

PR18 consultation

Development of the regulatory settlement for the Network Rail national system operator in CP6

Date of publication: 17 November 2016

Overview

This document sets out our decisions on some aspects of the regulatory framework for the Network Rail national system operator (NSO), as well as aspects of the settlement on which we are seeking views.

It builds on the feedback we received to our June 2016 working papers and a series of workshops facilitated by the Rail Delivery Group (RDG) over summer and autumn 2016. It is published alongside our conclusions to our initial consultation on the 2018 periodic review and will inform our draft guidance to Network Rail on its strategic plans, which we will publish shortly.

To support this work, we are also publishing our findings on the issues, opportunities and future challenges relating to the NSO; see [here](#).

Contact details

Lead Siobhán Carty
Email ORRsystemoperation@orr.gsi.gov.uk
Phone 0207 282 3728

Responses to this paper are requested by Wednesday 11th January 2017

Executive summary

1. The NSO is a business unit within Network Rail. Its decisions, and the information it provides about the network, affect the reliability, punctuality and value delivered by train services both now and in the future. It plays a critical role in informing decisions by the Department for Transport, Transport Scotland and other funders about how the network is used and developed over time, as well as franchising authorities' decisions about what passenger services should be provided. This means that the way it works matters. We and Network Rail refer to this function as the National System Operator or the NSO.
2. The NSO's role is likely to become more important over time as the network becomes more complex, the number of passengers it accommodates grows, the needs of freight customers change, and devolved administrations and local transport authorities play a greater role in determining rail services. Network Rail is also moving more responsibilities to its routes, which enhances the need for cross-route coordination to maintain the benefits of the network. Furthermore, the NSO plays an important role in supporting the development and operation of networks by parties other than Network Rail (e.g. High Speed 1, Crossrail and proposals such as the Transport for Wales' Metro scheme), which could include privately-funded projects in the future.
3. The NSO has taken steps to meet these challenges, putting in place programmes to address known issues (e.g. on the accuracy of the timetable) and to improve the way it works, including through its '*SO Fit for the Future*' programme that is considering how the NSO undertakes its system operator activities.
4. For CP6, we want our regulatory approach to the NSO to complement and support this work. Working with Network Rail, funders and industry, we intend to do this by setting a separate settlement specifically for the NSO. This will sit alongside the settlement for the routes as part of Network Rail's wider determination. It will involve having separate measures relating to the NSO's operational performance (including possible regulated outputs) and reporting separately on the NSO's costs and revenue. Reflecting this, Network Rail is already working to develop a separate strategic plan for the NSO, which it plans to discuss formally with stakeholders in late spring 2017.

5. By providing for a separate NSO plan and settlement, we and Network Rail are seeking to:
 - a. Improve transparency of the NSO's role so that funders, operators and ORR are better informed about the decisions it makes, their impact and rationale. This could relate to, for example, its analysis on what enhancements should be taken forward and what they will deliver or what capacity is available for new operators;
 - b. Sharpen the NSO's incentives to manage the network more effectively, both in terms of optimising the performance of train services and improving the use of existing capacity (in the way it produces the timetable, for example); and
 - c. Support longer-term investment in better data, processes and technology so that the NSO has the tools and capability to be a highly competent, proactive and creative system operator that delivers – and enables the rest of industry to deliver – the benefits of a coherent rail network.
6. Box 1 discusses how stakeholders can respond to this consultation, as well as the specific questions we would like feedback on.

The system operator activities for inclusion in a separate settlement

7. We intend to design the NSO settlement around the following functions: leading the long-term network planning processes (e.g. production of the route and market studies); managing network capacity over the medium-term (e.g. producing *ad hoc* capacity management studies and producing the annual working timetable); and meeting nearer-term requests for access to the network (e.g. short-term possessions request from a Network Rail route). These functions are currently undertaken in the main by Network Rail's Network Strategy and Capacity Planning directorate (though we recognise that could change in context of Network Rail's '*SO Fit for the Future*' programme).

Measures of the NSO's performance

8. The separate settlement will involve having specific measures relating to the NSO's operational performance. These could: form part of the NSO scorecard (which Network Rail intends to have in place for the beginning of CP6); feature in certain monitoring and reporting requirements we set for the

NSO; and/or be used to set regulated outputs. We will work closely with Network Rail and industry to help develop these measures further.

