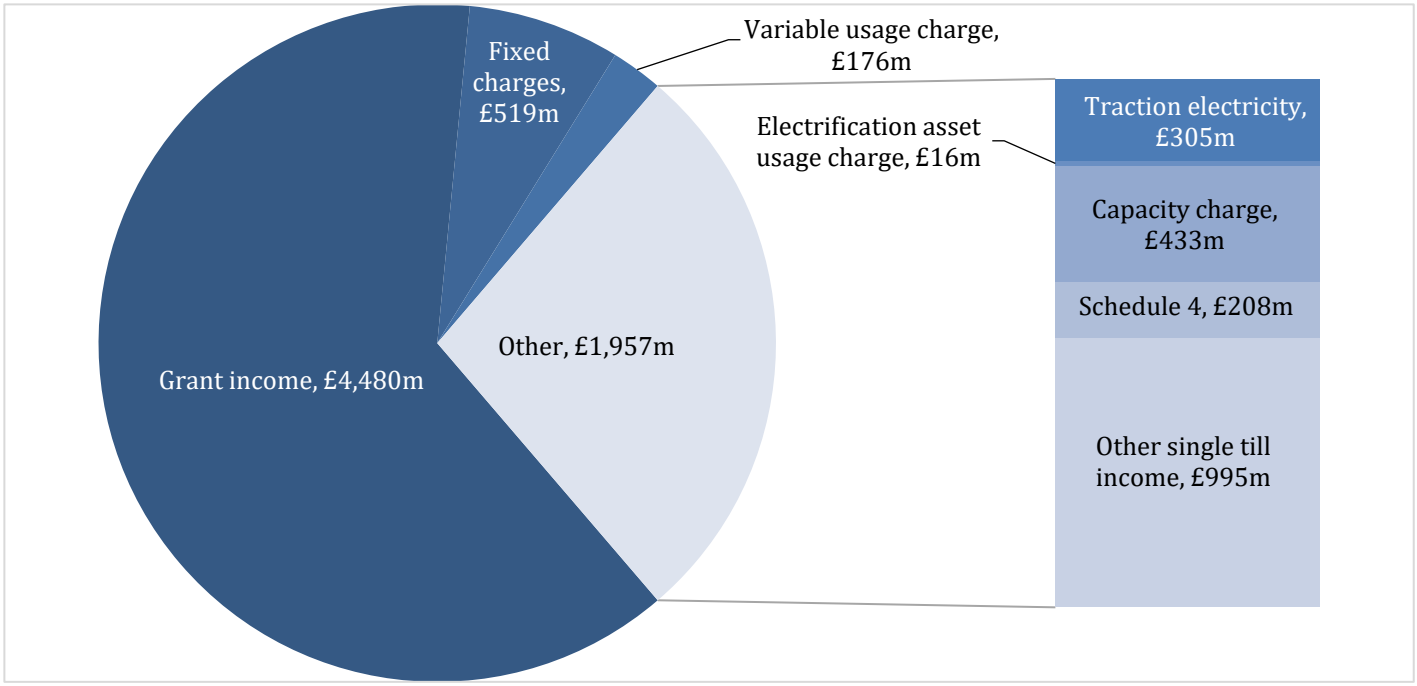
- *Edinburgh Glasgow improvement programme (EGIP):* This includes electrifying the line between Edinburgh and Glasgow via Falkirk, introduction of new rolling stock, shorter journey times and a major upgrade of Glasgow Queen Street station. £105m was spent on the programme in 2017-18, £10m more than budget. Work on electrifying the line completed in December 2017 and the bulk of remaining construction activity is focussed on depots and the Waverley and Queen Street stations. EGIP is scheduled to finish in March 2020. The programme has experienced cost overruns due to complications around electrification compliance, scope of work, poor cost control and performance from the EGIP Alliance. Work was also delayed following an extended planning process about the upgrade to Glasgow Queen Street station. The overspend was due to a combination of £45m of financial underperformance and £35m of changes to budget.

Income

2.41 Network Rail received £7,132m of income in 2017-18. Figure 2.5 shows this split by major income category. The majority of income was from government grants (£4,480m). It received £1,657m from track and other access charges from franchised train operators and £995m from Other Single Till Income (OSTI). OSTI comprises income from Network Rail's properties and stations, freight and open access charges, and from other sources.

[38] This has the effect of reversing underperformance reported in previous years.

Figure 2.5: Network Rail's income in 2017-18, Great Britain



Source: Network Rail and own analysis

2.42 Network Rail's income is relatively fixed in the short to medium term. Income increased by £106m (1.5%) in 2017-18. Consistent with our PR13 determination, this was mostly due to a £112m increase in fixed track access charges paid by franchised train operators offset by a £70m decrease in government grants. For the first time, Network Rail also received £72m from the Crossrail finance charge in relation to the work that Network Rail undertook to connect the new Crossrail infrastructure to the existing rail network.

Asset disposals

2.43 In 2015, Sir Peter Hendy, Chairman of Network Rail, undertook a review into Network Rail's CP5 enhancement programme cost and time overruns, and the replanning and reprogramming necessary to deliver those plans. The Hendy review concluded that Network Rail should address its CP5 funding shortfall by asset disposals totalling around £1.8 billion through divestment of non-core assets. This included considering options for the sale of property assets (including retail units in managed stations and the commercial estate), spare capacity on its telecommunications network and non-core rail assets such as depots[39].

2.44 Network Rail subsequently decided that some of the options for disposal would be inappropriate as the assets needed to be retained for railway purposes. Other disposal options included leasing rather than sale which would not count for the government's deficit reduction rules. Network Rail continues to proceed with its plans to dispose of non-core

[39] See http://www.railwaysarchive.co.uk/documents/NR_HendyReport2015.pdf.

assets where appropriate. Network Rail currently expects to achieve over £1bn of asset sales in CP5 including its commercial estate portfolio.

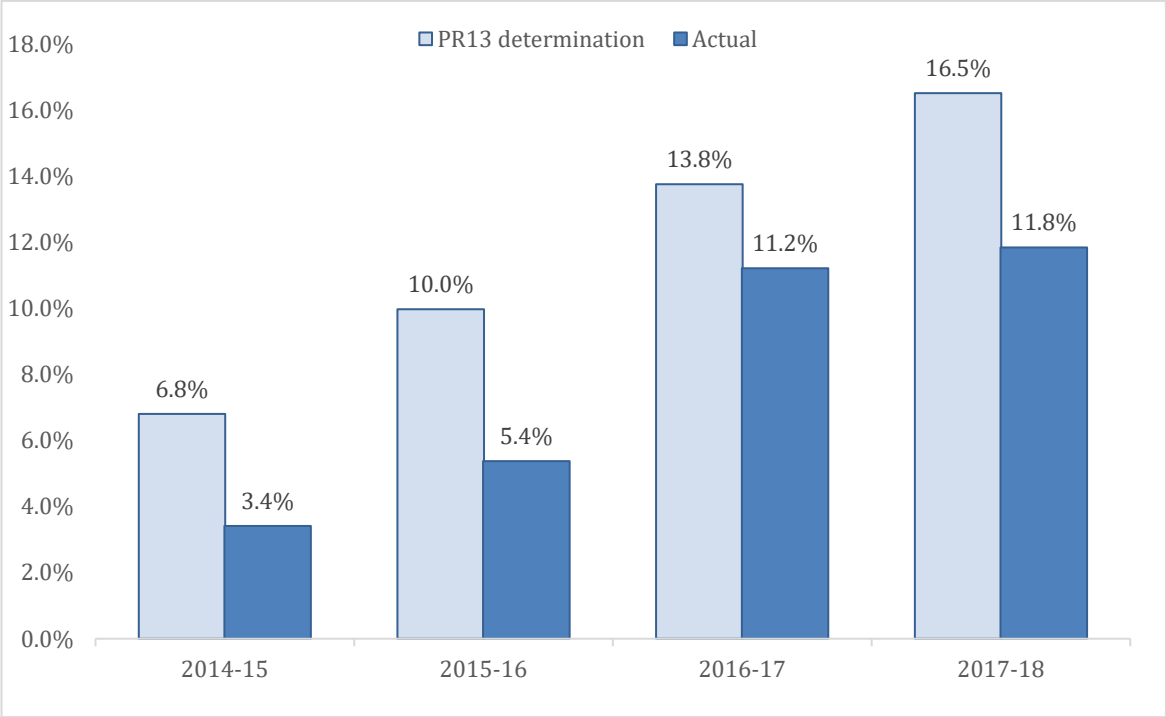
3. Scotland

3.1 This chapter covers efficiency, financial performance, expenditure and income for Network Rail in Scotland.

Efficiency

3.2 We assess changes to the efficiency of Network Rail's core business activities in Scotland. These are its operations, support, maintenance and renewals (OSMR) activities.

Figure 3.1: Actual and expected efficiency improvements compared to the start of CP5, Scotland



Source: Network Rail and own analysis

3.3 In determining the funding that Network Rail would require to deliver its outputs in Scotland in CP5, we assessed the efficient level of expenditure that it should need to incur[40]. Our PR13 determination concluded that Network Rail should improve its efficiency in Scotland by 19.5% by the end of CP5, including a 3.2% improvement in 2017-18.

3.4 As shown in Figure 3.1, Network Rail's efficiency in Scotland has improved in each of the first four years of CP5. It improved by 0.7% in 2017-18 to 11.8% compared to the start of CP5. This was due to £52m of renewals efficiencies and £23m of operations, support and maintenance efficiencies. The underlying cost changes are examined below.

[40] The detailed assumptions underlying these projections were set out in our 2013 Periodic Review (PR13) final determination. See http://orr.gov.uk/__data/assets/pdf_file/0015/456/fd-chapters-3-11.pdf.

