



**Consultation on our  
approach for assessing  
Network Rail's  
efficiency and wider  
financial performance  
in CP6**

31 January 2018

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# Summary

## Our agenda for change

By reporting on Network Rail's efficiency and wider financial performance over time, we give assurance to rail users and funders that Network Rail is delivering what is expected and at the same time, we provide a strong reputational incentive on Network Rail to become more efficient.

We are proposing to enhance our 2013 periodic review ('PR13') approach, which focussed on the financial performance measure. For control period 6 ('CP6'), the five-year period from 1 April 2019 to 31 March 2024, we consider that the priorities for our assessments should be to:

- drive the best outcomes for the users of the rail network through supporting better value for money;
- enhance comparisons of the performance of Network Rail's operating routes and to assist in future benchmarking;
- move away from technically precise measures to a more rounded assessment which draws out key messages about the drivers of performance, makes a clearer link between expenditure and delivery, and examines how efficiencies are being achieved;
- make more informed forward-looking assessments of the efficiencies that Network Rail will likely deliver across the control period;
- support Network Rail's internal performance measurement and staff incentives; and
- provide clear and informative messages about Network Rail's efficiency improvements, recognising that different audiences want different levels of technical detail.

To deliver our priorities we are proposing:

- to move to a better understanding of the efficiency of Network Rail's routes by putting greater emphasis on reviewing and reporting on how routes have delivered efficiency improvements;
- more assessment of unit costs, cost drivers and productivity measures over time and across routes. We set out suggested measures in this consultation, but importantly, want to work with Network Rail and stakeholders to identify the most useful measures for its business;

- to make greater use of information from our safety role, for example, drawing on insights from safety reports where relevant; and
- that we will provide a forward-looking view of the efficiencies that Network Rail will likely achieve across CP6 as part of our annual reporting. This will include assessing the quality and progress of routes' efficiency plans and monitoring leading indicators of delivery.

This consultation document builds on previous work supporting our 2018 periodic review (PR18). We consulted on key issues relevant to the CP6 financial framework, including how we should assess financial performance in January 2017<sup>1</sup>. We also consulted on our approach to route-level financial performance reporting in our July 2017 consultation on route requirements and scorecards<sup>2</sup>, and on improving Network Rail's renewals efficiency in July 2017<sup>3</sup>.

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

## Structure of this paper

Section 1 summarises what we mean by economic efficiency and what we are aiming to achieve in our monitoring. It also explains some of the confusing terminology surrounding this subject. Section 2 sets out different measures for assessing efficiency and financial performance, and their strengths and weaknesses. Section 3 summarises our relevant PR18 work to date and challenges with our assessments. Section 4 sets out our preferred approach for how we will assess Network Rail in CP6. Annex A provides a history of the approaches that we have used to assess Network Rail and Highways England with further relevant examples in Annex B.

## Responding to this consultation

We welcome comments, in particular, on the questions below. This consultation will close on 14 March 2018.

1. Do you agree with our priorities set out above? In particular, the move away from technically precise measures to a more rounded assessment and making our assessments more forward-looking?

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<sup>1</sup> See <http://orr.gov.uk/rail/consultations/pr18-consultations/consultation-on-the-financial-framework-for-pr18>.

<sup>2</sup> See <http://orr.gov.uk/rail/economic-regulation/regulation-of-network-rail/price-controls/periodic-review-2018/pr18-consultations/consultation-on-the-overall-framework-for-regulating-network-rail>.

<sup>3</sup> See <http://orr.gov.uk/rail/consultations/pr18-consultations/consultation-on-improving-network-rails-renewals-efficiency>.

2. We propose to improve our assessment and reporting of Network Rail's efficiency improvements, drawing on unit costs, cost drivers, productivity measures, leading indicators and safety reports. What are your views about this change of approach?
3. Our proposed approach will require Network Rail to provide better information to us. We consider that this is information that the company should already have. However, we want to ensure that any additional reporting is proportionate. Do you have any comments on this?
4. Do you agree that having a better understanding of unit cost changes and cost drivers should be an important part of our analysis? Should Network Rail improve the robustness of its unit cost reporting if necessary to support this?
5. Changes in expenditure due to a deferral or acceleration of work can have a material effect on our assessments. This is technically challenging and requires judgement. We are interested in respondents' views on this.
6. Section 4 sets out some productivity measures and leading indicators that we could assess. How effective do you think these measures could be to aid our assessments? What other measures should we use?
7. Do we have the right level and frequency of reporting through our biannual Network Rail Monitor and annual efficiency and finance assessment publications?
8. How can we improve the presentation of our assessments to improve their effectiveness for stakeholder engagement and challenge?

Please submit your responses, in electronic form, to our PR18 inbox:

[pr18@orr.gsi.gov.uk](mailto:pr18@orr.gsi.gov.uk).

We plan to publish all responses to this consultation on our website. Accordingly, when sending documents to us, we would prefer that you send your correspondence to us in Microsoft Word format or Open Document Format. This allows us to apply web standards to content on our website. If you do email us a PDF document, where possible please:

- create it from an electronic word processed file rather than sending us a scanned copy of your response; and
- ensure that the PDF's security method is set to "no security" in the document properties.

Should you wish any information that you provide, including personal data, to be treated as confidential, please be aware that this may be subject to publication, or release to other parties or to disclosure, in accordance with the access to information regimes. These regimes are primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 (DPA) and the Environmental Information Regulations (2004). Under the FOIA, there

is a statutory code of practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence.

In view of this, if you are seeking confidentiality for information you are providing, please explain why. If we receive a request for disclosure of the information, we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on ORR.

If you are seeking to make a response in confidence, we would also be grateful if you would annex any confidential information, or provide a non-confidential summary, so that we can publish the non-confidential aspects of your response.

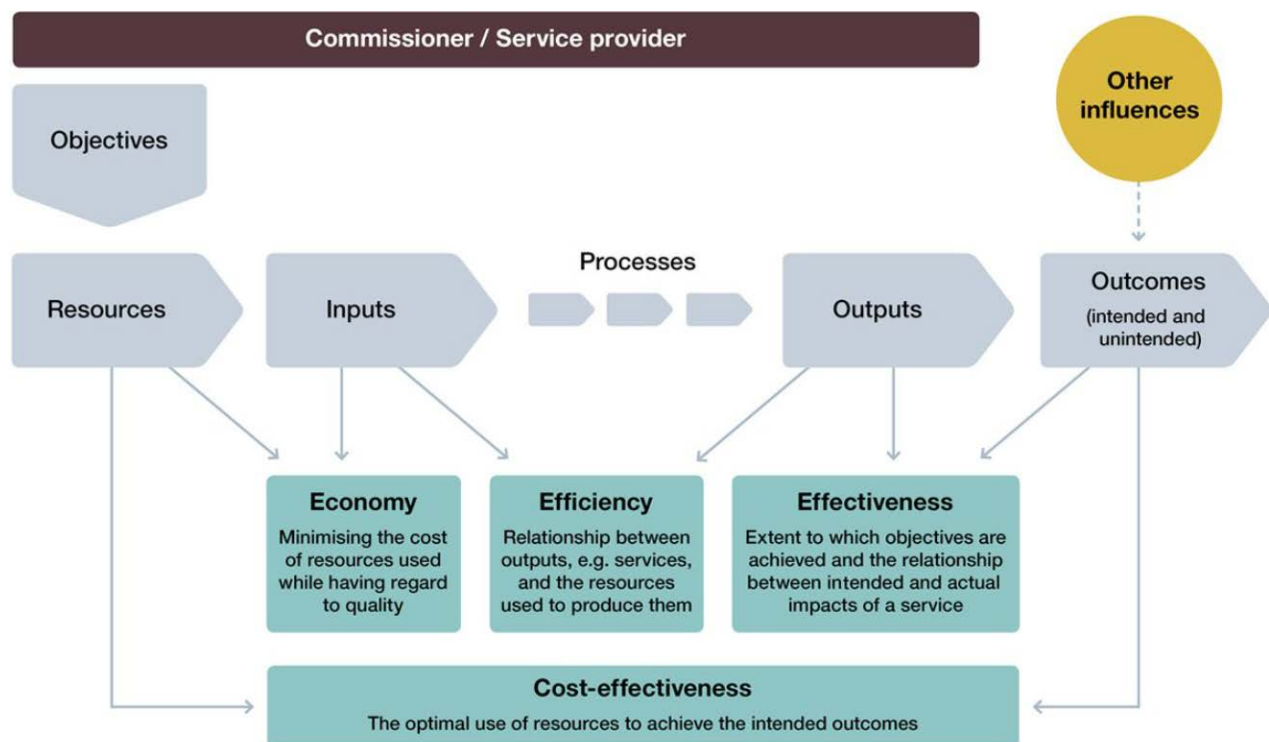
## 2. What we are aiming to measure

### What is economic efficiency?

2.1 Economic efficiency is generally considered to be about understanding and improving the use of resources to achieve intended outcomes. A commonly used approach in the UK public sector is the National Audit Office's 'Three E's' model of cost effectiveness<sup>4</sup>. This is summarised in Figure 1.1. The three E's stand for:

- *Economy*: minimising the cost of resources used or required (inputs) – spending less;
- *Efficiency*: the relationship between the output from goods or services and the resources to produce them – spending well; and
- *Effectiveness*: the relationship between the intended and actual results of public spending (outcomes) – spending wisely.