9. Our initial thinking is that **some of the measures will need to be capability-based, capturing the skills of the NSO** (as it is difficult to measure what the NSO has delivered) and that **the measures will need to be disaggregated in such a way to reflect the NSO's performance with respect to each of its stakeholders**. Furthermore, **the NSO will need to engage more with its customers and stakeholders** (given the range of NSO's stakeholders and their varied interests), both in the development of the measures and in reporting on them.

The treatment of the NSO's costs and revenue

10. The NSO settlement will also set out the income needed to meet the specific measures of operational performance that we set out in our determination. **We are considering whether additional mechanisms are required to ensure that the NSO has sufficient incentives to invest** (for example in improving the input data for producing the timetable). This could include establishing an NSO-specific regulatory asset base (RAB) that reflects the value of any investment it makes. It could also include having specific change control procedures (possibly involving ORR, funders and/or NSO's customers) to help ensure NSO capital projects are not being inappropriately deferred, while also providing Network Rail with sufficient flexibility to allocate its resources.
11. **We are also considering whether the NSO's revenue over CP6 should be based (simply) on the forecasts of efficient costs included in the NSO business plan**. An alternative could be to allow the NSO's net revenue to vary to reflect the success of its operational performance, which may provide a useful way to measure overall performance.

Box 1: Responding to this consultation

We would like stakeholder feedback on this document, including on the questions below, preferably by **Wednesday 11th January 2017**.

Please send your response to the team's inbox, ORRsystemoperation@orr.gsi.gov.uk.

We remain open to receiving more informal feedback such as responses by email and by way of meeting with us. Please feel free to get in touch with us.

Table 1: Questions on the development of the NSO regulatory settlement

Question number	Question
Chapter 2 questions	
Q1	What are your views regarding our proposals on i) using, amongst other things, capability-based measures of the NSO's operational performance; and ii) the extent to which NSO operational performance measures should be disaggregated (e.g. to each route or operator)?
Q2	What role should the NSO's stakeholders play in informing the development of NSO operational measures performance and in holding the NSO to account over CP6?
Q3	What are your views on our initial ideas regarding the possible NSO measures, as set out in Table 2.1?
Chapter 3 questions	
Q4	Do we need additional mechanisms regarding the NSO's capital budget, to ensure the NSO is properly incentivised to undertake capital expenditure?
Q5	Should the NSO be subject to financial incentives so that its revenue varies to reflect the success of its performance?

1. Background to the NSO and our decision to regulate it separately

Summary

This chapter explains why we intend to set a separate settlement for the NSO and what activities we expect the settlement to capture.

- 1.1 Network Rail plays a key role in system operation. Much of this is undertaken centrally and across Great Britain by the Network Strategy and Capacity Planning directorate within Network Rail; we refer to this function as the National System Operator or the NSO.
- 1.2 Network Rail routes also undertake system operation activities, including the day-to-day operation of the network through signalling. Where necessary, these activities will be captured in the relevant route settlements. Other organisations (such as operators, funders and ORR) also undertake aspects of system operation, though these are not the focus of this work¹.
- 1.3 This chapter discusses the current approach to regulating the NSO; our decision to regulate it separately; and the system operator activities this separate settlement is likely to include.

The current approach to regulating and monitoring the NSO

- 1.4 To date, our regulation and monitoring of Network Rail has not focused specifically on the NSO's activities, though it does indirectly cover its performance. For example:
 - Under its **licence**, Network Rail is obliged to secure the operation of the network in a timely, efficient and economical manner. In doing this, it also has related obligations regarding planning, capacity allocation and timetable planning;
 - Network Rail has **regulated outputs** to meet minimum targets relating to train service reliability (e.g. Public Performance Measure (PPM), Cancellations and Serious Lateness (CaSL)) and to report on this. Performance against these measures partly reflects the NSO's role in

¹ We do not intend to do more work to define the system operation activities, at least not for PR18.

producing a high-quality timetable (given that any conflicts will result in less reliable performance by Network Rail, for example);

- Network Rail is obliged to report on its delay minutes that includes delays caused by timetable planning errors. This is not used directly to inform compliance with its licence. As an **indicator**, this information is intended to help us (and industry) monitor Network Rail's overall performance; and
- Drawing on the above, Network Rail produces a **bi-annual dashboard of system operation metrics**². While this includes some higher-level, whole industry information (e.g. passenger satisfaction) and reflects wider socio-economic developments (e.g. change in freight volumes), it includes some metrics that reflect, in part, the NSO's performance. This includes: SO delay minutes (as discussed above); Network Rail's progress on process improvements plans (e.g. revisions to the timetable planning rules (TPRs)); and the number of routes that have been declared 'congested' under industry rules.