3.5 Using the CP5 efficiency measure, Network Rail is forecasting that its Scotland efficiency will be 0.1% percent lower in 2018-19 compared to the start of CP5. Network Rail Scotland has said that this is partly because of its preparations for CP6 where it has chosen to spend more (£77m). This shows as inefficiency in CP5 but may overall generate efficiency savings when looked at over both control periods.

Financial performance

3.6 Our primary measure of Network Rail's financial performance, the *financial performance measure* (FPM) provides a better understanding of Network Rail Scotland's financial performance than simple income and expenditure variances. FPM compares actual income and expenditure to Network Rail's annual budget, and then to the financial assumptions in our PR13 determination (which underpin the level of funding)[41]. The regulatory measure ensures that Network Rail does not benefit from delaying work to a later date if that work will still need to be done and adjusts for the value of any outputs that Network Rail in Scotland was funded to deliver, but has not delivered such as reliability of train performance. A positive FPM means that Network Rail has outperformed and vice versa[42].

Table 3.1: Network Rail's financial performance in Scotland in 2017-18

£m	Variance better / (worse)	Of which out / (under) performance
Turnover	4	(1)
Schedule 4	12	12
Schedule 8	(17)	(17)
Operations	1	1
Support	7	5
Maintenance	(2)	(4)
Capex – Renewals	31	4
Capex – Enhancements	23	37
Total	**59**	
Financial performance against budget[43]		**37**
Budget vs. PR13		(138)
Adjustments for missed regulatory outputs		(8)
Financial performance (regulatory)[44]		**(109)**

Source: Network Rail and own analysis

[41] It excludes some income and expenditure that are not as controllable by Network Rail in Scotland. These include network grant, fixed track access charges, traction electricity income and costs, and business rates.

[42] Annex C explains the linkage between Network Rail's financial performance and its efficiency.

[43] Neutral differences including deferral of work represent the £22m difference between the £59m of cumulative income and expenditure variances and the £37m of financial outperformance against budget.

[44] This does not include the effect of the 25% renewals RAB incentive. Including that adjustment, the regulatory measure is an underperformance of £51m. See our regulatory accounting guidelines and Network Rail's regulatory financial statements for further details.

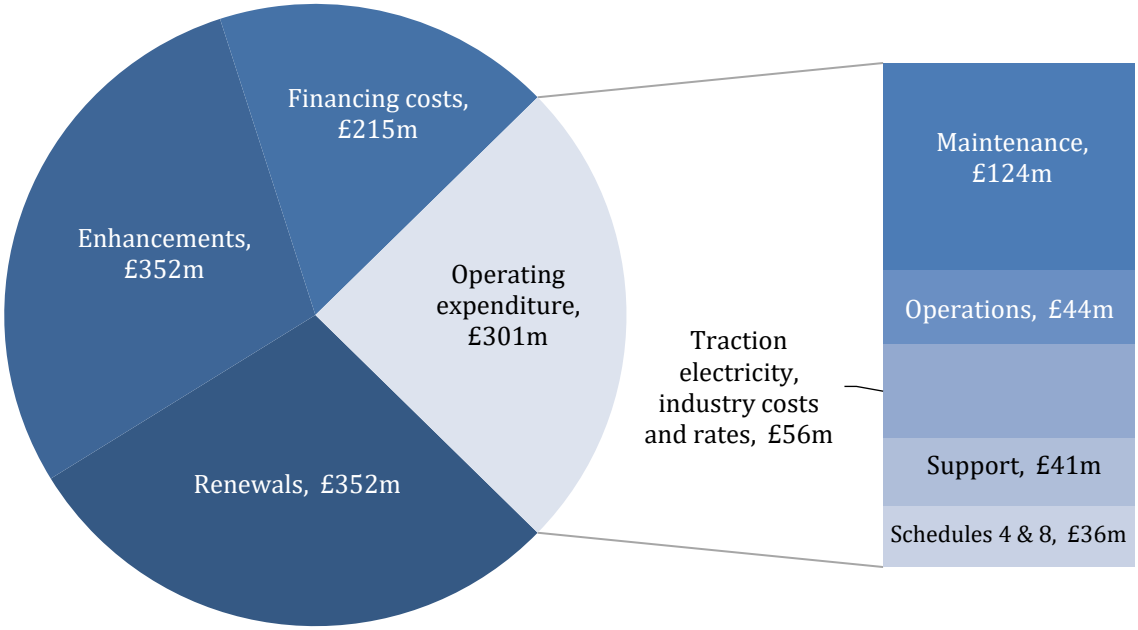
3.7 In Scotland, Network Rail outperformed against its budget by £37m in 2017-18. This was largely because of lower than budgeted enhancements expenditure, partly offset by higher than budgeted Schedule 8 payments for poor train performance. The level of performance has improved compared to the first three years of CP5 (average £50m annual underperformance against budget).

3.8 In Scotland, Network Rail underperformed the regulatory financial performance measure by £109m largely because its internal budget was £138m higher than our PR13 financial assumptions for the year. This is largely because of higher than expected capital expenditure for renewals and enhancements.

Expenditure

3.9 Network Rail spent £1.2bn in Scotland in 2017-18. Figure 3.2 shows this split by major expenditure category. These are operating expenditure (covering maintenance, operations, support costs, Schedule 4 and 8 payments and other), renewals, enhancements and financing costs. Expenditure in these categories is examined below[45].

Figure 3.2: Network Rail's expenditure in Scotland in 2017-18



Source: Network Rail and own analysis

Renewals

3.10 Renewals expenditure relates to activities to replace in whole, or in part, network assets that have deteriorated so that they can no longer be economically maintained. Renewal of an asset does not result in any change to the performance of the original asset.

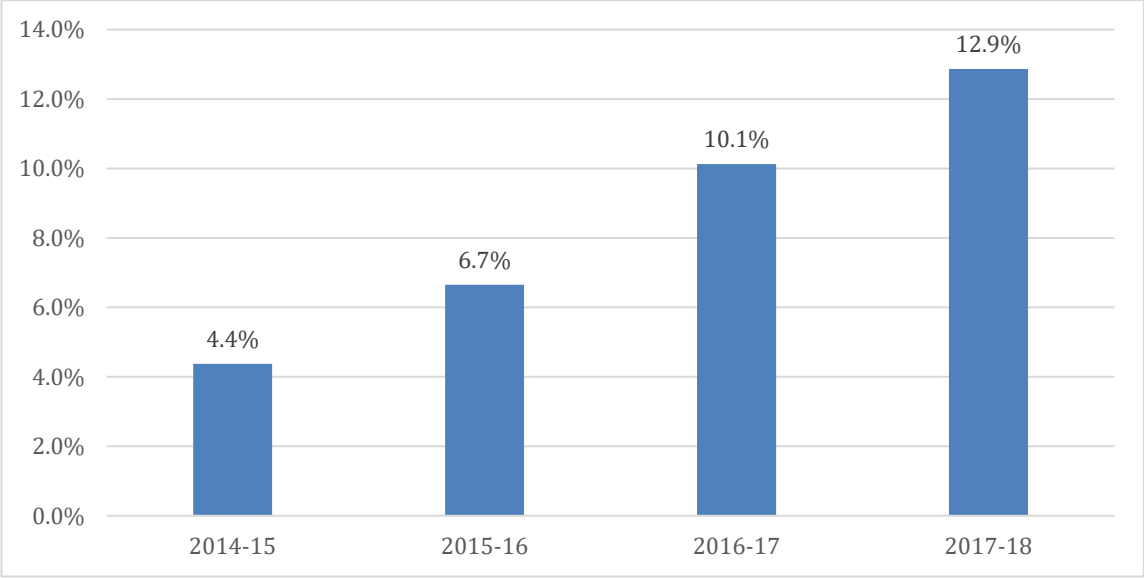
[45] Financing costs for Scotland are examined in Chapter 5.

3.11 Network Rail spent £352m renewing the rail network in Scotland in 2017-18, £31m less than its own budget mostly due to £27m of deferral of planned work. For the work that it delivered, it outperformed by £4m, compared to budget.

Renewals efficiency

3.12 The efficiency of Network Rail's renewals activities in Scotland improved by 3.0% in 2017-18 compared to 2016-17, largely due to improvements in the delivery of plain line track including the productivity of its high output plant and machinery. It expects renewals efficiency to decline by £31m in 2018-19 to 5.2% more efficient than the start of the control period.

Figure 3.3: Efficiency of Network Rail's renewals activities in Scotland compared to the start of CP5



Source: Network Rail and own analysis

Deferral of renewals work

3.13 Network Rail has deferred £119m of renewals work in Scotland in CP5 to date that was assumed in our PR13 determination.

Operating expenditure

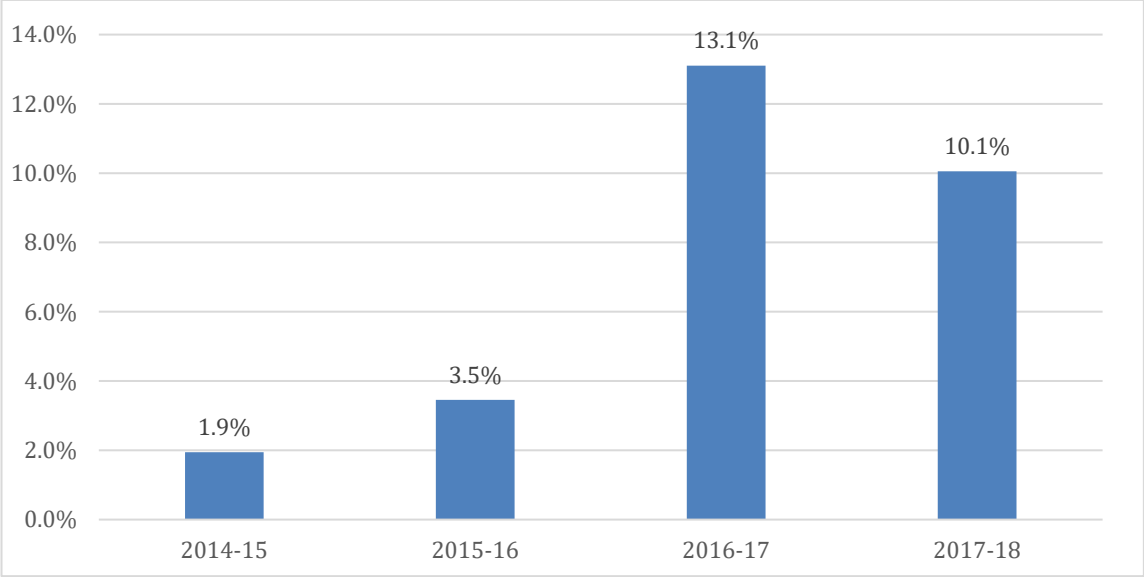
3.14 As shown in Figure 3.2, operating expenditure relates to operations, maintenance, support costs, Schedule 4 and 8 payments, and traction electricity, industry costs and rates. These expenditure items are examined below.