**Figure 1.1: The National Audit Office's 'Three E's' model of cost effectiveness**



Source: National Audit Office website

<sup>4</sup> See <https://www.nao.org.uk/successful-commissioning/general-principles/value-for-money/assessing-value-for-money/>.

- 2.2 As explained below, terminology can be confusing in this subject. This paper frequently uses the terms ‘efficiency’ and ‘financial performance’. These concepts are related, but they are not the same.
- 2.3 Consistent with common usage in economic regulation, we generally use the word efficiency to include the business processes from acquiring resources to delivering outcomes, i.e. all three ‘E’s above. To avoid confusion, we use the term ‘productivity’ rather than ‘efficiency’ as the middle ‘E’ in Figure 1.1. We also simplify the language used to explain each of these terms:
- improving *economy* means reducing the cost of resources used whilst having regard to quality;
  - improving *productivity* means improving the use of resources to deliver intended outputs; and
  - improving *effectiveness* means improving the extent to which intended objectives have been achieved.
- 2.4 These terms are more easily explained with a relevant example. The efficiency of renewing a section of railway track could be improved by:
- obtaining materials such as ballast at lower cost through improved procurement (improved *economy*);
  - reducing the amount of downtime of machinery by making sure that materials are available when they are needed (improved *productivity*); and
  - by making sure that work is undertaken when the track needs renewing (improved *effectiveness*).
- 2.5 The above example emphasises that improving efficiency is not just about short-term cost reductions. Reducing short-term costs can be a form of efficiency. However, efficiencies can also be achieved by improving customer outcomes such as reducing delays. Conversely, short-term cost reductions can be achieved by avoiding work that is necessary to maintain a transport network in a safe condition. These avoided costs would not be an efficiency improvement.
- 2.6 These factors are important for assessing efficiency improvements of companies like Network Rail that operate complex transport networks with long-life assets.
- 2.7 Consistent with general use in economic regulation, we use the term efficiency to refer to changes over time of the cost of a company’s core business activities. For Network Rail, these are the 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.



- 2.8 We use the separate 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 a company has achieved the expected level of efficiency improvements in a business plan, it will report neither out or under-performance against that plan.
- 2.9 Section 2 examines these different measures using simple examples. Annex A provides further details about how we have applied these measures in practice.

## Why this is important

- 2.10 It is important that our national transport networks deliver improvements in value for money. These networks play a key role in the British economy and society by facilitating economic growth, social connectivity and environmental sustainability. Improvements in value for money allow more of these benefits to be realised at a lower cost. This is particularly important given the current economic climate, and the financial pressures on the public purse.
- 2.11 Network Rail operates the majority of railway infrastructure in Great Britain. One of our key roles as the economic regulator of Network Rail is to set the charges that it can levy for access to the rail network. We do this in periodic reviews of charges, sometimes called price controls. A key element of our periodic reviews is our assessment of what activities Network Rail needs to undertake to efficiently operate, maintain and renew the national rail infrastructure, and what the efficient cost of these activities should be. In doing this, we challenge Network Rail to improve its efficiency.
- 2.12 Our annual efficiency and finance assessments help improve customers, funders and other interested parties understanding of Network Rail’s performance compared to the efficiency improvements that we challenge it to deliver in our periodic reviews. Our assessments also inform our future periodic reviews.
- 2.13 We also monitor Network Rail’s operational performance, including in respect of safety risk, train performance and asset management. These assessments are included in our annual health and safety reports<sup>5</sup> and our biannual Network Rail Monitor publications<sup>6</sup>. This work is important for us to verify whether Network Rail

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<sup>5</sup> See <http://orr.gov.uk/rail/health-and-safety/annual-health-and-safety-report>.

<sup>6</sup> We publish separate Monitors for Great Britain, Scotland and Wales. Our Monitor publications also include high-level financial analysis. See <http://orr.gov.uk/rail/economic-regulation/regulation-of-network-rail/monitoring-performance/network-rail-monitor>.

has delivered its obligations in return for the money that it has received from its customers and governments.

2.14 Our current methods for assessing Network Rail's efficiency improvements and wider financial performance have some strengths, but they also suffer from limitations and complexity. We are considering how we can improve our approach for CP6, which is the purpose of this consultation.

## 3. Measures for assessing efficiency and financial performance

- 3.1 In developing our approach for monitoring Network Rail's financial performance, it is important to understand that different measures can be used to report on a company's financial performance and that there is no single right or wrong measure. They are not exclusive and can be complimentary to provide a more rounded assessment.
- 3.2 This section examines measures that are relevant to our monitoring of Network Rail. It draws on our experiences of monitoring Network Rail and Highways England, and approaches used by other economic regulators. Annex A provides details about the approaches that we have used.
- 3.3 The measures examined in this section are:

### **Efficiency measures**

- 1) Point-to-point efficiency
- 2) Average efficiency
- 3) Cumulative efficiency

### **Financial performance**

- 4) Financial performance measure
- 5) Return on regulatory equity

### **Other measures**

- 6) Unit costs
- 7) Productivity measures
- 8) Efficiency registers
- 9) Traffic-adjusted performance

### **Point-to-point efficiency**

- 3.4 The point-to-point efficiency measure compares the relationship between expenditure and outputs between two points in time. Table 2.1 shows the point-to-point efficiency for a simple example of a company that successively reduces its expenditure over five years whilst delivering the same level of output. In this example, the company achieves a point-to-point 10% efficiency improvement from Year 0 to Year 5.

**Table 2.1: Point-to-point efficiency**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Expenditure (£m)	100	98	96	94	92	90
<b>Efficiency</b>						
Year-on-year (£m)		2	2	2	2	2
Year-on-year (%)		2.0%	2.0%	2.1%	2.1%	2.2%
Year 0 to Year x (£m)		2	4	6	8	10
Year 0 to Year x (%)		2.0%	4.0%	6.0%	8.0%	10.0%

3.5 Measuring point-to-point efficiency does not fully take account of a company's performance over time. This means that it can be confusing when a company has an uneven expenditure profile because the measure ignores expenditure variances within the interim period.

3.6 Table 2.2 shows the point-to-point efficiency of a company whose expenditure is the same in Year 0 and Year 5 as in Table 2.1, but is higher in Years 1 to 4. The reported Year 0 to Year 5 point-to-point efficiency remains 10.0% even though the company has spent 7.4% more across the five years than in the first example.

**Table 2.2: Point to point efficiency with an uneven expenditure profile**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Expenditure (£m)	100	100	105	110	100	90
<b>Efficiency</b>						
Year-on-year (£m)		0	-5	-5	10	10
Year-on-year (%)		0.0%	-5.0%	-4.8%	9.1%	10.0%
Year 0 to Year x (£m)		0	-5	-10	0	10
Year 0 to Year x (%)		0.0%	-5.0%	-10.0%	0.0%	10.0%

3.7 Both of the above examples assumed a constant level of output in each year. In the real world, this is unlikely to be the case, which complicates matters. Table 2.3 shows the point-to-point efficiency of a company with the same expenditure profile as in Table 2.2 and with uneven output.

**Table 2.3: Point to point efficiency with uneven expenditure and outputs**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Expenditure (£m)	100	100	105	110	100	90
Output (units)	20	20	22	24	22	17
Unit cost (£m/unit)	5	5.0	4.8	4.6	4.5	5.3
<b>Efficiency</b>						
Year-on-year (£m)		0.0	5.0	4.5	0.8	-12.7
Year-on-year (%)		0.0%	4.5%	4.0%	0.8%	-16.5%
Year 0 to Year x (£m)		0.0	5.0	10.0	10.0	-5.0
Year 0 to Year x (%)		0.0%	4.5%	8.3%	9.1%	-5.9%

3.8 Although the company's expenditure is the same as in Table 2.2, adjusting for the changes to outputs significantly changes the reported point-to-point efficiencies. For example, in Table 2.3, expenditure increases in Years 2 and 3, though efficiency also increases. Conversely, as expenditure decreases in Year 4 so does efficiency. Taking account of the lower output, the Year 0 to Year 5 efficiency is -5.9% (i.e. worse) rather than +10.0% in Table 2.2.

## Observations

3.9 Our key observations about the point-to-point efficiency are:

- Because it fits with commonly used analysis of expenditure variances over time, point-to-point efficiency is easier to understand.
- It is relatively simple to calculate. However, its simplicity means that the measure can be misleading, for example, by ignoring variances within an interim period. Taking account of changes to outputs complicates the measure and makes it hard to reconcile to basic expenditure variances.
- It is easier to apply for repeatable activities but can be hard to apply for more complex and bespoke activities. Therefore, it focuses on core business activities over time but does not readily provide a comprehensive picture of a company's performance.
- Outputs are hard to define for complex transport network operators like Network Rail. Planned and unplanned changes to outputs can have important consequences for efficiency. These can be hard to quantify. For example:
  - If materials are scarce, it may be necessary to pay proportionately more to deliver a planned increase in output. This would not necessarily be an

inefficiency<sup>7</sup>. Conversely, the company may benefit from unforeseen excess capacity in the supply chain<sup>8</sup>.

- An unplanned reduction to outputs may have resulted in a cost saving, but also an important detrimental effect on customers. This would not be an efficiency<sup>9</sup>.
- Annex A provides further details about our experiences of using this type of measure.

## Average efficiency

3.10 An average efficiency measure develops the point-to-point measure to take account of changes to expenditure and outputs in the intervening period. As explained with worked examples in Annex B, it does this by taking an average of the efficiency improvements in each year. As shown in Annex B, this can lead to important presentational differences compared to the point-to-point efficiency measure.