1.5 Network Rail does not report directly on its NSO costs. These are reported as part of Network Operations, which also includes activities such as controls, signalling and performance management (all of which are undertaken directly by the routes).

1.6 The NSO's direct operating costs are typically around £25m per year and, for 2015/16, its capital expenditure was around £8m. As per the approach to other core services, the NSO's costs are allocated (or charged) to the routes; this includes the NSO's use of (other) core services. This is based on Network Rail's own methodologies, with many of its costs being split evenly between Network Rail's ten business units.

Our decision to have a separate NSO settlement

1.7 In our June 2016 working paper 3, we said that there is a case for having a more focused and tailored approach to regulating the NSO. In their responses, the majority of stakeholders agreed³. For example:

- Go-Ahead said it will encourage more focus by Network Rail on the system operator's performance, facilitate investment in its capabilities,

² Available [here](#).

³ Responses to working paper 2 and working paper 3 are available [here](#). Those supporting a more focused and tailored approach were the Chartered Institute of Logistics and Transport in the UK (CILTUK); the Department for Transport (DfT); the Freight Transport Association (FTA), Go-Ahead Group, Network Rail, RDG, and Transport Scotland. Furthermore, Arriva recognised that, while challenging, a well-designed focused approach can deliver cost-effective improvements.

enable operators to hold it to account, and improve transparency of decision-making;

- The DfT suggested that it could support route devolution; and
- The FTA discussed the importance of protecting and advancing the needs of freight in the context of political devolution of funding and route-level devolution.

1.8 **We will set a separate settlement for the NSO.** This will involve having separate measures relating to the NSO's operational performance (including possible regulated outputs) and setting a separate revenue (or budget). This is consistent with our approach of setting separate settlements for each of Network Rail's routes, within the context of a single determination for England & Wales and for Scotland.

1.9 In designing the NSO settlement, we want it to:

- Improve transparency of the NSO's role so that funders, operators and ORR are better informed about the decisions it makes. This could relate to, for example, its analysis on what enhancements should be taken forward and what they will deliver, or what capacity is available for new operators;
- Sharpen the NSO's incentives to manage the network more effectively, both in terms of optimising the performance of train services and getting better use of the capacity (in the way it produces the timetable, for example); and
- Support longer-term investment in better data, processes and technology so that the NSO has the tools and capability to be a highly competent, proactive and creative system operator that delivers – and enables the rest of industry to deliver – the benefits of a coherent rail network.

1.10 Our starting point is that the NSO settlement will be similar to the routes' settlements, except where differences between the NSO's role and the routes' role justify a difference in approach. We expect that this consultation will inform Network Rail's production of its NSO strategic plan; our initial thinking on this is discussed in Box 1.1.

Box 1.1: Our initial thinking on the NSO's strategic plan

For CP6, Network Rail will produce a discrete strategic plan for the NSO business unit. We expect to receive this in autumn 2017.

We expect the NSO strategic plan to:

- Set out the NSO's priorities for CP6. This should reflect on our findings regarding the material issues, opportunities and future challenges associated with the NSO (as discussed in our supporting document to this consultation; see Box 2.2) and the priorities of its stakeholders;
- Demonstrate how the NSO has engaged with its stakeholders to understand and address stakeholders' priorities; and
- Based on the above, explain what revenue the NSO needs to meet its outputs efficiently.

Network Rail is setting up a stakeholder session in late spring 2017 to help it understand stakeholders' priorities for the NSO's strategic plan.

We will shortly be issuing our draft guidance to Network Rail on all its strategic plans (i.e. including those for the routes); this will be available [here](#).

The system operator activities for inclusion in the NSO settlement

1.11 As illustrated in Figure 1.1, we expect the system operator settlement will focus on the following system operator activities:

- **Long-term system operation.** This focuses on developing and specifying proposals for changes to the network, and includes the following activities:
 - Leading industry's long-term planning processes (LTPP) to develop proposals for changes to the network to meet future demands, including by working with a wide range of stakeholders, such as funders and operators; and
 - Leading the production of market studies and route studies (which involves long-term demand forecasting) to feed into funders' decisions about the longer-term development of the network and how operational solutions can be deployed to make better use of the existing network.