Operations, maintenance and support activities efficiency

3.15 The efficiency of Network Rail's operations, maintenance and support (OMS) activities in Scotland declined by 3.5% in 2017-18 compared to 2016-17, partially offsetting the 13.1% efficiency achieved in the first three years of CP5. The underlying cost increases are examined below.

3.16 Network Rail is forecasting that its OMS efficiency will decline by 21.8% in Scotland in 2018-19 such that it will be 9.6% lower than compared to the start of CP5.

Figure 3.4: Efficiency of Network Rail's operating activities in Scotland compared to the start of CP5



Source: Network Rail and own analysis

Maintenance

3.17 Maintenance expenditure relates to activities that sustain the condition and capability of the existing infrastructure to the previously assessed standard of performance.

3.18 Network Rail spent £124m maintaining the rail network in Scotland in 2017-18, £1m more than in 2016-17.

Operations and support costs

3.19 Operations expenditure relates to activities to operate the rail network. These include signalling and running managed stations. Support costs relate to activities that are generally centrally managed and facilitate the core business. These include information management and corporate functions.

3.20 Network Rail spent £44m operating the rail network in Scotland in 2017-18, £2m less than in 2016-17. Support costs were £41m, £4m more than in 2016-17[46].

[46] Support costs include British Transport Police costs in Table 3.1. These costs are included under traction, industry rates and other costs in this section.

Schedule 4 and Schedule 8 costs

3.21 The Schedule 4 regime compensates train operators for reduced network availability due to planned engineering work. It incentivises Network Rail to plan engineering work early and efficiently, reducing disruption. The Schedule 8 performance regime compensates train operators for the impact of unplanned disruption.

3.22 Schedule 4 costs were £15m, £26m lower than in 2016-17, largely due to more possessions taken in 2016-17 for works at Glasgow Queen Street. Schedule 8 costs were £21m compared to £0m in 2016-17 largely due to adverse weather conditions (weather conditions were relatively benign in 2016-17). Schedule 8 costs were £17m higher than budget because the weather was worse than assumed in the budget.

Traction electricity, industry costs and rates

3.23 Traction electricity (£20m) provides power to electrically powered trains. Network Rail acquires electricity from providers and passes most of the costs onto train companies, retaining a small amount of the cost for electricity used by Network Rail itself.

3.24 Industry costs and rates in Scotland include Network Rail's share of British Transport Police (BTP) costs (£10m), business rates (£23m), ORR licence fee and railway safety levy (£2m), and RSSB[47] costs (£1m).

3.25 Overall these costs were £3m higher than in 2016-17, largely due to increases in business rates.

Enhancements

3.26 Enhancements are changes to improve network capacity or capability, for example enabling more train journeys or higher speeds.

3.27 Network Railhas undertaken a portfolio of enhancement projects in Scotland in CP5, spending £382m in 2017-18 and £1.4bn over the control period to date. Expenditure was £23m lower than budget, because of outperformance (£37m) partially offset by £14m of changes to budgets which did not contribute to financial performance. Network Rail refers to these as FPM neutral.

[47] Rail Safety and Standards Board (RSSB).

Table 3.2: Enhancements expenditure in 2017-18, Scotland

£m	Expenditure	Budget variance b/(w)	Neutral including (acceleration) / deferral	(Under) / out performance
Edinburgh Glasgow improvement programme	105	(10)	35	(45)
Rolling Programme of Electrification	131	(2)	(81)	79
Aberdeen to Inverness Journey time improvements	79	20	17	3
Other PR13 enhancements	51	14	(14)	0
Total PR13 enhancements	**366**	**22**	**(15)**	**37**
Non PR13 enhancements	17	1	1	0
Total enhancements	**382**	**23**	**(14)**	**37**

Source: Network Rail and own analysis

3.28 The financial aspects of the key projects are summarised below:

- *Edinburgh Glasgow improvement programme (EGIP):* This includes electrifying the line between Edinburgh and Glasgow via Falkirk, introduction of new rolling stock, shorter journey times and a major upgrade of Glasgow Queen Street station. £105m was spent on the programme in 2017-18, £10m more than budget. Work on electrifying the line completed in December 2017 and the bulk of remaining construction activity is focussed on depots and Waverley and Queen Street stations. EGIP is scheduled to finish in March 2020. The programme has experienced cost overruns due to complications around electrification compliance, scope of work, poor cost control and performance from the EGIP Alliance. Work was also delayed following an extended planning process about the upgrade to Glasgow Queen Street station. This was due to a combination of £45m of financial underperformance and £35m of changes to budget.

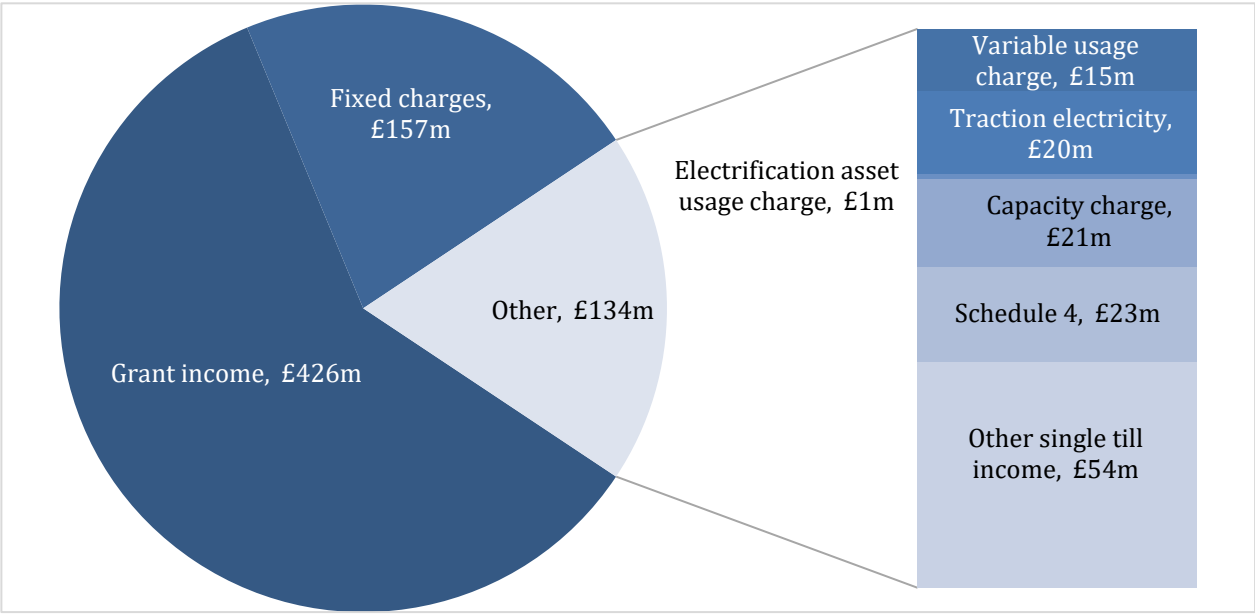
- *Rolling programme of electrification:* This consists of three projects electrifying the lines between Rutherglen and Coatbridge (completed December 2014), Stirling, Dunblane and Alloa, and the Shotts line (both due to complete in March 2019). £131m was spent on the programme in 2017-18, £2m higher than budget. This was due to a combination of £79m of financial outperformance and £81m of changes to the annual budget as a result of changes to the overall baseline funding for the project.

- *Aberdeen to Inverness journey time improvements:* This will provide infrastructure to permit trains to call at potential new stations at Kintore and Dalcross without extending average journey times and permit more frequent commuter services to Aberdeen and Inverness. £79m was spent on the programme in 2017-18, £20m less than budget. This was due to a combination of £3m of financial outperformance and £17m of changes to budget.

Income

3.29 Network Rail received £717m of income in Scotland in 2017-18. Figure 3.5 shows this split by major income category. The majority of its income was from government grants (£426m), with £237m from track and other access charges from train operators and (£54m) from Other Single Till Income (OSTI) which is examined below.

Figure 3.5: Income in 2017-18, Scotland



Source: Network Rail and own analysis

3.30 Network Rail's income in Scotland is relatively fixed in the short to medium term. Consistent with our PR13 determination, government grants decreased by £56m, offset by a £60m increase in fixed track access charges paid by franchised train operators.