3.11 Specific observations about the average efficiency measure are:

- It is a more accurate measure of performance over a period of time than the point-to-point measure because it takes account of expenditure and outputs in the interim period.
- It is harder to understand and is more complicated to calculate.
- We have not used an average efficiency measure in our assessments.

## Cumulative efficiency

3.12 A cumulative efficiency measure aggregates year-on-year efficiency improvements to report total efficiencies achieved over a period of time. As explained with worked examples in Annex B, it does this by aggregating the efficiency improvements in each year. As shown in Annex B, there are important presentational differences between the cumulative, average and point-to-point efficiency measures.

3.13 Specific observations about the cumulative efficiency measure are:

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<sup>7</sup> Although it could be. It partly depends on the extent to which the company can effectively work with its supply chain to meet the additional demand. Judgement is required to assess this and avoid cherry picking as part of periodic reviews.

<sup>8</sup> Such as happened following the 2007 financial crisis where infrastructure providers benefited from lower contractor rates due to reduced demand in other parts of the economy. These cost savings did not reflect efficiency improvements by the infrastructure providers. As explained in Chapter 4, these were included in our assessments of Network Rail's efficiency.

<sup>9</sup> In practice, judgement is required to assess whether the detrimental effect outweighs the cost reduction, particularly as the detrimental effect may be hard to quantify.

- It accumulates efficiency improvements to report the total efficiencies achieved over a period of time.
- It is harder to explain than the point-to-point efficiency measure.
- It can be confusing when presented as a percentage.
- It has a number of similarities to financial performance measures (see below). However, the cumulative efficiency measure uses a historic 'pre-efficient' baseline rather than a 'post-efficient' business planning assumption.
- Conceptually, it underpins Highways England's reporting of efficiency improvements. In practice, Highways England uses efficiency registers to calculate its cumulative efficiency improvements. This is explained below and in more detail in Annex A.

## Financial performance measure

- 3.14 The general idea of financial performance measures is to compare a company's income and expenditure to the financial assumptions in a business plan or regulatory determination (the 'baseline'). These financial assumptions will typically include expected improvements to efficiency so the baseline is often described as being post-efficient. If a company has spent less and / or received more income than the baseline, it will report financial outperformance, and vice versa.
- 3.15 Table 2.8 shows the financial performance of a company that has successively increased its income and reduced its expenditure over a five-year period, but by different amounts compared to the financial assumptions in the company's baseline.

**Table 2.8: Financial performance measure**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Income (£m)	120	119	121	123	122	123
Baseline (£m)	n/a	121	122	123	124	125
Expenditure (£m)	100	98	96	94	92	90
Baseline (£m)	n/a	99	98	96	93	88
<b>Financial performance</b>						
Annual (£m)	n/a	-1.0	1.0	2.0	-1.0	-4.0
Cumulative (£m)	n/a	-1.0	0.0	2.0	1.0	-3.0

3.16 In the above example, the company has cumulatively underperformed by £3m across the five-year period despite increasing its income and decreasing its expenditure. It is interesting to compare this to the seemingly better 10% efficiency improvement that the company would report using a point-to-point efficiency measure.

## Observations

3.17 Our key observations about the financial performance measure are:

- It can be flexibly applied in terms of its scope, the baseline and the way that it is calculated, for example, adjustments for performance.
- It is a comprehensive measure of aggregate performance across income and expenditure. However, this can make it harder to identify areas of performance which observers may be particularly interested in.
- In our experience, it is not generally well understood. It is conceptually no more difficult than efficiency, but adjustments to the calculation make it complicated. In addition, there is no direct link to past performance. This makes it hard to reconcile to efficiency improvements over time.
- Because it uses a post-efficient baseline, zero financial performance means that a company has achieved its expected efficiency improvements<sup>10</sup>. This is an important presentational difference to efficiency, which has caused confusion.
- Financial performance is usually presented as a financial amount (e.g. £x m). It can be useful to quantify the performance achieved, but makes it harder for observers to determine the relative scale of any financial out or

<sup>10</sup> The financial performance measure can also include items of income and expenditure that are not typically included in efficiency measures.



underperformance compared to efficiency, which is usually presented as a percentage.

- Annex A provides details about our experiences of using financial performance measures.

## Return on regulatory equity

3.18 Ofwat and Ofgem require their regulated companies to annually report their regulatory return on equity ('RoRE'). RoRE measures the returns (after tax and interest) that companies have earned relative to the regulated equity component of their regulatory capital value (RCV) by reference to the notional capital structure. RoRE provides an indication of equity providers returns compared to the cost of equity that was originally allowed for the control period. Ofwat reports on companies' RoRE in its annual monitoring reports<sup>11</sup>.

### Observations

3.19 Our key observations about RoRE are:

- It is a comprehensive measure of aggregate performance across income and expenditure.
- It requires an understanding of regulatory economic concepts such as regulatory equity. These are complicated.
- As a measure of shareholder returns, it is more suitable for companies that have equity funding.
- It is difficult to reconcile RoRE to efficiency improvements over time.

## Other measures

### Unit costs

3.20 Unit costs are a measure of the average cost of undertaking an activity. They are useful for assessing changes in costs over time of repeatable maintenance and renewals activities. Movements in unit costs are a useful way to assess improvements to the economy and productivity of repeatable activities such as maintenance and renewals.

### Observations

3.21 Our key observations about unit cost measures are:

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<sup>11</sup> See for example <https://064f1d25f5a6fb0868ac-0df48efcb31bcf2ed0366d316cab9ab8.ssl.cf3.rackcdn.com/wp-content/uploads/2017/11/Monitoring-financial-resilience-report-2017-Final.pdf>.

- They are relatively easy to understand (£ per something delivered).
- Unit cost analysis is well established in many industries.
- We require Network Rail to report unit costs for most of Network Rail's renewals activities. However, we have not made much use of this information in our annual assessments, partly because of our concerns about the robustness of the company's reporting in CP4 and CP5.
- Network Rail does not consider that unit cost analysis currently provides a useful analysis of its performance. This is because Network Rail considers that most of its renewals activities are not uniform in nature because of factors such as the geographic location and differing nature of the work at each site. It also considers that applying pressure to reduce unit costs can incentivise easier projects, rather than those with the lowest whole life costs.
- We recognise Network Rail's concerns. However, we consider that for most of Network Rail's maintenance and renewals activities it should be possible to identify and record the main site-specific factors that lead to cost differences.

## Productivity measures

3.22 As explained in Section 1, improving productivity is one of the key ways for a company to become more efficient. An example of a productivity measure is the amount of time that machinery is in use.

### Observations

3.23 Our key observations about productivity measures are:

- Because productivity measures directly relate to business activities, they are relatively easy to understand and use. For example, reporting the amount of time that maintenance work is actually undertaken during network downtime<sup>12</sup>, ('time-on-tools').
- For many productivity measures such as time-on-tools, it is necessary to apply financial assumptions to calculate efficiency (for example, the opportunity cost of under-utilised resources).
- Improving productivity is only one of the ways in which a company can become more efficient (it can also improve economy and effectiveness). Therefore, assessing productivity changes does not fully capture all the ways in which a company's efficiency can change.

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<sup>12</sup> Network Rail calls downtime a possession.

- For operators of complex transport networks, it may be necessary to use a range of productivity measures to assess productivity changes over time. This is potentially onerous.
- We have not made much use of productivity measures in our annual efficiency and finance assessments.

## Efficiency registers

### Overview

3.24 The general idea of efficiency registers is to identify and quantify the specific initiatives that a company has undertaken to improve its efficiency. These are aggregated through efficiency registers to report cumulative efficiency improvements across the business as a whole.

3.25 As explained in Annex A, Highways England uses efficiency registers to calculate and report its efficiency improvements over time.

### Observations

3.26 Our key observations about efficiency registers are:

- Capturing efficiencies at a detailed level within a business provides useful insights into how a company's efficiency is improving, not just by how much. This approach can complement other efficiency measures.
- It should be possible to separately identify and report changes to economy, productivity and effectiveness.
- The bottom-up approach of recording and collating individual efficiency initiatives requires detailed analysis, some of which requires judgement. This is potentially onerous.
- Recording detailed efficiency improvements risks cherry-picking areas of the business that are improving, whilst ignoring areas that are becoming less efficient<sup>13</sup>.

## Traffic-adjusted performance

3.27 The general idea of traffic-adjusted performance measures is to present financial performance in relation to the level of activity of the network. For Network Rail, examples could include operating costs per passenger journey, or maintenance costs per train kilometre travelled. However, this can be overly simplistic for complex

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<sup>13</sup> As explained in Annex A, this is why for our assessments of Highways England we also assess unit cost movements and delivery of its commitments.

infrastructure companies whose costs do not simply vary with journeys. This is explained below.

## Observations

3.28 Our key observations about traffic adjusted performance measures are:

- They can be simple and easy to understand. Similar approaches are commonly used to inform consumers about what their utility bills have paid for. For example, changes to the cost of a litre of tap water over time.
- It can be difficult to choose the right unit of output for a transport network. For example, using the number of passenger journeys would exclude freight users of the rail network. Train kilometres travelled is not particularly easy to understand and different trains have different characteristics (length, weight etc.). Blended measures may be more robust but are more complicated.
- For complex transport networks, the relationship between costs and high-level outputs (such as passenger journeys) are largely fixed in the short to medium term. This means that traffic-adjusted measures are too simplistic for assessing efficiency changes or financial performance in the short to medium term.
- We have presented this type of analysis of the rail industry in our UK rail industry financial information publications<sup>14</sup>. However, we have not used this type of analysis as part of our assessments of Network Rail's efficiency and financial performance for the reasons above.