- **Medium-term system operation.** This consists of determining the capacity available from the physical network and managing medium-term capacity allocation and performance. As such, the key system operator activities are:
 - Integrating new enhancements into the existing network so that additional capacity and/or the improved performance is delivered and that disruption to the existing network is minimised;
 - Producing capacity studies to understand better how capacity is used, such as the capacity analysis for the recent East Coast Main Line access applications;
 - Managing the process for updating and maintaining TPRs that underpin the timetable production process and have a significant impact on what capacity can be allocated to network users;
 - Developing access policy, including for emergency access contracts or management of congested infrastructure;
 - Planning access that includes the sale of access rights, and provides a key interface between customers and stakeholders who need to use the network;
 - Scheduling access to undertake engineering work and producing the working timetable⁴ on an annual or bi-annual basis; and
 - Producing performance analysis, including root-cause analysis of delays and use of results to drive performance improvements into the timetable.

- **Short- to near-term system operation.** This focuses on the short- to near-term allocation of capacity as well as the operation of the system. Under these system operation functions, the system operator activities include:
 - Management of the operational timetable⁵ as well as allocation of capacity after the working timetable has been agreed. The latter includes allocating freight paths through the spot market and

⁴ The working timetable, created twice each year, shows all train movements planned to operate over the network in sufficient detail for their safe and efficient operation.

⁵ The operational timetable is the amended version of the working timetable applicable for each day. It is updated to accommodate any relevant Restrictions of Use and special or altered workings and is in place at 22:00 on the day prior to operation.

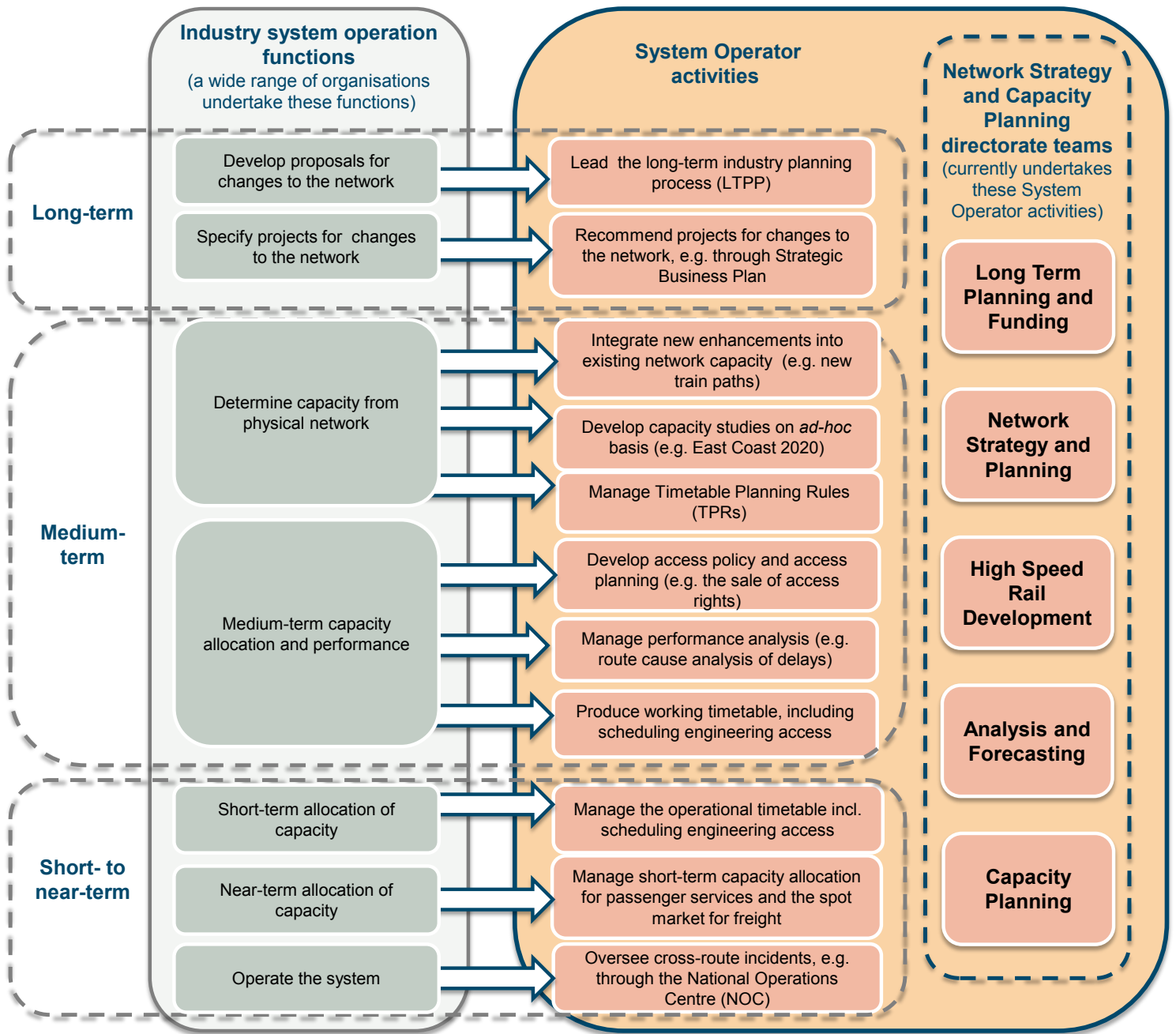
allocating paths to train services through the short-term plan (STP)⁶;
and