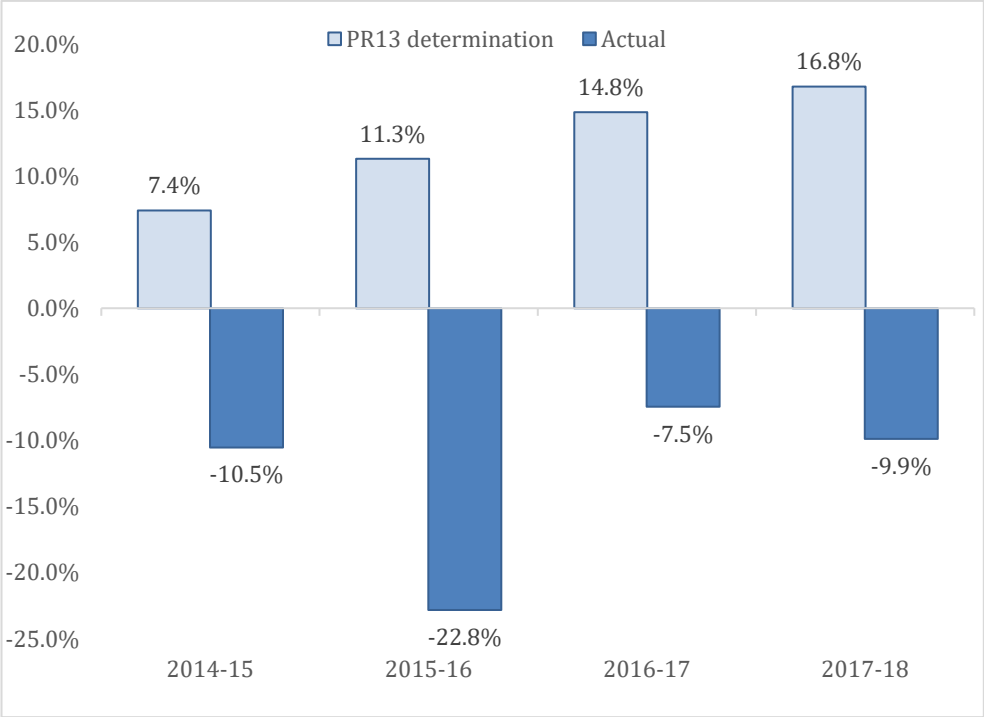
4. Wales

4.1 This chapter covers efficiency, financial performance, expenditure and income for Network Rail in Wales.

Efficiency

4.2 We assess changes to the efficiency of Network Rail's core business activities in Wales. These are its operations, support, maintenance and renewals (OSMR) activities.

Figure 4.1: Actual and expected efficiency improvements in Wales compared to the start of CP5



Source: Network Rail and own analysis

4.3 In determining the funding that Network Rail would require to deliver its outputs in Wales in CP5, we assessed the efficient level of expenditure that it should need to incur[48]. Our PR13 determination concluded that Network Rail should improve its efficiency in Wales by 16.8% by the fourth year of CP5, including a 2.3% improvement in 2017-18.

4.4 As shown in Figure 4.1, Network Rail's efficiency in Wales declined significantly earlier in CP5. Efficiency has decreased by 2.3% compared to 2016-17 and is 9.9% lower compared to the start of CP5. The underlying cost increases are examined below.

[48] The detailed assumptions underlying these projections were set out in our 2013 Periodic Review (PR13) final determination. See http://orr.gov.uk/__data/assets/pdf_file/0015/456/fd-chapters-3-11.pdf.

Financial performance

4.5 Our primary measure of Network Rail's financial performance, the *financial performance measure* (FPM) provides a better understanding of Network Rail in Wales's financial performance than simple income and expenditure variances. FPM compares actual income and expenditure to Network Rail's Wales annual budget, and then to the financial assumptions in our PR13 determination (which underpin the company's level of funding)[49]. The regulatory measure ensures that Network Rail does not benefit from delaying work to a later date if that work will still need to be done and adjusts for the value of any outputs that it was funded to deliver, but has not delivered such as reliability of train performance. A positive FPM means that Network Rail in Wales has outperformed and vice versa[50].

Table 4.1: Network Rail's financial performance in Wales in 2017-18

£m	Variance to budget better/(worse)	Of which out / (under) performance
Turnover	(7)	1
Schedule 4	4	3
Schedule 8	(1)	(1)
Operations	(2)	(2)
Support	4	3
Maintenance	0	0
Capex – Renewals	12	(4)
Capex – Enhancements	10	(3)
Total	**20**	
Financial performance (internal)		**(3)**
Budget vs. PR13		(97)
Adjustments for missed regulatory outputs		(4)
Financial performance (regulatory) [51]		**(104)**

Source: Network Rail and own analysis

4.6 Network Rail underperformed against its budget in Wales by £3m in 2017-18. It underperformed the regulatory financial performance measure by £104m largely because its internal budget was £97m higher than our PR13 financial assumptions for the year. The regulatory measure includes a £4m downward adjustment for train performance lower than the regulatory target.

[49] It excludes some income and expenditure that are not as controllable by Network Rail in Wales. These include network grant, fixed track access charges, traction electricity income and costs, and business rates.

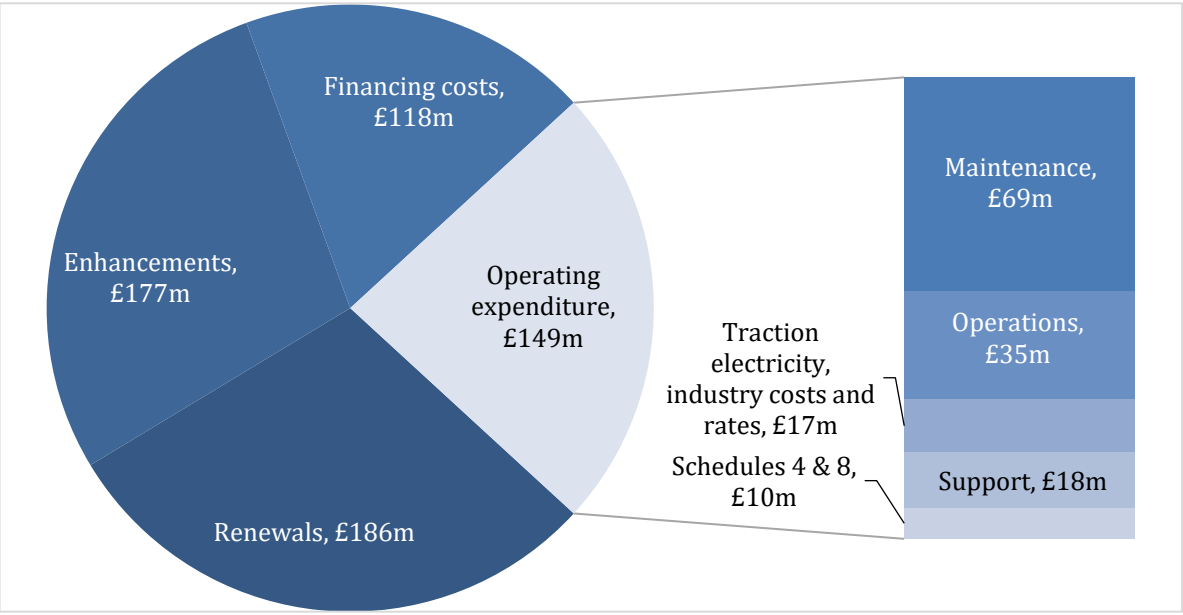
[50] Annex C explains the linkage between Network Rail's financial performance and its efficiency.

[51] This does not include the effect of the 25% renewals RAB incentive. Including that adjustment, the regulatory measure is an underperformance of £43m. See our regulatory accounting guidelines and Network Rail's regulatory financial statements for further details.

Expenditure

4.7 Network Rail spent £630m in Wales in 2017-18. Figure 4.2 shows this split by major expenditure category. These are operating expenditure (covering maintenance, operations, support costs, Schedule 4 and 8 payments and other), renewals, enhancements and financing costs. Network Rail in Wales's expenditure in these categories is examined below.

Figure 4.2: Expenditure in 2017-18, Wales



Source: Network Rail and own analysis

Renewals

4.8 Renewals expenditure relates to activities to replace in whole, or in part, network assets that have deteriorated so that they can no longer be economically maintained. Renewal of an asset does not result in any change to the performance of the original asset.

4.9 Network Rail spent £186m renewing the rail network in Wales in 2017-18, £22m less than in 2016-17. It spent £12m less than its own budget but also deferred £16m of planned work, meaning that for the work done, the route underperformed by £4m.

4.10 The efficiency of Network Rail's renewals activities in Wales declined by 6.1% in 2017-18 compared to 2016-17. Network Rail in Wales expects renewals efficiency to improve in 2018-19, such that its renewals activities will be 17.8% less efficient at the end of CP5. It has deferred £226m of renewals work in the first four years of CP5 compared to the assumptions in our PR13 determination.

Operating expenditure

4.11 Operating expenditure relates to operations, maintenance, support costs, Schedule 4 and 8 payments, and traction electricity, industry costs and rates.

Operations, maintenance and support activities efficiency

4.12 The efficiency of Network Rail's operations, maintenance and support (OMS) activities in Wales improved by 0.5% in 2017-18 compared to 2016-17. It expects efficiency to decline in 2018-19, such that its OMS activities will be 1.5% more efficient at the end of CP5 than at the start.

Maintenance

4.13 Maintenance expenditure relates to activities that sustain the condition and capability of the existing infrastructure to the previously assessed standard of performance. Network Rail spent £69m maintaining the rail network in Wales in 2017-18, £1m less than in 2016-17.

Operations and support costs

4.14 Operations expenditure relates to activities to operate the rail network. These include signalling and running managed stations. Support costs relate to activities that are centrally managed by Network Rail and facilitate the core business. These include information management and corporate functions.

4.15 Network Rail spent £35m operating the rail network in Wales in 2017-18, £1m more than in 2016-17. Support costs[52] were £18m, £3m lower than in 2016-17.

Schedule 4 and Schedule 8 costs

4.16 The Schedule 4 regime compensates train operators for reduced network availability due to planned engineering work. It incentivises Network Rail to plan engineering work early and efficiently, reducing disruption. The Schedule 8 performance regime compensates train operators for the impact of unplanned disruption.