## Strengths and weaknesses of the different measures

3.29 We have used the following criteria for assessing the strengths and weaknesses of the measures of efficiency and financial performance that were set out in Section 2:

- *Understandability*: Ease of comprehension, particularly for external users.
- *Simplicity*: The effort required to accurately record, calculate and report.
- *Robustness*: A clear measure that fits with what is actually happening in the business.
- *Completeness*: Captures all relevant important matters.

3.30 Table 2.9 provides a simple and indicative summary of the different measures against our criteria.

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<sup>14</sup> See <http://orr.gov.uk/rail/publications/reports/uk-rail-industry-financial-information>.

**Table 2.9: Strengths and weaknesses of measures for monitoring Network Rail**

Measure	Understand-ability	Simplicity	Robust-ness	Completeness
<b>Efficiency</b>				
- Point-to-point	✓✓✓✓✓	✓✓✓✓	✓✓	✓✓
- Average	✓✓✓	✓✓✓	✓✓✓	✓✓
- Cumulative	✓✓✓	✓✓✓	✓✓✓	✓✓
<b>Financial performance</b>				
- Financial performance measure	✓✓	✓✓✓	✓✓✓✓	✓✓✓✓
- Return on regulatory equity (RoRE)	✓	✓	✓✓	✓✓✓✓
<b>Other measures</b>				
- Unit costs	✓✓✓✓	✓✓	✓✓	✓✓
- Productivity measures	✓✓✓✓	✓✓✓	✓✓	✓✓
- Efficiency registers	✓✓✓	✓✓	✓✓	✓✓
- Traffic-adjusted performance	✓✓✓✓	✓✓✓✓	✓	✓

✓ Low      ✓✓✓ Medium      ✓✓✓✓✓ High

## 4. Responses to previous consultations and challenges with our assessments

4.1 This section summarises the views of respondents to work that we have already undertaken to support the development of our approach. It also explains some of the difficulties with assessing Network Rail's efficiency and financial performance that can have a material effect on our assessments. We are considering ways in which we can better address these matters for our assessments in CP6.

### Responses to previous consultations

4.2 We have already undertaken the following work to support the development of our approach for assessing Network Rail's financial performance in PR18:

- our consultation on the PR18 financial framework included questions about how we should assess Network Rail's financial performance in CP6;
- our consultation on route requirements and scorecards; and
- our consultation on improving Network Rail's renewals efficiency in July and follow-up seminar.

### Consultation on the PR18 financial framework

4.3 Our January 2017 consultation on the PR18 financial framework<sup>15</sup> set out our initial thoughts on how we should assess financial performance in CP6. We suggested that our main measure should involve a comparison of outturn expenditure levels to the baseline levels established in our PR18 determination at route and national levels, reflecting our scrutiny and challenge of the costs set out in Network Rail's business plans. We also expected to report on Network Rail's efficiency on an appropriate basis. We also sought views on:

- establishing principles for assessing Network Rail's financial performance;
- whether financial performance measures could be given formal output status;
- whether to introduce mechanisms to update efficiency assumptions;
- route-level considerations;
- how we could improve our financial monitoring in order to more effectively challenge Network Rail's performance where appropriate; and

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<sup>15</sup> See [http://orr.gov.uk/\\_data/assets/pdf\\_file/0020/23960/pr18-consultation-on-the-financial-framework-2017-01-26.pdf](http://orr.gov.uk/_data/assets/pdf_file/0020/23960/pr18-consultation-on-the-financial-framework-2017-01-26.pdf).

- whether we could set our review of financial performance in a wider industry context.

#### 4.4 Key responses are summarised below:

- Network Rail wants us to be mindful of regulatory burden (apply a risk-based approach, only collect necessary data and simplify route-level reporting). It would also like financial performance to take account of 'headwinds', i.e. external factors that increase costs which it thinks are beyond its control.
- Network Rail and some other respondents saw little gain from making financial performance a regulatory output, instead suggesting that we should focus on understanding and reporting the drivers of performance. However, others considered that financial performance should be a regulatory output.
- Some respondents, mostly sub-national transport bodies would like more geographically disaggregated financial information aligned to their geographies.

### Consultation on route requirements and scorecards

4.5 We consulted on route-level financial performance reporting as part of our July 2017 consultation on route requirements and scorecards<sup>16</sup>. As set out in that consultation, we think that financial performance measures on route scorecards can help customers and other stakeholders understand Network Rail's progress by providing comparative data, for example on:

- poor financial performance (even though the access charges paid by train operators within the relevant control period are not directly affected);
- the expenditure levels to deliver the outputs; and
- overspending against budgets, e.g. that might put planned renewals programmes at risk.

#### 4.6 Key responses are summarised below:

- The majority of respondents, including Network Rail, supported including a financial performance measure on route scorecards because it is an important component of overall performance and would aid transparency. Others recognised the importance of our financial monitoring, but did not think it important or relevant to a customer scorecard.
- Some respondents suggested including additional relevant metrics on the scorecard, for example, renewals unit costs and schemes delivered on time.

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<sup>16</sup> See [http://orr.gov.uk/\\_data/assets/pdf\\_file/0018/25281/route-requirements-and-scorecards.pdf](http://orr.gov.uk/_data/assets/pdf_file/0018/25281/route-requirements-and-scorecards.pdf).

- One respondent suggested including a 'likelihood' scale of expected efficiencies being delivered.

### **Consultation on improving Network Rail's renewals efficiency**

4.7 We consulted on improving Network Rail's renewals efficiency in July 2017<sup>17</sup>, with a follow-up seminar in September. This consultation document sought views on what Network Rail, ORR and the wider industry need to do differently to improve renewals efficiency in CP6. The consultation informed our approach to scrutinising Network Rail's business plans for CP6. It also has relevance to our ongoing monitoring of Network Rail's efficiency and financial performance.

4.8 Key responses are summarised below:

- Some respondents commented that it was difficult for them to offer a view about changes to Network Rail's renewals efficiency in CP5 as they have had little visibility of Network Rail's cost base and its efficiency improvement plans for CP5, suggesting a need for greater transparency in this area.
- One respondent questioned whether our CP5 measure was a reliable measure of performance as it was not clear to them why there has been such a large jump in unit costs.

### **Challenges with our assessments**

4.9 This section explains some of the difficulties with assessing Network Rail's efficiency and financial performance. These can have a material effect on our assessments. We are considering ways in which we can better address these matters for our assessments in CP6.

### **Controllability of expenditure**

4.10 Our general approach in our periodic reviews is that if a category of expenditure is deemed controllable, then it should be included in Network Rail's reporting of efficiency and financial performance. So for example, an increase in the cost of steel would reduce Network Rail's reported efficiency. If a category of expenditure is deemed non-controllable, then it should be excluded from Network Rail's reporting of efficiency and financial performance. For example, changes to the cost of electricity purchased for use by electrically powered trains.

4.11 Reflecting this principle in our assessments can result in reporting that does not necessarily reflect the underlying cost change in Network Rail's total cost base.

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<sup>17</sup> See <http://orr.gov.uk/rail/consultations/pr18-consultations/consultation-on-improving-network-rails-renewals-efficiency>.



However, we need to do this for consistency with our periodic reviews, to avoid cherry picking and to avoid an excessive reporting burden on Network Rail.

### **Treatment of one-off items**

4.12 To the extent that we consider one-off items of income and expenditure to be controllable by Network Rail, our approach is to include unforeseen material one-off changes (both positive and negative) in Network Rail's reporting of efficiency and financial performance.

### **Deferral of work**

4.13 A simple financial analysis would compare expenditure to a baseline without taking account of what had been delivered. Our approach for assessing efficiency and financial performance takes account of the work done. We do this as it provides a better measure for holding Network Rail to account for its expenditure and incentivises Network Rail to deliver outputs efficiently. However, for a company like Network Rail that undertakes many different types of complex activities, taking account of changes to work undertaken is complicated. It also makes it harder to communicate the results of our assessments.

4.14 In both CP4 and CP5 Network Rail undertook lower volumes of renewals compared to its strategic business plans for each of these control periods and renewals varied significantly from year to year. Judgement is required to decide how to treat the changes to costs from changes to planned levels of work. For example, improved asset monitoring may require lower volumes of renewal, in which case the cost saving could be an efficiency.

4.15 Work may be deferred for a short period to manage network access constraints, in which case the cost saving will be neither an efficiency or inefficiency. Alternatively, work may have slipped with consequences for asset reliability, in which case there would be an inefficiency despite the cost saving. Network Rail has simplifying rules in place to address these issues but understanding the effect of these can be complicated. We need to think about how we value these changes as the real economic effect is not the immediate cost change but the cost profile over the long term.

### **Changes to the mix of renewals work delivered**

4.16 In both CP4 and CP5 Network Rail made significant changes to the types of renewals undertaken compared to its strategic business plans for each of these control periods. Because our periodic review determinations are based on Network Rail's strategic business plans, it is therefore difficult to track the financial performance of the mix of renewals work actually undertaken compared to our determination.