- Setting the framework within which the system is operated on a day-to-day basis and, in some circumstances, to help manage or coordinate response to cross-route incidents⁷. The operation of the system on a day-to-day basis, however, sits mainly with routes.

⁶ Routes are also responsible for near-term capacity allocation. For example, they are currently responsible for capacity allocation that is requested and allocated through the very short-term plan (VSTP, which involves alterations of train services after the operational timetable is in place).

⁷ Currently, the National Operations Centre (NOC) has a role in managing cross-border and major incidents and in coordinating certain engineering work possession (e.g. at bank holidays).

Figure 1.1: System operator activities



- 1.12 Currently, these NSO activities are undertaken together by Network Rail's Network Strategy and Capacity Planning directorate. While Network Rail is considering its approach to system operation as part of its '*SO Fit for the Future*' programme (see Box 1.2), we do not anticipate any immediate or major changes to where within Network Rail these activities are undertaken.
- 1.13 It is for Network Rail to organise itself in a way that it considers appropriate. However, in response to our June 2016 working paper 3, several stakeholders discussed their views on what activities should be undertaken centrally by the NSO; we summarise these in Annex A and suggest that Network Rail considers them as it develops its approach to the system operator.
- 1.14 Furthermore, the activities undertaken by the NSO may change over CP6 (e.g. in response to a change in funders' responsibilities). We will need to consider this as part of our wider PR18 change control processes.

Box 1.2: Network Rail's '*SO Fit for the Future*' programme

In June 2016, Network Rail initiated a programme to review its system operator activities. As part of the company's Transformation programme, Network Rail describes the aims of the "SO Fit for the Future" programme as being to:

- Provide a clear vision for the NSO;
- Create a NSO function within Network Rail which has the organisation, skills, processes, and tools to make it capable of addressing the future capacity requirements of customers and funders; and
- Consider in more detail the NSO's role as a 'client' for enhancement projects so that, on behalf of funders and the routes, it ensures that the enhancement project is delivered in line with the agreed plans.

The programme is targeting a go-live date of June 2017.

2. Measures of the NSO's performance

Summary

This chapter sets out possible ways to measure and assess the performance of the NSO, and the role for stakeholders in informing the development of these metrics and monitoring during CP6.

Introduction

2.1 As discussed in chapter 1, there are currently only a limited number of ways in which Network Rail reports on the NSO's performance. This makes it difficult for the NSO's stakeholders (and ORR) to assess the NSO's performance and to hold it to account. For CP6, there is value in and scope to develop specific measures of the NSO's operational performance. These measures could inform:

- The NSO scorecard: In line with the current approach for routes, Network Rail intends to develop a NSO-specific scorecard for CP6 (see Box 2.1), which would likely include some measures of the NSO's performance (and possibly its costs, as discussed in chapter 3);
- ORR's monitoring and reporting requirements: We may require Network Rail to report on other aspects of the NSO's operational performance on a systematic and regular basis, to support our monitoring; and
- NSO's regulated outputs: It may be appropriate to set certain measures as regulated outputs⁸ and/or as baseline measures against which financial incentives could be set and/or performance reported.