4.17 Schedule 4 costs were £7m, £3m lower than in 2016-17. Schedule 8 costs were £3m, £2m higher than in 2016-17.

Traction electricity, industry costs and rates

4.18 Traction electricity provides power to electrically powered trains. Network Rail acquires electricity from providers and passes most of the costs onto train companies, retaining a small amount of the cost for electricity used by the organisation. In Wales this was £1m.

4.19 Industry costs and rates include Network Rail in Wales's share of British Transport Police costs (£4m), business rates (£9m), ORR licence fee and railway safety levy (£2m), and RSSB costs (£1m). These costs were £17m, £7m higher than in 2016-17.

[52] Support costs largely relate to Wales's share of the costs of activities that are centrally managed by Network Rail, rather than costs incurred directly by the Wales route.

Enhancements

4.20 Enhancements are changes to improve network capacity or capability, for example enabling more train journeys or higher speeds. Network Rail has undertaken a portfolio of enhancement projects in Wales in CP5, spending £196m in 2017-18.

Table 4.2: Enhancements expenditure in 2017-18, Wales

£m	Expenditure	Budget variance better/(worse)	Neutral including (acceleration) / deferral	(Under) / out performance
Great Western electrification	184	12	12	0
Bridgend to Swansea electrification	6	(5)	(5)	0
Other PR13 schemes[53]	(14)	7	7	0
Total PR13 enhancements	**176**	**18**	**18**	**0**
Non PR13 enhancements	21	(8)	(5)	(3)
Total enhancements	**196**	**10**	**13**	**(3)**

Source: Network Rail and own analysis

4.21 *Great Western Electrification*: This is a major and complex project to electrify the Great Western Main Line (GWML) into Wales. £184m was spent on the programme in 2017-18, £12m less than budget. This was due to the deferral of £12m of work.

4.22 *Bridgend to Swansea electrification:* £6m was spent on the programme in 2017-18m, £5m more than budget. This was due to the acceleration of £5m of work.

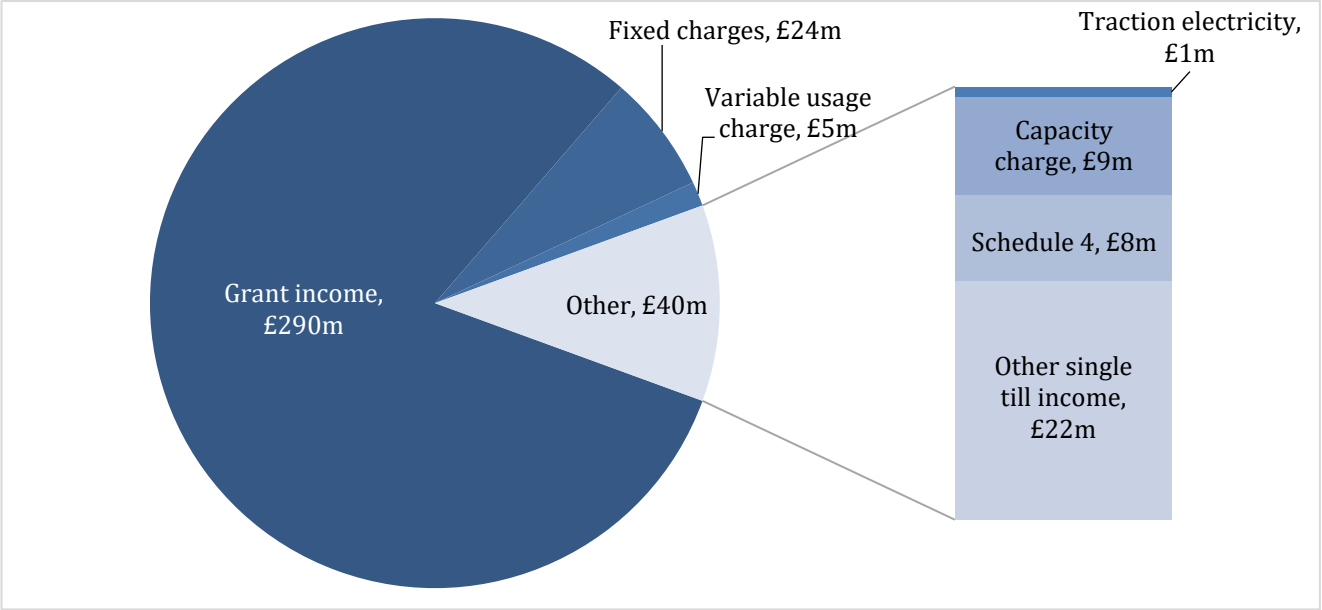
Income

4.23 Network Rail received £359m of income in Wales in 2017-18. Figure 4.3 shows this split by major income category. The majority of its income was from government grants (£290m), with £47m from track and other access charges from train operators and £22m from Other Single Till Income (OSTI).

4.24 Network Rail's income in Wales was £5m lower in 2017-18 compared to 2016-17 mostly due to £9m lower Schedule 4 income.

[53] This comprises £4m of expenditure on the strategic freight network and other projects offset by £19m of DfT funding for performance improvement schemes. The work funded by these schemes is included in other projects, both for this year and previous years. However, the additional funding is included in this line, hence there is a £19m credit.

Figure 4.5: Income in 2017-18, Wales



Source: Network Rail and own analysis

5. Regulatory finances

5.1 This chapter reports on Network Rail's regulatory finances. These are its borrowing, net debt, financing costs, the regulatory asset base (RAB) and financial indicators. Information is presented separately for Great Britain and for Scotland where relevant.

Borrowing and net debt

5.2 Following Network Rail's reclassification as a public sector body in 2014, the company agreed to borrow from the Department for Transport (DfT) instead of issuing bonds. There are separate borrowing facilities and limits for Network Rail's operations in England and Wales, and in Scotland.

5.3 Network Rail's net debt increased by £5.6bn to £50.4bn in 2017-18 (for Great Britain). This was £0.6bn lower than budget largely due to underspend on renewals and enhancements projects. In 2017-18, Network Rail borrowed £6.7bn from DfT largely to fund its capital programme and to refinance existing debt.

5.4 Network Rail expects to use all of its available borrowing for its operations in England and Wales in 2018-19. It expects to have £0.1bn of headroom for its operations in Scotland. The lack of headroom for England and Wales means that it will have no contingency in the event that income or expenditure outturn is worse than planned. In light of Network Rail's underperformance against its own budget in each year of CP5 to date, we consider that this lack of contingency is risky. In practice, we expect that the company would need either to request additional funds from the UK Government, or defer further renewals work into CP6, which would exacerbate the declining efficiency of its renewals activities.

5.5 The main financial risks are asset divestment, Schedule 8 costs, delivery of renewals efficiency initiatives, enhancements costs, movements in interest rates, cash collateral on financial derivatives and inflation.

Financing costs

5.6 Network Rail incurs financing costs on its debt. Financing costs includes interest and accretion[54] on index-linked debt.

5.7 Network Rail's financing costs were £2.3bn in 2017-18. Financing costs included £1.6bn of interest costs and £0.7bn of accretion. Network Rail's financing costs for Scotland were £0.2bn.

[54] Network Rail used to issue index-linked bonds. The interest payments and the final repayment of these bonds are linked to the retail price index (RPI). If RPI outturns lower than expected when the bond was issued, Network Rail will pay less to bondholders and vice versa.

5.8 The way that Network Rail receives funding from governments will change in CP6. As part of these changes, Network Rail will no longer borrow and incur financing costs on new debt. These changes are explained in our recent PR18 draft determination[55].

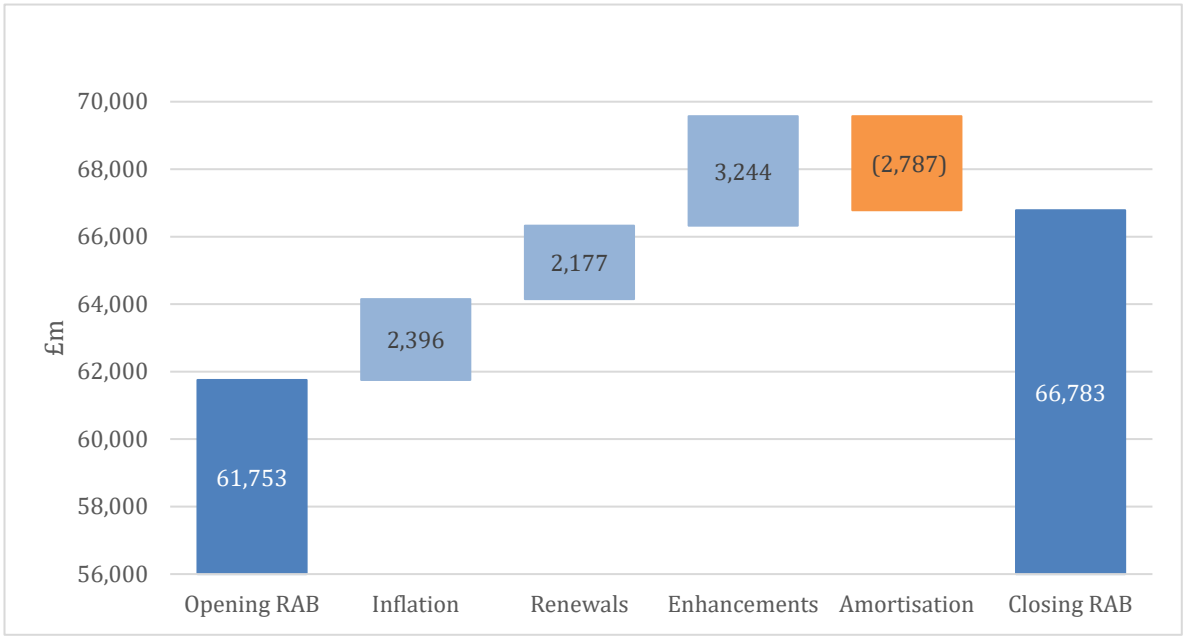
Regulatory asset base

5.9 The regulatory asset base (RAB) is our valuation of Network Rail's assets[56]. Network Rail's RAB increased by £5.0bn to £66.8bn in 2017-18. It increased by £0.6bn to £6.7bn in Scotland.