## **Nature of our assessments**

- 4.17 Ultimately, in our assessments, we take a high-level view of Network Rail's efficiency rather than a detailed assessment of each of the company's contracts and expenditure decisions. This is because ultimately the way that periodic reviews work is to set a company an efficiency challenge and to then report on the company's delivery, rather than to reassess the scope for improvements on a continual basis. This helps to avoid excessive reporting burden on the company. The more detailed assessment is undertaken as part of the five-year periodic review.
- 4.18 One of the consequences of our approach is that increases to expenditure are reported as reducing efficiency even if that expenditure may increase efficiency in the medium or long term, for example, increased staff training and vice versa.
- 4.19 Taking account of the overall effects of individual expenditure decisions would overly complicate our assessments. It would also require us to have a very detailed understanding of the effects of these decisions, which is not practicable.

## **Fixed and semi-fixed costs**

- 4.20 Large-scale renewals programmes include a proportion of fixed and semi-fixed costs. If volumes of work change substantially, this can affect the unit costs of delivering these renewals programmes.

## **Incremental enhancements**

- 4.21 Our current financial performance measure does not fully capture some of Network Rail's renewals activities. For example, if Network Rail undertakes incremental work beyond a like-for-like renewal (such as to increase gauge or line speed), the additional cost of the incremental enhancement scores against the financial performance measure without capturing the benefit of this work. We want to improve the way that we capture these activities in our CP6 approach. This needs to be assessed in the round with our treatment of situations where Network Rail has done less work than expected

## **Application of standards**

- 4.22 Network Rail has made a number of changes to standards for undertaking work in CP5. Some industry members have noted that whilst resulting changes to business practices have increased costs, it is not clear whether operational or safety performance have improved as a result. Examples include the introduction of standards to implement EU law concerning safety and interoperability in relation to electrification risk and the requirement to use two safety observers when operating heavy machinery rather than one.

4.23 Whilst the financial performance measure captures the increased cost resulting from changes to standards, it does not capture the benefits, or the extent to which expected benefits have materialised.

### **Enhancements to the network**

4.24 Following Network Rail's reclassification to the public sector, the DfT has taken a greater role in overseeing Network Rail's enhancements portfolio in England and Wales through an enhancements portfolio board and related governance processes. We no longer have an ex-ante role in assessing the efficient costs of enhancements to the network for England and Wales. We expect to continue to publicly report on the cost of enhancement projects as part of our annual efficiency and finance assessments of Network Rail as a whole.

## 5. Our proposed approach for CP6

5.1 This section sets out our proposed approach for monitoring Network Rail's efficiency and financial performance in CP6. It sets our priorities; the measures that we propose to use, and how we propose to use them; the regulatory status of efficiency improvements and how we will report.

### Our priorities

5.2 We consider that the priorities for our assessments in CP6 should be to:

- drive the best outcomes for the users of the rail network through supporting better value for money;
- enhance comparisons of the performance of Network Rail's operating routes<sup>18</sup> and to assist in future benchmarking;
- move away from technically precise measures to a more rounded assessment which draws out key messages about the drivers of performance, makes a clearer link between expenditure and delivery, and examines how efficiencies are being achieved;
- make more informed forward-looking assessments of the efficiencies that Network Rail will likely deliver across the control period;
- support Network Rail's internal performance measurement and staff incentives; and
- provide clear and informative messages about Network Rail's efficiency improvements, recognising that different audiences want different levels of technical detail.

### How we propose to implement our priorities

5.3 Looking at our current approach, we recognise the value of an efficiency measure to provide a clear message about the performance of Network Rail's core business. We also recognise the benefits of FPM as a measure of the company's wider financial performance. However, as examined in Sections 2 and 3, there are important limitations with any single measure for assessing and reporting Network Rail's performance. In particular, a basic efficiency measure can be overly simplistic (though still difficult to calculate and explain), and financial performance measures can be complex and not easily understandable. Also, no measure can by itself provide a rounded assessment of performance.

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<sup>18</sup> We note that the CP6 route scorecards will require some form of financial performance measure.

5.4 We are proposing a number of incremental changes to our current approach to deliver our CP6 priorities. These changes are explained below.

## Efficiency

- 5.5 We consider that providing a clear summary of Network Rail's efficiency improvements should be one of the key parts of our financial monitoring in CP6. This includes differences to the efficiency assumptions in our PR18 determination.
- 5.6 The point-to-point efficiency measure (explained in Chapter 2) is relatively simple and easy to understand. We propose that such a measure should form a key part of Network Rail's and our reporting of the company's efficiency improvements in CP6 at a route level. The measure would cover Network Rail's core business activities (operations, maintenance, renewals and supporting central functions) on a like-for-like basis over time.
- 5.7 We propose that for operations, maintenance and support activities, Network Rail would report the percentage efficiency changes compared to its expenditure in 2018-19. Changes to expenditure would be indexed to general inflation. The same approach would apply for renewals, except that changes to the amount of work undertaken should be taken into account.
- 5.8 We recognise that the point-to-point efficiency measure can provide a misleading picture. For example, expenditure and outputs can vary (including during an interim period) for reasons other than efficiency improvements. We propose to address this by not relying on a single measure, focussing on key messages that explain Network Rail's performance, and by requiring Network Rail to quantify and explain the factors that have affected its efficiency including those factors that it considers to be outside of its control<sup>19</sup>.

## Wider financial performance

- 5.9 Network Rail has embedded the CP5 financial performance measure within its business. It forms an important component of how the company holds its operating routes to account and its staff incentive arrangements. The measure appears to be working well for Network Rail's assessment and comparison of routes' financial performance. However, aspects of the measure are complex.
- 5.10 We propose that a financial performance measure should continue to be the main measure for comparing routes' financial performance on route scorecards in CP6. However, we will look to simplify the measure where practicable.

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<sup>19</sup> Network Rail uses the terms 'headwinds' and 'tailwinds' to describe external uncontrollable cost changes in its business planning for CP6.

- 5.11 Providing that Network Rail can provide a clear reconciliation between the internal budgets of its routes and our PR13 financial assumptions, we propose that the company's internal budget may be the most suitable baseline for calculating and reporting financial performance. This should help to reduce some of the complexity of the CP5 measure but still allow reporting against the PR18 determination.
- 5.12 To limit confusion between Network Rail's reporting of efficiency improvements and its wider financial performance, it will be important for the efficiency improvements assumed in routes' CP6 business plans to be clearly set out. In the event that there are subsequent changes to routes' business plans, the effect of these changes to planned levels of efficiency should be clearly stated.

### **Further enhancements to our monitoring and reporting**

- 5.13 We want to make a clearer link between routes' expenditure and delivery, improve our understanding of how efficiencies are being planned and delivered, and have greater confidence about whether it is on track to deliver these efficiencies. We propose to do this through more rounded assessments that take account of more diverse quantitative and qualitative information.
- 5.14 To support our proposed changes, we expect that routes will need to improve their capability to provide the necessary analysis. However, we need to be mindful of the potential resource implications for Network Rail.

### *Maintenance and renewals unit costs*

- 5.15 Movements in unit costs are a useful way to assess improvements to the economy and productivity of repeatable activities such as maintenance and renewals. Unit cost analysis is well established in many industries and it is relatively easy for stakeholders to understand.
- 5.16 However, Network Rail considers that the majority of its renewals activities are not uniform in nature because of factors such as the geographic location and differing nature of the work at each site. Therefore, Network Rail does not consider that unit cost analysis currently provides a useful analysis of performance. It also considers that applying pressure to reduce unit costs can incentivise easier projects, rather than those with the lowest whole life costs.
- 5.17 We recognise Network Rail's concerns. However, these arguably relate to the maturity of the company's cost capture and analysis. We consider that for most of Network Rail's maintenance and renewals activities it should be possible to identify and record the main site-specific factors such as geology and access that lead to cost differences. It should then be possible to identify the extent to which aggregate expenditure variances are due to efficiency changes as opposed to other reasons such as site locations.

5.18 We understand that Network Rail has made improvements to capturing project costs in CP5 and that site-specific factors are taken into account for routes' business planning. We consider that this is likely to form an important part of our CP6 assessments and that it should be possible for Network Rail's routes to use this same information to show how the costs of standard renewals activities (i.e. excluding site-specific factors) have changed over time. We intend to explore this matter further with Network Rail and other stakeholders.

### *Productivity measures*

5.19 As explained in Section 1, improving productivity is one of the key ways for a company to become more efficient. However, we have made little use of productivity measures in our reporting of Network Rail's efficiency and financial performance to date.

5.20 We could potentially assess a number of Network Rail's activities to inform our assessments of the company's productivity improvements at a route level. The main areas that we have identified are set out below:

- *Time on tools:* Most of Network Rail's maintenance activities are undertaken at night to avoid disruption to the network. However, the amount of time that maintenance work is undertaken ('time on tools') is usually significantly shorter than the total track possession. Contributory factors include the need to ensure that sites are safe to work on, and that they have been cleared-up in time.
- *Workload stability:* Poor workload stability makes it harder for suppliers to plan their own resources effectively, particularly for lower tiers of the supply chain and late changes to the scope of projects can lead to considerable post contract variations. These uncertainties make it harder for the supply chain to plan and manage resources effectively with subsequent inefficiencies passing to Network Rail.

Possible measures that we could use include variances between planned and actual work delivered and the proportion of projects settled with post contract variations greater than five percent of the anticipated final cost<sup>20</sup>.

*Network access:* Network Rail needs to restrict network availability to undertake some renewals activities. As the rail network has become busier, ensuring that planned network possessions are effectively used has become increasingly important.