2.2 This section sets out our further thinking on these possible measures. It considers, in turn:

- **The high-level design of measures of the NSO's operational performance;**
- **The role of the NSO's stakeholders** in identifying and/or developing the measures and in holding the NSO to account, reflecting the NSO's work across the network; and

⁸ This was discussed in further detail in our working paper 4 on the outputs framework; see [here](#).

- **Our initial thinking on the possible NSO measures**, including both outcome- and capability-based measures.

Box 2.1: The NSO scorecard

Network Rail intends to develop a scorecard for the NSO for CP6.

The NSO will engage with its customers to develop a scorecard that is meaningful for them and that helps drive an improvement in both its performance and its capabilities in CP6. It is intended to provide the NSO (and Network Rail) with a single, coherent business tool which will also support regulatory reporting and monitoring.

The NSO already has a management dashboard of key system operator measures and has started discussions with its customers on how this needs to evolve. It will undertake more formal and structured discussions with its customers in 2017 to support the evolution of its scorecard and strategic plan for CP6.

High-level design of the NSO measures

2.3 We expect that the design of the NSO measures will reflect the approach being used for route measures. However, in developing specific NSO measures, we note that they are likely to:

- **Include measures that reflect the NSO's capabilities and/or its progress towards improved system operator performance.** Our preference is for outcome-based measures that incentivise the NSO to meet the outcomes of good system operation, while being flexible about *how* it does that. However, we also expect there to be a role for capability-based measures. This reflects the difficulties associated with measuring the performance of the NSO; the fact that the NSO does not entirely control (or is not fully accountable for) many of the outcomes of system operation⁹; and data limitations. In their response to working paper 3, stakeholders were broadly supportive of this approach; and
- **Reflect the NSO's performance with respect to its different stakeholders.** It is important that the NSO's stakeholders have sufficient information about the service it receives so that they are able to assess

⁹ For example, in ensuring the right investment in the network is made, the NSO works with funders and with industry to inform investment decisions, but it is for funders to decide upon necessary enhancements.

the NSO's performance. This suggests that, at a minimum, measures should be capable of being disaggregated to route, operator and funder-level (e.g. England & Wales and Scotland). They could also be disaggregated further (e.g. to other infrastructure managers)¹⁰.

- 2.4 At this stage, we want to identify appropriate measures of the NSO's operational performance (including its impact and delivery). We may subsequently decide to set some of these measures (whether qualitative or quantitative) as regulated outputs for the NSO in CP6. Any NSO regulated outputs would need to reflect those functions for which it is clearly responsible and accountable. For example, measures that reflect industry-wide performance (and only in part the role of the NSO), such as passenger rail satisfaction or overall passenger and freight volume, are unlikely to be suitable regulated outputs for the NSO¹¹. Furthermore, we need to consider the consequences of a failure by the NSO to meet its scorecard measures and the extent to which performance against the scorecard is viewed as evidence as to whether the NSO is meeting all of its regulatory obligations (notably including compliance with Network Rail's licence).

The role of the NSO's stakeholders

- 2.5 The NSO has a wide range of stakeholders. These include Network Rail routes, passenger and freight operators, funders (DfT, Transport Scotland and Welsh Government, but also local authorities and operators that fund certain enhancements), and passengers and their representatives (including local groups). We also work with the NSO, particularly in our role allocating track access rights.
- 2.6 The NSO engages with its stakeholders through various fora; for example, as part of the LTPP process, it works with the relevant routes, funders and operators in the production of route studies. The NSO is also exploring the option of developing a stand-alone NSO customer survey to help it understand its customers' experiences and priorities better.
- 2.7 We are keen that the NSO measures are informed by the priorities of its stakeholders, both in the development of initial measures and in the way they develop over time. We are also keen that there is scope for the NSO's

¹⁰ Responses to working paper 3 were supportive of measures that reflected the NSO's performance with respect to its different stakeholders.

¹¹ Furthermore, we do not propose to set outputs for the NSO relating to technical policies and standards, as these are 'owned' by Network Rail's technical authority. However, we would expect that the regulation of the NSO provided suitable incentives for it to work with the technical authority to improve these policies and standards.

stakeholders to engage with and challenge the NSO in the services it is providing. When establishing its approach to engaging with stakeholders the NSO will need to consider that:

- The NSO has a particularly large and varied range of stakeholders, especially when compared with an individual route's stakeholders;
- Some of the NSO's decisions and analysis involve making difficult trade-offs that affect its different customers (e.g. in undertaking analysis around the implications of allocating capacity between different users); and
- The NSO's activities are of critical importance in facilitating the benefits of the network (e.g. producing the timetable) and in supporting competition between operators.