5.10 The movements in Network Rail's RAB are shown in Figure 5.1. Note that RAB additions will not equal actual capital expenditure. As explained in our regulatory accounting guidelines, our PR13 determination assumed expenditure is added to the RAB and it is then adjusted in accordance with our guidelines. This is shown in Statement 2b of Network Rail's regulatory financial statements.

Figure 5.1: RAB movement in 2017-18

Great Britain

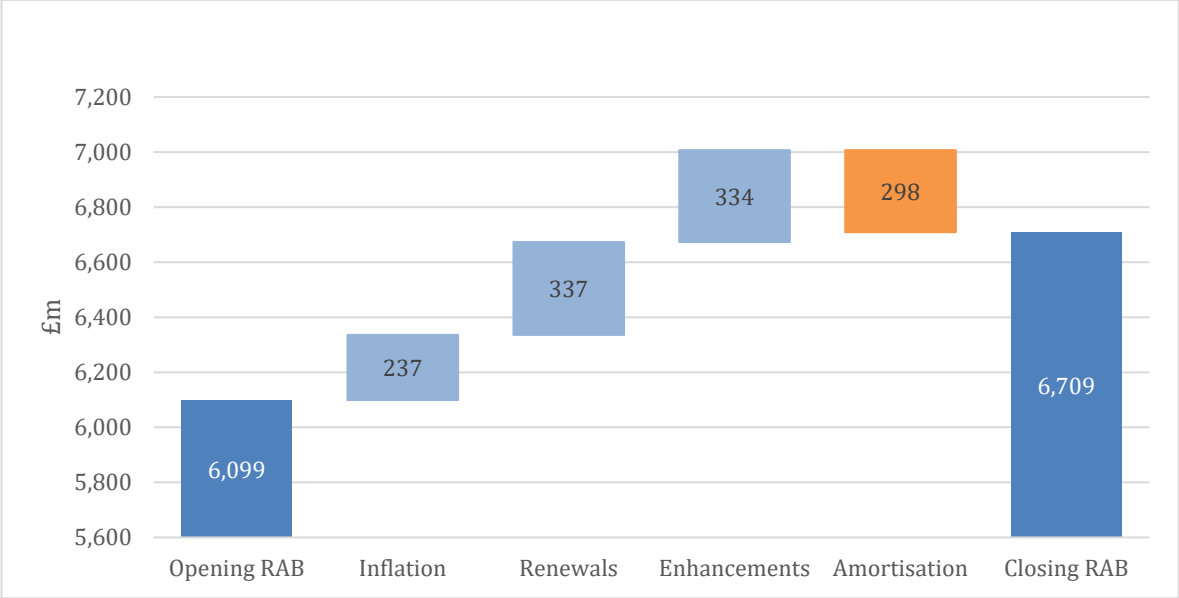


Source: Network Rail and own analysis

[55] See http://orr.gov.uk/rail/consultations/pr18-consultations/pr18-draft-determination.

[56] See Chapter 12 of our PR13 final determination for further details, http://orr.gov.uk/__data/assets/pdf_file/0011/452/pr13-final-determination.pdf.

Scotland



Source: Network Rail and own analysis

Financial indicators

5.11 The net debt/RAB and adjusted interest cover ratio (AICR) ratios are measures of financial sustainability for economically regulated companies. Our PR13 determination included forecasts for the debt/RAB ratio and AICR in order for us to incentivise Network Rail to maintain an appropriate financial position. The network licence requires our consent for Network Rail's net debt/RAB to exceed 75%.

Table 5.1: Financial indicators

	2017-18			2016-17
£m	**Actual**	**PR13**	**Variance b/(w)**	**Actual**
Great Britain				
Net debt/RAB[57]	75.4%	71.9%	(3.5%)	72.5%
Adjusted interest cover ratio (AICR)	0.53	1.03	(0.50)	0.74
Scotland				
Net debt/RAB[58]	69.8%	67.7%	(2.1%)	66.4%
Adjusted interest cover ratio (AICR)	0.77	1.02	(0.25)	1.01

Source: Network Rail's regulatory financial statements

5.12 Network Rail exceeded the net debt/RAB licence requirement during the year. We consented to this having taken account of relevant factors including the statements made by Network

[57] Our PR13 model assumed gearing of 70.1%. The difference of 1.8% is due to outturn inflation being different to our assumption.

[58] Our PR13 model assumed gearing of 66.7%. The difference of 1.0% is due to outturn inflation being different to our assumption.

Rail, the loan agreement in place between Network Rail and the UK Government, and the efficiency commitments made by Network Rail. Our consent was on the proviso that Network Rail uses reasonable endeavours to stay within the limits set out in the loan agreement (as subsequently amended) until 31 March 2019.

Annex A: Summary of key financial information

Great Britain

	2017-18			4 years to end 2017-18			2016-17
£m, 2017-18 prices	Actual	PR13	Variance	Actual	PR13	Variance	Actual
Income	**A**	**B**	**C=A-B**	**D**	**E**	**F=D-E**	
Government grant income	4,480	4,535	(55)	18,042	17,976	66	4,550
Fixed charge income	519	503	16	1,789	1,712	77	407
Variable charge income	1,138	1,267	(129)	4,616	4,817	(201)	1,163
Other single till income	995	1,023	(28)	3,614	3,762	(148)	906
Total income	**7,132**	**7,328**	**(196)**	**28,061**	**28,267**	**(206)**	**7,026**
Operating expenditure	**A**	**B**	**C=B-A**	**D**	**E**	**F=E-D**	
Operations	596	425	(171)	2,266	1,808	(458)	575
Maintenance	1,380	1,124	(256)	5,347	4,716	(631)	1,370
Support costs	396	453	57	1,612	1,946	334	350
Traction electricity, industry costs & rates	650	733	83	2,474	2,624	150	605
Schedule 4 compensation payments	220	225	5	933	942	9	225
Schedule 8 compensation payments	219	5	(214)	643	18	(625)	194
Total operating expenditure	**3,461**	**2,965**	**(496)**	**13,275**	**12,054**	**(1,221)**	**3,319**
Capital expenditure	**A**	**B**	**C=B-A**	**D**	**E**	**F=E-D**	
Renewals	2,413	2,647	234	11,725	11,137	(588)	2,882
PR13 enhancements	3,153	3,664	511	12,808	14,078	1,270	3,446
Non-PR13 enhancements	150	0	(150)	597	0	(597)	55
Total enhancements[59]	**3,303**	**3,664**	**361**	**13,405**	**14,078**	**673**	**3,501**
Total capital expenditure	**5,716**	**6,311**	**595**	**25,130**	**25,215**	**85**	**6,383**
Other expenditure	**A**	**B**	**C=B-A**	**D**	**E**	**F=E-D**	
Financing costs	2,347	2,260	(87)	7,126	7,626	500	1,836
Corporation tax	0	0	0	(2)	4	6	2
Total other expenditure	**2,347**	**2,260**	**(87)**	**7,124**	**7,630**	**506**	**1,838**
Total expenditure	**11,524**	**11,536**	**12**	**45,529**	**44,899**	**(630)**	**11,540**
Other information	**(A)**	**(B)**	**B-A or A-B**				
RAB	66,798	65,203	1,595	n/a	n/a	n/a	64,149
Net debt	50,358	46,880	(3,478)	n/a	n/a	n/a	44,792
Adjusted interest cover ratio	0.53	1.03	(0.50)	n/a	n/a	n/a	0.74
Gearing (net debt/RAB)	75.4%	71.9%	(3.5%)	n/a	n/a	n/a	72.5%

Source: Network Rail's regulatory financial statements

[59] This excludes £753m of other work on stations, car parks and other facilities undertaken on behalf of train operators and other parties (pay as you go schemes). The total including these schemes is £4,055m, which is the same as in Table 2.3.

Scotland

	2017-18			4 years to end 2017-18			2016-17
£m, 2017-18 prices	**Actual**	**PR13**	**Variance**	**Actual**	**PR13**	**Variance**	**Actual**
Income	**A**	**B**	**C=A-B**	**D**	**E**	**F=D-E**	
Government grant income	426	431	(5)	1,838	1,832	6	482
Fixed charge income	157	158	(1)	448	448	0	97
Variable charge income	80	86	(6)	331	334	(3)	90
Other single till income	54	66	(12)	213	247	(34)	49
Total income	**717**	**741**	**(24)**	**2,830**	**2,861**	**(31)**	**718**
Operating expenditure	**A**	**B**	**C=B-A**	**D**	**E**	**F=E-D**	
Operations	44	39	(5)	190	167	(23)	46
Maintenance	124	114	(10)	481	471	(10)	123
Support costs	41	45	4	178	194	16	37
Traction electricity, industry costs & rates	56	58	2	209	213	4	53
Schedule 4 compensation payments	15	25	10	97	108	11	41
Schedule 8 compensation payments	21	1	(20)	25	2	(23)	0
Total operating expenditure	**301**	**282**	**(19)**	**1,180**	**1,155**	**(25)**	**300**
Capital expenditure	**A**	**B**	**C=B-A**	**D**	**E**	**F=E-D**	
Renewals	352	275	(77)	1,340	1,253	(87)	373
PR13 enhancements	353	320	(33)	1,276	1,389	113	312
Non-PR13 enhancements	(1)	0	1	14	0	(14)	(2)
Total enhancements[60]	**352**	**320**	**(32)**	**1,290**	**1,389**	**99**	**310**
Total capital expenditure	**704**	**595**	**(109)**	**2,630**	**2,642**	**12**	**683**
Other expenditure	**A**	**B**	**C=B-A**	**D**	**E**	**F=E-D**	
Financing costs	215	229	14	647	770	123	165
Corporation tax	0		0	0	0	0	0
Total other expenditure	**215**	**229**	**14**	**647**	**770**	**123**	**165**
Total expenditure	**1,220**	**1,106**	**(114)**	**4,457**	**4,567**	**110**	**1,148**
Other information	**(A)**	**(B)**	**B-A or A-B**				
RAB	6,709	6,970	(261)	n/a	n/a	n/a	1,155
Net debt	4,682	4,718	36	n/a	n/a	n/a	4,044
Adjusted interest cover ratio	0.77	1.02	(0.25)	n/a	n/a	n/a	1.01
Gearing (net debt/RAB)	69.8%	67.7%	(2.1%)	n/a	n/a	n/a	66.4%

Source: Network Rail's regulatory financial statements

[60] This excludes £18m of other work on stations, car parks and other facilities undertaken on behalf of train operators and other parties (pay as you go schemes). The total including these schemes is £370m, which is £12m lower than shown in Table 3.2. The difference is because £12m of Intercity Express Programme (IEP) expenditure is allocated to Scotland for management purposes, but is reported in England & Wales in the regulatory financial statements.