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<sup>20</sup> For example, a renewal project that cost £106,000 but was anticipated to cost £100,000.

Possible measures that we could use include the proportion of planned possessions that are not used and the proportion that are subject to late changes.

5.21 We could prescribe the measures that we intend to use to assess Network Rail's productivity improvements. However, we recognise that this information should also be important for Network Rail's own management and that much of it should already be available. We therefore want to work with Network Rail to agree the most suitable measures.

5.22 We intend to continue to liaise with Network Rail's supply chain to understand their insights into the opportunities and challenges for Network Rail to improve its efficiency. For example, we will continue to engage with the Rail Industry Association's Renewals Cost Working Group.

#### *Forward looking assessment*

5.23 Our reporting on Network Rail's efficiency and financial performance to date has provided little opinion about whether the company is on track to deliver expected future efficiency improvements.

5.24 As reported in our annual efficiency and finance assessments, our experience in CP5 is that Network Rail was over-optimistic about the efficiency improvements that it could achieve and that this over-optimism remained through most of the company's subsequent financial reforecasts during the control period.

5.25 Network Rail will be subject to different government grant funding arrangements in CP6. Given the transition to route regulation, we will be enhancing our scrutiny of Network Rail's expenditure plans. This is also very relevant to the governments, as they will understandably want greater confidence that Network Rail will deliver the efficiency initiatives in its business plans. Therefore, we think that our reporting will need to include a forward-looking assessment.

5.26 We consider that there are leading indicators of performance that we can draw on to provide an independent view about the efficiency improvements that Network Rail is likely to achieve by the end of CP6. This would enable us to report our confidence about Network Rail's forecast efficiency improvements. These include the number of network possessions secured six months ahead of the start of work and the proportion of planned work that has been tendered. We want to work with Network Rail to agree the most suitable measures.

5.27 We envisage this being a rigorous process of challenging routes about the progress of their initiatives to deliver improvements<sup>21</sup>. To support our assessments, routes will

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<sup>21</sup> Building on the efficiency registers approach explained in Chapter 2.



need to have well documented plans for how they intend to deliver efficiency improvements and clear tracking of progress in delivering these plans.

5.28 We will look to make greater use of information from our safety role including making greater use of relevant information from safety reports.

## The regulatory status of efficiency improvements

5.29 Network Rail operates under a network licence. Condition 1.1 of the licence requires it to manage the rail network in a timely, efficient and economical manner<sup>22</sup>. We can take licence enforcement action if we are concerned about the company's compliance with this condition<sup>23</sup>.

5.30 Recognising Network Rail's problem of declining efficiency in CP5 to date, assessing routes' efficiency plans for CP6 is a key part of our PR18 determination in the same way as determining regulatory requirements such as train performance and asset sustainability. We consider that our PR18 determination, monitoring and reporting are our most effective tools to support Network Rail to become more efficient. Improving efficiency will be an integral part of what routes are expected to deliver and we are enhancing our approach for monitoring their performance. We will take action to enforce Condition 1.1 of Network Rail's licence if appropriate<sup>24</sup>.

## How we will report

5.31 We currently include a short financial analysis in our biannual Network Rail Monitor publications (separate for GB, Scotland and Wales)<sup>25</sup>. We also publish annual efficiency and finance assessments, which provide more detailed analysis<sup>26</sup>.

5.32 We are considering how and when we should report. In particular, we are considering whether we have the right linkages between our publications and how to improve the presentation of our assessments to make them easier to understand.

## Updating efficiency assumptions

5.33 As noted in our consultation on the financial framework for PR18, forecasting the efficiencies achievable by any company over a five-year period is difficult. For Network Rail this is especially the case, given the backdrop of Network Rail's

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<sup>22</sup> The network licence is available at [http://orr.gov.uk/\\_data/assets/pdf\\_file/0012/3063/netwrk\\_licence.pdf](http://orr.gov.uk/_data/assets/pdf_file/0012/3063/netwrk_licence.pdf).

<sup>23</sup> Our economic enforcement policy is available at [http://orr.gov.uk/\\_data/assets/pdf\\_file/0018/4716/economic-enforcement-statement.pdf](http://orr.gov.uk/_data/assets/pdf_file/0018/4716/economic-enforcement-statement.pdf).

<sup>24</sup> I.e. in accordance with our economic enforcement policy.

<sup>25</sup> See <http://orr.gov.uk/rail/economic-regulation/regulation-of-network-rail/monitoring-performance/network-rail-monitor>.

<sup>26</sup> See <http://orr.gov.uk/rail/economic-regulation/regulation-of-network-rail/monitoring-performance/efficiency-and-finance-assessment>.

negative efficiency in recent years and not meeting targets agreed with DfT. In order for us to address this issue, we are still considering whether there should be a mechanism for us to update our PR18 efficiency assumptions during the CP6 control period<sup>27</sup>. We would consider doing this if we thought that, to a material extent, the original assumptions were no longer reasonable and hence not providing an appropriate incentive for Network Rail to improve its efficiency in the year concerned.

5.34 This might arise if, for CP6, we were to base our initial efficiency assumptions on Network Rail's 2018-19 exit position (i.e. the cost levels it experiences in the last year of CP5). We will need to forecast this position because when we publish our determination in October 2018 we will not have final financial performance data for 2018-19<sup>28</sup>. In order to take account of this issue, we could consider updating our efficiency assumptions using actual outturn information for 2018-19.

### **Financial performance in a wider context**

5.35 We do not, in our annual reporting compare the performance of the wider railway industry to the assumptions supporting the governments' statements of funds available (SOFAs). We are still considering whether it could be useful to make such comparisons, which might allow us to show how, at a high-level, Network Rail's expenditure decisions affect the rest of the industry. If this is too complex to implement then in our annual reporting we could use the information in a more limited way to provide additional context.

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<sup>27</sup> This might be similar to the change control we are considering in respect of outputs, referred to in our PR18 working paper 4 on the outputs framework.

<sup>28</sup> This was a particular problem for PR13.

# Annex A: Approaches that we have used to assess efficiency and financial performance

This annex describes the different approaches that we have used for assessing Network Rail's and Highways England's efficiency and financial performance.

## Reporting in CP4

### Real Economic Efficiency Measure

Early in CP4, Network Rail developed the 'Real Economic Efficiency Measure' (REEM) to report efficiency improvements of its core business activities<sup>29</sup> over time. REEM was presented as a percentage change and was calculated as follows:

- For controllable operating expenditure<sup>30</sup> and maintenance, the baseline was expenditure in 2008-09, the final year of CP3.
- For renewals, the baseline was our PR08 determination pre-efficient implied volumes multiplied by 2008-09 unit costs. For renewals activities that did not have unit costs, the baseline was the PR08 determination pre-efficient expenditure assumption.
- These baselines were adjusted for RPI inflation.
- Network Rail also intended to adjust the baseline for changes in traffic volumes and required outputs, but did not in practice.

#### *Observations about REEM*

- Network Rail developed REEM to report cost changes over time that took account of changes to the mix of work and outputs.
- It focussed on expenditure associated with Network Rail's core business activities.
- It was arguably the closest measure that has been developed to what many would understand as a measure of efficiency changes over time.

#### *Problems with REEM*

- REEM evolved out of an internal 'Cost Efficiency Measure' (CEM) that Network Rail developed to inform internal performance related pay decisions. CEM mostly differed from REEM by using the company's internal budget. Network Rail's use of CEM as an internal measure and REEM as an external measure complicated the reporting.
- Because Network Rail had already developed CEM, REEM evolved with little consultation with ORR. Network Rail took little account of ORR's concerns about

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<sup>29</sup> Support, operations, maintenance and renewals activities.

<sup>30</sup> Network Rail deemed certain categories of operating expenditure to be non-controllable by the company. These included British Transport Police and traction electricity. These were excluded from the REEM calculation.

some aspects of the measure. These included expenditure that was excluded (such as Schedules 4 and 8), that the measure did not adjust for lower than required train performance, and that it was hard to reconcile to the efficiency assumptions in our PR08 determination.

- The independent reporter, Arup, reviewed the calculations underpinning reported REEM values. Arup had a number of concerns including the complexity of calculations and the manual processes required to calculate REEM.

## **PR08 measure of efficiency**

The PR08 funding settlement for CP4 assumed that Network Rail would achieve efficiency improvements compared to forecast levels of operating, maintenance and renewals expenditure in the final year of CP3. The PR08 determination efficiency measure calculated expenditure variances compared to the pre-efficient expenditure assumptions in our PR08 determination adjusted for changes to the level of renewals work undertaken.

### *Observations about the PR08 determination efficiency measure*

- Sought to provide a like-for-like comparison between actual efficiency improvements and the efficiency improvements assumed in the PR08 determination.

### *Problems with the PR08 determination efficiency measure*

- Network Rail considered that the baseline (PR08 pre-efficient assumed expenditure) was flawed. This was because the baseline was neither actual historic expenditure, nor a funding baseline that the company had agreed to.
- The PR08 measure shared many similarities with REEM, though it was difficult to reconcile the two mostly due to differences in the baselines.
- Our attempts to explain both REEM and the PR08 determination efficiency measures generated a substantial amount of analysis and differences were hard to explain to stakeholders. An example extract from our 2011 annual efficiency and finance assessment is reproduced below.

## Efficiency

23. Network Rail's OMR efficiencies are summarised in Table 3.<sup>14</sup> We have included a range for renewals efficiencies based on the uncertainties in Network Rail's reporting of renewals efficiencies as explained above.