2.8 In their response to working paper 3, many responses¹² recognised the need to include the NSO's stakeholders in the process of developing and/or implementing NSO measures. Indeed, system operators in other sectors use different ways in which to enable their stakeholders to monitor their performance and to hold them to account¹³.

2.9 Reflecting this, the NSO could secure stakeholder input and challenge in the following ways:

- The planned NSO-specific scorecard, both when its content is decided and as a monitoring tool;
- Bilateral relationships. This could be strengthened and/or clarified, given that some customers have suggested that it is not always obvious how to raise a concern with the NSO;
- The establishment of a new working group and/or panel made-up of the NSO's stakeholders, tasked with monitoring the NSO's overall operational performance. However, given the wide range of NSO stakeholders (and their different responsibilities and priorities), consideration would need to be given to how all stakeholders can meaningfully engage and/or whether there is a role for separate fora for different types of stakeholders.

¹² Arriva, CILTUK, DfT, Freightliner, Go-Ahead Group, MTR Crossrail, Network Rail, RDG, RFG, and the Welsh Government.

¹³ For example, National Grid (as the system operator in electricity) uses the Electricity Transmission Operational Forum to bring together electricity suppliers and generators (and other third parties) to consider operational issues associated with balancing the system. It also provides an opportunity for National Grid to discuss with the industry the types of services it wishes to procure from them (and the possible ways in which it might do that).

Alternatively, existing groups could be used to help monitor and provide challenge of the NSO's operational performance; and/or

- Formal reporting by the NSO, for example by way of an annual report in which (alongside the scorecard), the NSO explains its performance and discusses its recent and future activities/priorities. This could help Network Rail manage the large number of stakeholder interests in this area in a transparent and consultative manner.

2.10 In providing input and challenge on the NSO's performance, stakeholders could also play a role in considering any proposed changes to the NSO measures and/or its spending (see chapter 3).

2.11 As discussed above in the context of the development of the NSO strategic plan for CP6, Network Rail is setting up a stakeholder session in late spring 2017 to help it gather some early and formal discussion about stakeholders' priorities for what the plans will deliver, and how.

Initial ideas for the NSO's measures

2.12 To help inform the thinking about NSO measures, Table 2.1 sets out some initial ideas on what they could cover. These measures could form part of the NSO scorecard and/or could play a role in how ORR monitors and/or provides incentives for the NSO (e.g. through their use as 'regulated outputs'). We expect that development of these measures will include engagement through the RDG-facilitated working groups.

2.13 We consider it important that the suite of NSO measures that will be developed adequately capture the breadth of the NSO's activities (as discussed in chapter 1) and help support the NSO in addressing the material issues and future challenges we have identified (as summarised in Box 2.2). As such, our initial thinking on the measures reflects our findings in this area and is also informed by a report we commissioned from TRL consultants to consider options for capacity measures/metrics (which will be published shortly)¹⁴.

2.14 These measures should not be viewed as necessarily being potential regulated outputs. They could, for example, form part of a scorecard or ORR's routine monitoring and reporting on the NSO's performance.

¹⁴ This will be available [here](#) later this year.

Box 2.2: Our findings on the material issues, opportunities and future challenges

We have identified four broad issues in relation to the NSO's activities, which we will seek to address as part of the NSO's regulatory framework for CP6:

- The incentives the NSO faces when trading-off increased capacity use, performance and cost are not currently balanced. This is partly due to the fact that there are currently no accurate measures of available capacity on the network;
- The NSO's activity of managing the TPRs and producing capacity studies to inform investment and capacity allocation decisions (by funders or ORR) could be improved;
- The way that the NSO produces the working timetable could be more effective at unlocking benefits (both in terms of capacity use and performance) from the network; and
- The alignment of incentives between the NSO, Network Rail (in general) and operators in relation to operational performance could be improved. While this is not an NSO specific issue, to the extent that the NSO is responsible for managing trade-offs as described above, this is also relevant for the design of our regulatory framework for the NSO.

In addition, there are a number of key areas where challenges might arise for the NSO in the future. For example, there is a need for the NSO to support decision-making on necessary network investment and to manage the delivery of future enhancement projects. Also, ensuring coordination across routes is likely to become increasingly important as responsibilities continue to devolve to the routes. Network Rail (and the NSO) is already seeking to address these future challenges as part of its '*SO Fit for the Future*' programme.