Wales

	2017-18			4 years to end 2017-18			2016-17
£m, 2017-18 prices	**Actual**	**PR13**	**Variance**	**Actual**	**PR13**	**Variance**	**Actual**
Income	**A**	**B**	**C=A-B**	**D**	**E**	**F=D-E**	
Government grant income	290	293	(3)	1,143	1,139	4	289
Fixed charge income	24	25	(1)	90	90	0	21
Variable charge income	23	23	0	113	110	3	32
Other single till income	22	28	(6)	81	90	(9)	18
Total income	**359**	**369**	**(10)**	**1,427**	**1,429**	**(2)**	**360**
Operating expenditure	**A**	**B**	**C=B-A**	**D**	**E**	**F=E-D**	
Operations	35	25	(10)	129	108	(21)	34
Maintenance	69	64	(5)	287	265	(22)	70
Support costs	18	19	1	79	89	10	21
Traction electricity, industry costs & rates	17	12	(5)	56	43	(13)	10
Schedule 4 compensation payments	7	11	4	30	63	33	10
Schedule 8 compensation payments	3	0	(3)	2	1	(1)	1
Total operating expenditure	**149**	**131**	**(18)**	**583**	**569**	**(14)**	**146**
Capital expenditure	**A**	**B**	**C=B-A**	**D**	**E**	**F=E-D**	
Renewals	186	120	(66)	721	627	(94)	208
PR13 enhancements	175	264	89	487	556	69	181
Non-PR13 enhancements	2	0	(2)	8	0	(8)	0
Total enhancements[61]	**177**	**264**	**87**	**495**	**556**	**61**	**181**
Total capital expenditure	**363**	**384**	**21**	**1,216**	**1,183**	**(33)**	**389**
Other expenditure	**A**	**B**	**C=B-A**	**D**	**E**	**F=E-D**	
Financing costs	118	119	1	361	403	42	91
Corporation tax	0	0	0	0	0	0	0
Total other expenditure	**118**	**119**	**1**	**361**	**403**	**42**	**91**
Total expenditure	**630**	**634**	**4**	**2,160**	**2,155**	**(5)**	**626**
Other information	**(A)**	**(B)**	**B-A or A-B**				
RAB	3,462	3,485	(23)	n/a	n/a	n/a	3,274
Net debt	2,570	2,512	(58)	n/a	n/a	n/a	2,226
Adjusted interest cover ratio	0.73	1.12	(0.39)	n/a	n/a	n/a	0.95
Gearing (net debt/RAB)	74.2%	72.1%	(2.1%)	n/a	n/a	n/a	70.7%

Source: Network Rail's regulatory financial statements

[61] This excludes £19m of other work on stations, car parks and other facilities undertaken on behalf of train operators and other parties (pay as you go schemes). The total including these schemes is £196m, which is the same as in Table 4.2.

Annex B: England routes analysis

This annex summarises the financial performance of routes in England in 2017-18. Analysis for Scotland and Wales is covered in Chapters 3 and 4 respectively.

Caution needs to be applied when comparing the relative performance of routes. This is because financial data in this assessment has not been normalised for differences in the physical, geographical and operational characteristics of the routes. Also, Network Rail's internal budget analysis does not allocate central services to routes. The 'Differences to PR13 baseline' row in the following tables includes the variance between a route's budget and the PR13 financial assumptions for that route, and also the route's share of the financial performance of central services. Our analysis for Scotland and Wales in chapters 3 and 4 includes their portions of the costs of these central activities. The financial performance of central services is shown in a separate table and examined in this annex.

Anglia

£m	Income / expenditure	Financial performance better/(worse)
Turnover	587	(1)
Schedule 4	34	(13)
Schedule 8	23	(13)
Operations	56	(2)
Support	38	0
Maintenance	131	(6)
Capex – Renewals	206	(4)
Capex – Enhancements	235	(40)
Financial performance against internal budget		**(79)**
Differences to PR13 baseline		(141)
Adjustments for missed regulatory outputs		(44)
Financial performance (regulatory)		**(261)**

Source: Network Rail and own analysis

Anglia financially underperformed against its own budget by £79m and by £261m against the regulatory measure in 2017-18. The main drivers of the underperformance to budget were:

- Enhancements overspent by £40m, mostly due to Anglia's contributions to Crossrail and to the Gospel Oak to Barking electrification scheme (see Enhancements section).
- Schedule 4 costs were £13m over budget (the highest of any route) due to higher costs per possession and the impact of Storm Emma, partly offset by undertaking less renewals activity than budget.
- Schedule 8 costs were £13m over budget due to infrastructure failures, the impact of Storm Emma and increased network traffic.

London North East and East Midlands

£m	Income / expenditure	Financial performance better/(worse)
Turnover	1,706	(1)
Schedule 4	72	(8)
Schedule 8	38	1
Operations	149	(3)
Support	100	-
Maintenance	338	(2)
Capex – Renewals	565	(11)
Capex – Enhancements	428	27
Financial performance against budget		**4**
Budget vs. PR13		(290)
Adjustments for missed regulatory outputs		0
Financial performance (regulatory)		**(286)**
- London North East		**(240)**
- East Midlands		**(46)**

Source: Network Rail and own analysis

London North East and East Midlands financially outperformed against its own budget by £4m in 2017-18, mostly due to outperformance on a number of enhancement schemes including Midland mainline electrification. The route underperformed by £286m against the regulatory measure mostly due to the problems with renewals efficiency.

London North West

£m	Income / expenditure	Financial performance better/(worse)
Turnover	1,574	(5)
Schedule 4	44	(5)
Schedule 8	38	(54)
Operations	134	0
Support	86	2
Maintenance	347	(2)
Capex – Renewals	442	(10)
Capex – Enhancements	669	(79)
Financial performance against budget		**(153)**
Budget vs. PR13		(281)
Adjustments for missed regulatory outputs		(29)
Financial performance (regulatory)		**(462)**

Source: Network Rail and own analysis

London North West financially underperformed against its own budget by £153m and by £462m against the regulatory measure in 2017-18. The main drivers of the underperformance to budget were:

- Enhancements overspent by £79m, mostly due to overspend on the North of England programme and West Coast power supply upgrade (see Enhancements section).
- LNW had the highest Schedule 8 underperformance of any route (£54m adverse to budget). Performance on this route has been affected by an increase in trespassing and fatalities around stations on the intensively used southern part of the West Coast mainline. Network Rail pays for costs incurred by train operators under the Schedule 8 regime. LNW introduced a number of initiatives to reduce such fatalities during the year.

South East (Sussex and Kent)

£m	Income / expenditure	Financial performance better/(worse)
Turnover	872	2
Schedule 4	31	2
Schedule 8	29	29
Operations	120	(11)
Support	48	0
Maintenance	181	(12)
Capex – Renewals	327	3
Capex – Enhancements	522	43
Financial performance against budget		**56**
Budget vs. PR13		(334)
Adjustments for missed regulatory outputs		(1)
Financial performance (regulatory)		**(276)**
- Sussex		**(155)**
- Kent		**(121)**

Source: Network Rail and own analysis

South East financially outperformed against its own budget by £56m in 2017-18, mostly due to £43m of outperformance on a number of enhancement schemes including Thameslink, and £29m of Schedule 8 outperformance. Schedule 8 costs have improved on this route, which Network Rail has attributed to investment in a number performance improvement schemes[62]. The additional cost of these schemes increased operations and maintenance costs (£11m underperformance).

[62] As reported in our Q3-Q4 Network Rail Monitor, train performance improved on this route in 2017-18, albeit from a low base last year. The data that we have suggests that South East's delivery is improving and its assets are becoming more reliable. There has been a 15% decline in all Network Rail-caused delay minutes to Govia Thameslink Railway (GTR), the main train operator on this route.

Wessex

£m	Income / expenditure	Financial performance better/(worse)
Turnover	511	0
Schedule 4	19	(9)
Schedule 8	54	(32)
Operations	41	(4)
Support	35	1
Maintenance	112	(2)
Capex – Renewals	134	3
Capex – Enhancements	190	(6)
Financial performance against budget		**(51)**
Budget vs. PR13		(138)
Adjustments for missed regulatory outputs		(37)
Financial performance (regulatory)		**(225)**

Source: Network Rail and own analysis

Wessex financially underperformed against its own budget by £51m and by £225m against the regulatory measure in 2017-18. Schedule 4 and 8 costs were the main drivers of the underperformance to budget (£41m worse than budget). The route was affected by a number of infrastructure failures including a derailment of a train at Waterloo. The Waterloo blockade over the summer also had a major impact on performance as more trains were delayed than assumed in the budget.