**Table 3: Analysis of efficiency**

	Real economic efficiency measure		PR08 determination	
	Actual	NR trajectory	Actual	Assumed
<b>Great Britain</b>				
Controllable opex	3.5%	2.2%	-7.3%	5.5%
Maintenance	13.3%	12.6%	14.6%	6.3%
Renewals	13.1% - 16.6%	16.6%	13.1% - 16.6%	9.8%
<b>Total OMR</b>	<b>11.3% - 13.2%</b>	<b>12.8%</b>	<b>9.9% - 11.9%</b>	<b>8.1%</b>
<b>England &amp; Wales</b>				
Controllable opex	3.0%	1.9%	-7.4%	5.5%
Maintenance	13.7%	12.5%	14.2%	6.3%
Renewals	13.6% - 17.2%	17.3%	13.6% - 17.2%	9.8%
<b>Total OMR</b>	<b>11.6% - 13.5%</b>	<b>13.1%</b>	<b>10.1% - 12.1%</b>	<b>8.1%</b>
<b>Scotland</b>				
Controllable opex	8.3%	5.6%	-6.7%	5.5%
Maintenance	8.6%	14.5%	18.9%	6.3%
Renewals	9.3% - 11.8%	11.9%	9.3% - 11.8%	9.8%
<b>Total OMR</b>	<b>9.0% - 10.5%</b>	<b>10.2%</b>	<b>9.0% - 10.4%</b>	<b>8.1%</b>

24. Network Rail's reported overall efficiency for Great Britain on a 'real economic efficiency measure' (REEM) basis was 13.2% which is 0.4% ahead of its own target trajectory for 2010-11. On a PR08 determination basis, reported efficiency was 11.9% which is 3.8% above our PR08 assumption.
25. REEM and PR08 determination efficiencies are not directly comparable largely due to the use of different baselines against which actual expenditure is compared. For REEM purposes, the baselines are mostly 2008-09 actual expenditure, whereas the PR08 determination baselines are the PR08 expenditure assumptions based on the level of Network Rail's efficiency at the start of 2009-10. The REEM methodology is explained Chapter 3 (Efficiency).
26. The difference in reported efficiency as measured on a REEM and a PR08 determination basis was largely due to controllable opex where our PR08

<sup>14</sup> These are the efficiencies for 2010-11 compared to the baselines at the start of 2009-10 and not just the improvement in efficiency from 2009-10.

## Financial Value Added

Network Rail started reporting Financial Value Added (FVA) in 2012, the third year of CP4. FVA measured cumulative financial performance across most of Network Rail's income and expenditure. It compared cumulative income and expenditure to the financial assumptions in Network Rail's CP4 (2009) delivery plan.

### *Observations about FVA*

- Included most items of income and expenditure including enhancements and interest costs (unlike REEM).
- FVA contributed to the long-term incentive plan (LTIP) component of directors' performance related pay.

### *Problems with FVA*

- Because Network Rail developed FVA for internal decisions about performance related pay, it was reluctant to make changes for our concerns about the design of the measure.
- We had concerns about various aspects of the measure. These included using the company's delivery plan as a baseline, the treatment of amortisation of inflation-linked debt and that the measure did not take account of whether regulatory outputs such as required levels of train performance had been delivered.
- Network Rail reported £1.0bn of FVA in CP4 with over 70% of this from lower than expected finance costs. ORR and Network Rail disagreed about the extent to which this represented genuine value added as Network Rail's calculation excluded £0.2bn of accretion on index-linked debt.

## Efficiency Benefit Sharing Mechanism

We established the Efficiency Benefit Sharing Mechanism (EBSM) in CP4 to incentivise train operators to support Network Rail to outperform the financial assumptions in our PR08 determination. There were separate schemes for England and Wales, and for Scotland.

Under the EBSM mechanism, train and freight operators shared 25% of cumulative outperformance on a number of elements of Network Rail's expenditure and income. For items of expenditure, outperformance was measured as the amount that expenditure was less than the post-efficient assumed expenditure. Likewise, for income items, outperformance was measured as the amount that income was greater than the post-efficient assumed income.

### *Observations about the EBSM measure*

- As a measure of cumulative financial performance, EBSM had a number of similarities to FVA.
- The baseline was the PR08 post efficient income and expenditure assumptions.
- It included different elements of income and expenditure than REEM and FVA.

### *Problems with the EBSM measure*

- It was important that all parties had confidence in the calculation as it resulted in payments from Network Rail to train operators. However, the PR08 determination provided little detail about what items of income and expenditure would be included, or how outperformance would be calculated which meant that further work had to be done to finalise the measure after the start of CP4.
- Reconciling and communicating differences between the EBSM, REEM and FVA measures was difficult due to the different elements of income and expenditure and different baselines they used.
- We intended for the mechanism to be simple. However, the actual calculation became complex. Challenges included the calculation of renewals performance when the mix of work undertaken was different to that assumed in the PR08 determination, and determining the value of underspend related to under-delivery of train performance targets.
- Stakeholders had wider concerns about whether the EBSM mechanism had the intended incentive effects. These concerns are not explored here.

## **Reporting in CP5**

The different measures of efficiency and financial performance that emerged in CP4 was confusing. As a result, ORR and Network Rail jointly developed a single 'Financial Performance Measure' of performance for the start of CP5. However, the CP5 Regional Efficiency Sharing (REBS) mechanism includes only a sub-set of income and expenditure and allowed Network Rail to allocate different route-level budgets to those assumed in PR13. This necessitated a separate, though related financial performance measure. It became clear in the first year of CP5 that stakeholders continued to expect ORR to provide a view on Network Rail's efficiency improvements on its core business activities compared to the efficiency assumptions set out in the PR13 determination. Consequently, we now report an additional efficiency measure.

## **Financial performance measure**

The Financial Performance Measure (FPM) was intended to be a single, all-encompassing measure of Network Rail's financial performance. FPM is calculated for Network Rail as a whole, and separately for each of the company's operating routes. The calculation of FPM starts with cumulative income and expenditure variances to Network Rail's own budget and then to our PR13 determination. A series of adjustments can then be made for:

- Variances not controllable by Network Rail;

- Changes in volumes of work done compared to PR13 assumptions;
- 75% of renewals and enhancements expenditure variances are excluded to align with the RAB roll forward incentive;
- 75% of expenditure variances on independent reporters' fees are excluded to recognise that these variances may not be fully within Network Rail's control; and
- Deductions for under-delivery of regulatory outputs and reduced sustainability.

### *Observations about FPM*

- ORR and Network Rail put a lot of effort into designing and agreeing the measure before the start of CP5. This provided greater certainty than in CP4 where measures were developed and changed through the control period.
- FPM is reported separately for each of Network Rail's operating routes.
- FPM is embedded within Network Rail's internal reporting and forms an important component of the company's performance related pay.
- Most items of Network Rail's income and expenditure are included.
- It adjusts for the financial impact of missed regulatory outputs based on pre-agreed amounts.
- It is aligned with the RAB roll forward incentive mechanism<sup>31</sup>. This mechanism provides an incentive on Network Rail to manage renewals and enhancements efficiently but does not expose the company to too much risk.

### *Problems with FPM*

- There is a generally low awareness and understanding of FPM outside of Network Rail and ORR. This undermines its usefulness as a reporting tool.
- In practice, Network Rail uses an internal FPM measure to inform its internal assessments of business performance. This uses the company's annual budget as the baseline. As Network Rail's annual budgets have diverged from the PR13 financial assumptions this has resulted in large differences between the internal and external measures. This is confusing for stakeholders.
- The calculation of FPM is technically complex and hard to explain to stakeholders.
- Financial performance is stated to the nearest £1 million, which arguably overstates the accuracy of the measure. In practice, judgement is required about how to quantify some adjustments.
- It does not properly capture changes to some of Network Rail's activities. For example, changes to the mix of full renewal and refurbishment are hard to assess.
- The measure is not symmetrical as no credit is given for exceeding regulatory targets<sup>32</sup>.

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<sup>31</sup> See Chapter 12 of the PR13 final determination for further details. This is available at [http://orr.gov.uk/data/assets/pdf\\_file/0011/452/pr13-final-determination.pdf](http://orr.gov.uk/data/assets/pdf_file/0011/452/pr13-final-determination.pdf).

<sup>32</sup> This was a policy choice that recognised that the CP5 High Level Output Strategy (HLOS) did not specify going beyond the required level of performance, so we could not incentivise performance above that level.



- Network Rail has overspent by over £3bn on renewals and enhancements that have been undertaken in CP5 to date. The 75% Regulatory Asset Base ('RAB') roll-forward adjustment substantially reduces the reported underperformance<sup>33</sup>.
- Network Rail does not apply output adjustments for its internal measure. This is because Network Rail considers that this would double-count areas of poor performance when used as part of a balanced scorecard of performance. The accuracy of these output adjustments is also uncertain.

## Regional Efficiency Benefit Sharing measure

We developed the CP5 Route Efficiency Benefit Sharing (REBS) mechanism to strengthen the alignment of incentives between Network Rail and train operators in order to support greater co-operation and reduce industry costs. REBS started at the beginning of CP5.

### *Observations about the REBS measure*

- As a measure of cumulative financial performance, it is based on FPM, but there are differences because it also affects train operators.
- It excludes some items of income and expenditure, most notably, enhancements expenditure.
- For the company as a whole, the baseline is the PR13 post efficient income and expenditure assumptions, though individual route baselines were adjusted in Network Rail's delivery plan.