Western

£m	Income / expenditure	Financial performance better/(worse)
Turnover	766	2
Schedule 4	22	3
Schedule 8	34	(23)
Operations	46	0
Support	51	1
Maintenance	136	(5)
Capex – Renewals	282	(26)
Capex – Enhancements	730	(15)
Financial performance against budget		**(55)**
Budget vs. PR13		(276)
Adjustments for missed regulatory outputs		(21)
Financial performance (regulatory)		**(352)**

Source: Network Rail and own analysis

Western financially underperformed against its own budget by £55m and by £352m against the regulatory measure in 2017-18. The main drivers of the underperformance to budget were:

- Renewals underperformed by £26m to budget. Renewals on this route have been affected by enhancements including the Great Western electrification programme. Compared to other routes, Western has also been particularly affected by changes to Network Rail's safety policy for work when the adjacent line is open (passing trains can now only travel at 20mph which affects the timetable).
- Schedule 8 costs were affected by Storm Emma and other infrastructure failures.

Central services

£m	Financial performance better/(worse)
Turnover	(5)
Schedule 4	27
Schedule 8	17
Operations	0
Support	54
Maintenance	3
Capex – Renewals	(26)
Capex – Enhancements	36
Financial performance against budget	**105**

Source: Network Rail and own analysis

Central services encompasses Network Rail's corporate services and other activities that are not devolved to its routes such as Human Resources, Finance, Property Services and Digital Railway. It also includes centrally held budget contingencies – Network Rail centre sets route budgets and holds some central contingency against underperformance against these.

Central services outperformed against budget by £105m in 2017-18. Central support costs outperformed by £54m including reduced performance related pay and reorganisation costs. Schedule 4 and 8 costs outperformed by £44m from the release of centrally held contingency for route overspends on Schedule 4 and 8. Central enhancement costs outperformed by £36m due to the release of centrally held contingency for overspend on Network Rail's enhancements portfolio. These were partly offset by £26m of overspend on central renewals costs. This included overspend on the supervisory control and data acquisition (SCADA) control system.

Annex C: Linkage between efficiency and financial performance

Several measures can be used to report on a company's financial performance and there is no single right or wrong measure. The measures are not exclusive and can be complimentary to provide a more rounded assessment. Our assessments focus on two measures, efficiency and the financial performance measure.

Consistent with general use in economic regulation, we use the term efficiency to refer to changes over time of the cost of Network Rail's core business activities. These are Network Rail's activities of operating, maintaining and renewing the rail network, and supporting central functions such as human resources. These are broadly repeatable activities, which makes them easier to compare over time.

Our CP5 efficiency measure compares Network Rail's actual operations, support, maintenance and renewals expenditure in 2017-18 with expenditure on these activities in 2013-14, the last year of CP4. Adjustments are made for the level of renewals activity undertaken and related factors. After these adjustments, expenditure on these activities was £4,785m in 2017-18 and cumulative efficiency was £222m compared to the start of CP5. Expressed as a percentage this is -4.9%. This means that, adjusted for inflation, Network Rail spent 4.9% more for the work it delivered in 2017-18, than it did in 2013-14.

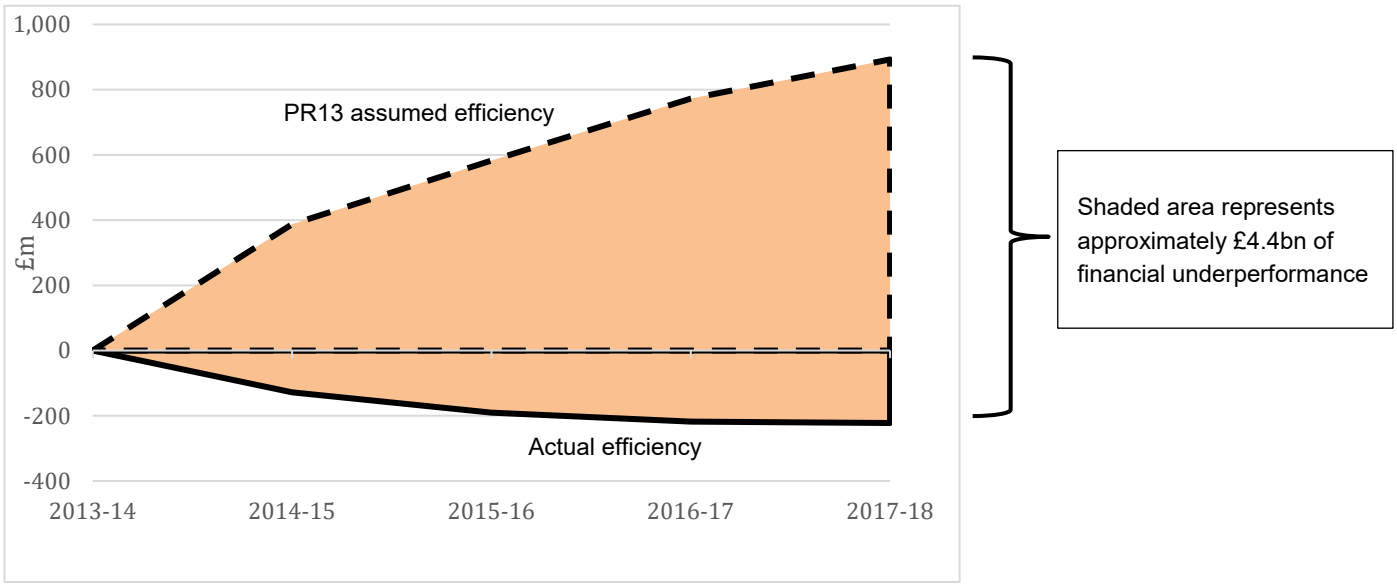
We use the term 'financial performance' to assess both core business activities and wider activities that generate income and expenditure such as enhancements to the network. Financial performance is a comparison of income and expenditure to the financial assumptions in a baseline such as in a business plan or regulatory determination. Other things being equal, if Network Rail has achieved the expected level of efficiency improvements in a business plan, it will report neither out or under-performance against that plan. Network Rail's financial performance for Great Britain against its internal budget and against the PR13 financial assumptions is summarised in Table 2.1.

Our PR13 determination assumed that Network Rail could make substantial efficiency improvements for Great Britain in CP5 such that it would be 19.4% more efficient at the end of CP5 than the start[63]. Network Rail's efficiency has declined in CP5, which has resulted in the substantial financial underperformance that we have reported in our CP5 assessments. As its efficiency has declined, Network Rail's annual business plans have diverged from our PR13 financial assumptions. As set out in Section 2, this is why Network Rail's financial underperformance against its internal budget is lower than reported against the regulatory measure.

[63] Our PR13 determination assumed that Network Rail would achieve higher efficiency in 2013-14 (the final year of CP4) than it actually achieved. This means that the starting point for our PR13 assumed efficiencies for CP5 in the figure below is not the same as for Network Rail's reported efficiencies.

The following chart shows Network Rail's declining efficiency for its operations, support, maintenance and renewals activities compared to the efficiency assumptions in our PR13 determination. The total shaded area in the chart represents the cumulative financial underperformance for these activities and is approximately £4.4bn. This means that Network Rail has spent approximately £4.4bn more for the work that it has delivered on these activities in the first four years of CP5 because its efficiency has declined and it has not achieved the efficiency improvements set out in our PR13 determination[64].

The effect of efficiency differences on Network Rail's financial performance compared to the PR13 determination



Source: Own analysis

We consulted recently on changes that we intend to make to the way that we assess Network Rail's efficiency and financial performance[65]. In CP6 we intend to make more forward-looking assessments of the efficiencies that Network Rail will likely deliver across the control period. We will draw out key messages about the drivers of performance, recognising that different audiences want different levels of technical detail.

To support this, Network Rail will need to make changes to the information that it provides to us. Network Rail is working with us to agree how these should work in practice. Network Rail has committed to:

- improve its communication of the reasons for cost changes due to changes to routes' efficiencies, mix of work and external factors;

[64] Including in the final year of CP4.

[65] See http://orr.gov.uk/rail/economic-regulation/regulation-of-network-rail/price-controls/periodic-review-2018/pr18-consultations/our-approach-for-assessing-network-rails-efficiency-and-wider-financial-performance-in-control-period-6.

- provide a sharper focus on performance compared to delivery plans; and
- identify the most appropriate measures of routes' productivity and leading indicators of performance.

We will publish our finalised approach in regulatory accounting guidelines before the start of the control period.

Annex D: Acronyms and abbreviations

Acronym / abbreviation	Meaning
AICR	Adjusted Interest Cover Ratio
BTP	British Transport Police
Capex	Capital expenditure
CP4	Control Period 4 (1 April 2009 - 31 March 2014)
CP5	Control Period 5 (1 April 2014 - 31 March 2019)
CP6	Control Period 6 (1 April 2019 - 31 March 2024)
DfT	Department for Transport
ECAM	Enhancement Cost Adjustment Mechanism
EGIP	Edinburgh Glasgow Improvement Programme
FPM	Financial Performance Measure
LNE	London North East route
LNW	London North West route
OSMR	Operations, support, maintenance and renewals
OPEX	Operating expenditure
ORR	Office of Rail and Road
OSTI	Other single till income
PR13	Periodic Review 2013 (covering CP5)
PR18	Periodic Review 2018 (covering CP6)
RAB	Regulatory Asset Base
RAGs	Regulatory Accounting Guidelines
REBS	Route Level Efficiency Benefit Sharing Scheme
RPI	Retail Prices Index (we use the 'RPI CHAW in CP5')
SBP	Network Rail's Strategic Business Plan
TOCs	Train Operating Companies (passenger)