### *Problems with the REBS measure*

- Train operators have found it difficult to understand the calculation.
- The ability for Network Rail to adjust its route-level baselines within a total financial envelope mean that it is difficult to reconcile to FPM.
- Stakeholders have expressed wider concerns about whether the REBS mechanism has had the intended incentive effects. These concerns are not explored here.

## CP5 efficiency measure

Although we agreed with Network Rail that it would only report FPM in CP5, it soon became clear that stakeholders expected us to provide a view on the efficiency improvements of Network Rail's core business activities. Consequently, we developed a CP5 efficiency measure which we have included in our annual efficiency and finance assessments, but which we do not require Network Rail to formally report in its regulatory financial statements.

### *Observations about the CP5 efficiency measure*

- In theory, it is a relatively simple measure that is widely used by the media and key stakeholders. However, in practice it is complicated to calculate and explain.

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<sup>33</sup> Applying the 75% RAB roll-forward adjustment made the measure consistent with changes to Network Rail's RAB. However, it makes FPM harder to explain.

### *Problems with the CP5 efficiency measure*

- It is not a direct measure of efficiency improvements over time. The efficiency baseline was calculated based on the differences between the PR13 financial assumptions and CP4 outturn costs.

## **Highways England efficiency measure**

Highways England is required to deliver £1.2bn of efficiency improvements on its capital programme, i.e. renewals and improvements to the strategic road network across Road Period 1, the five-year period ending in March 2020. We agreed an approach with Highways England and DfT for assessing the company's efficiency improvements in 2015<sup>34</sup>. This sets out the framework for identifying, valuing and monitoring efficiencies.

### *Observations about the Highways England efficiency measure*

- The measure is a consolidation of detailed project level efficiency registers.
- In assessing these efficiencies, we also assess unit cost movements and the company's delivery of its performance specification and investment plan requirements within the available funding.
- This approach recognises that Highways England has fixed five-year funding for its capital programme.
- Consistent with the NAO approach explained in Section 1, Highways England is required to separately identify and report improvements to economy, productivity and effectiveness. For example, the company increased productivity by reducing the time taken to deliver smart motorways schemes (which saves traffic management costs) and by standardising designs (for example, of overhead gantries).
- Capturing efficiencies at a detailed level within the business provides insights into how the company is improving its efficiency, not just by how much. This provides a more comprehensive understanding of business improvements and supports internal knowledge transfer.

### *Problems with the Highways England efficiency measure*

- The bottom-up approach of recording and collating individual efficiency initiatives requires a lot of detailed analysis, discussion and agreement about how these should be calculated and reported. This is potentially onerous.
- Recording and consolidating detailed efficiencies risks cherry-picking areas of the business that are improving, whilst ignoring areas that are becoming less efficient. Assessing unit cost movements and delivery of its performance specification and investment plan requirements helps to mitigate this risk.
- Highways England's capital programme was not clearly specified at the start of the road period and the expectation that the company can deliver £1.2bn of efficiencies

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<sup>34</sup> See <https://www.gov.uk/government/publications/highways-england-efficiency-and-inflation-monitoring-manual>.

on this programme was not based on a detailed bottom-up assessment of the scope for efficiency improvements on this programme.

- Calculating the value of individual efficiency improvements requires judgement. This increases the risk that ORR and Highways England may disagree about the level of efficiencies achieved<sup>35</sup>. We have sought to mitigate this risk through the development of efficiency guides with clearly stated methodologies for calculating efficiencies.

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<sup>35</sup> Highways England and ORR disagreed about the level of efficiencies in the company's smart motorway programme in 2015-16. As reported in our 2016-17 annual assessment, we later reached agreement on a different approach to valuing these efficiencies. See <http://orr.gov.uk/highways-monitor/publications/highways-monitor-annual-assessment-of-highways-englands-performance>.

## Annex B: Further examples of efficiency measures

This annex provides simple worked examples of the average efficiency measure and cumulative efficiency measure that are explained in Section 2.

### Average efficiency measure

An average efficiency measure develops the point-to-point measure to take account of changes to expenditure and outputs across multiple years<sup>36</sup>.

Table B1 shows the average efficiency for the same uneven expenditure profile as in Table 2.2 in Section 2. As expected, year-on-year efficiencies are the same as in Table 2.2. However, efficiencies across longer periods are lower due to the measure being an average and therefore taking account of the higher expenditure in Years 2 to 4. Using an average measure, the reported Year 0 to Year 5 efficiency is -1.0% (i.e. an inefficiency), compared to the 10.0% efficiency improvement using the point-to-point measure.

**Table B1: Average efficiency with an uneven expenditure profile**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Expenditure (£m)	100	100	105	110	100	90
<b>Efficiency</b>						
Year-on-year (£m)		0.0	-5.0	-5.0	10.0	10.0
Year-on-year (%)		0.0%	-5.0%	-4.8%	9.1%	10.0%
<i>Average</i>						
Year 0 to Year x (£m)		0.0	-2.5	-5.0	-3.8	-1.0
Year 0 to Year x (%)		0.0%	-2.5%	-5.0%	-3.8%	-1.0%

An average efficiency measure can take account of changes to outputs in intervening periods. Table B2 shows the average efficiency for a company with the same uneven expenditure and outputs as in Table 2.3 in Section 2. Again, the year-on-year efficiencies are the same as in Table 2.3. However, the efficiencies across longer periods are different due to the measure being an average and taking account of the different expenditure and outputs in Years 2 to 4. Using an average measure, the Year 0 to Year 5 efficiency is now 3.6%, compared to the 10.0% efficiency improvement using the point-to-point measure.

<sup>36</sup> An average efficiency measure could alternatively simply divide the point-to-point efficiency measure by the number of periods. This would not take account of intervening changes to expenditure and outputs and is not what we mean here.

**Table B2: Average efficiency with uneven expenditure and outputs**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Expenditure (£m)	100	100	105	110	100	90
Output (units)	20	20	22	24	22	17
Unit cost (£m/unit)	5	5.0	4.8	4.6	4.5	5.3
<b>Efficiency</b>						
Year-on-year (£m)		0.0	5.0	4.5	0.8	-12.7
Year-on-year (%)		0.0%	4.5%	4.0%	0.8%	-16.5%
<i>Average</i>						
Year 0 to Year x (£m)		0.0	2.5	5.0	6.3	4.0
Year 0 to Year x (%)		0.0%	2.5%	4.5%	5.2%	3.6%

## Observations

The average efficiency measure shares many of the characteristics of the point-to-point measure. Specific observations about the average efficiency measure are:

- It is a more accurate measure of performance over a period of time than the point-to-point measure because it takes account of expenditure and outputs in the interim period.
- It is harder to understand and is more complicated to calculate.
- We have not used an average efficiency measure in our assessments.

## Cumulative efficiency

A cumulative efficiency measure aggregates year-on-year efficiency improvements to report total efficiencies achieved over a period of time. Because efficiencies / inefficiencies are added up, reported cumulative efficiencies will usually be higher than the point-to-point and average measures.

Table B3 shows the cumulative efficiency for the same uneven expenditure profile as in Tables 2.2 (in Section 2) and B1. Again, the year-on-year efficiencies are the same as in Tables 2.2 and B1. The cumulative inefficiencies follow the same trend over time as the average efficiencies in Table B1. However, the cumulative inefficiencies are larger than the average efficiencies due to the additive nature of the calculation.

**Table B3: Cumulative efficiency with an uneven expenditure profile**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Expenditure (£m)	100	100	105	110	100	90
<b>Efficiency</b>						
Year-on-year (£m)		0.0	-5.0	-5.0	10.0	10.0
Cumulative (£m)		0.0	-5.0	-15.0	-15.0	-5.0
Cumulative (%)		0.0%	-5.0%	-15.0%	-15.0%	-5.0%

Table B4 shows the cumulative efficiency for the same uneven expenditure and outputs as in Tables 2.3 (in Section 2) and B2. Again, the year-on-year efficiencies are the same as in Tables 2.3 and B2. However, the cumulative efficiencies are larger than the average efficiencies in Table B2 due to the additive nature of the calculation.

**Table B4: Cumulative efficiency with an uneven expenditure profile and outputs**

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Expenditure (£m)	100	100	105	110	100	90
Output (units)	20	20	22	24	22	17
Unit cost (£m/unit)	5	5.0	4.8	4.6	4.5	5.3
<b>Efficiency</b>						
Year-on-year (£m)		0.0	5.0	4.5	0.8	-12.7
Cumulative (£m)		0.0	5.0	15.0	25.0	20.0
Cumulative (%)		0.0%	5.0%	15.0%	25.0%	20.0%

## Observations

The cumulative efficiency measure shares many of the characteristics of the point-to-point and average efficiency measures. Specific observations about the cumulative efficiency measure are:

- It accumulates efficiency improvements to report the total efficiencies achieved over a number of years.
- It is harder to explain than the point-to-point efficiency measure.
- It can be confusing when presented as a percentage.
- It has a number of similarities to financial performance measures (see below). However, the cumulative efficiency measure uses a historic 'pre-efficient' baseline rather than a 'post-efficient' business planning assumption.
- Conceptually, it underpins Highways England's reporting of efficiency improvements. In practice, Highways England uses efficiency registers to

calculate its cumulative efficiency improvements. This is explained in more detail in Annex A.



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