We set out this out in detail in our supporting document on our findings on the system operation issues, opportunities and future challenges; see [here](#).

Table 2.1: Initial ideas for ways to measure the NSO’s operational performance

System operator activities	Possible outcome-based measures	Possible capability / progress-based measures
Lead the long term planning process	<ol style="list-style-type: none"> 1. Stakeholder satisfaction with NSO’s role in leading the LTPP and/or the reports it produces (e.g. route study, market study). 2. Success of the NSO’s processes in leading the LTPP, possibly assessed independently (e.g. against stakeholder feedback / best-practice and by independent consultants). 	<ol style="list-style-type: none"> a. Progress against the NSO’s deliverables for producing route studies.
Recommend projects for changes to the network¹⁵	<ol style="list-style-type: none"> 3. Delivery of enhancements against delivery milestones¹⁶. 4. Timeliness and quality of advice provided to funders and customers. As above, this could be assessed using stakeholder feedback / best-practice. Criteria and/or a metric of the timeliness / quality of advice could be developed, perhaps in the form of a service level agreement. 	<ol style="list-style-type: none"> b. Maturity assessment models on NSO’s role in recommending projects (requiring maturity assessment to be developed).
Integrate new enhancements into network capacity	<ol style="list-style-type: none"> 5. Delivery of enhancements (e.g. additional train paths per hour and/or improved punctuality) against forecast of what enhancement would deliver. 6. Success of the NSO’s processes in integrating new projects, possibly assessed independently (e.g. against stakeholder feedback / best-practice and by independent consultants) and/or by way of reviews of individual projects). 	
Undertake capacity studies on <i>ad hoc</i> basis	<ol style="list-style-type: none"> 7. Success of the NSO’s processes in undertaking capacity studies, possibly assessed against stakeholder feedback / best-practice and undertaken independently possibly assessed independently (e.g. against stakeholder feedback / best-practice and by independent consultants) and/or by way of reviews of individual projects). 	<ol style="list-style-type: none"> c. NSO reporting on strategic capacity availability / needs, possibly as regular (e.g. annual) report. d. Progress against improvement plans to improve input data, including TPRs.

¹⁵ This includes identifying operational solutions to make better use of the network.

¹⁶ This measure could reflect the NSO’s role as a ‘client’ for enhancement projects, as discussed in Box 1.2.

System operator activities	Possible outcome-based measures	Possible capability / progress-based measures
Manage TPRs	<p>8. A comparison between Notional Capacity and Capacity in Use, which could capture – albeit indirectly – improvements in TPRs.</p> <p>9. Performance against a baseline of additional train paths <i>identified</i> in the creation of a new financial incentive (or a revision of the existing Volume Incentive)¹⁷. This is subject to the design of the NSO financial framework.</p>	<p>e. Progress against the NSO's deliverables in revising TPRs (possibly through next phase of the Network Rail Timetable Rules Improvement Programme).</p> <p>f. Programme to improve input data (e.g. Model Office+).</p>
Developing access policy and access planning	<p>10. Timeliness and quality of advice provided to franchising authorities, operators and/or ORR in franchising and track access decisions. As above, this would need to be assessed against stakeholder feedback / best-practice. Criteria and/or a metric of the timeliness / quality of advice could be developed.</p>	<p>g. Delivery of CPIP milestones against plan¹⁸ (see Box 3.1).</p>
Performance analysis	<p>11. Assessment of systematic causes of NSO caused delay.</p> <p>12. Periodic publication of analysis of key aspects of performance (e.g. poorly performing routes/services, performance at key interfaces, etc).</p>	<p>h. Provision of services to the routes regarding national performance issues and how to optimize these.</p>
Producing working timetable, including scheduling engineering access	<p>13. A metric of Capacity in Use and Notional Capacity, whereby changes in the ratio between the two metrics over time could highlight improvements in timetabling. This is discussed in the corresponding TRL report; a significant amount of work would be needed to 'scale' this metric into measures that work at a network-wide level.</p> <p>14. Financial incentive to reward additional train paths allocated against a baseline (subject to design of the NSO financial framework).</p> <p>15. Key measures contained currently within the Possession Indicator Report.</p> <p>16. Extent of adherence to the 'Access Framework Principles' planning guidelines document¹⁹ (e.g. level of complaints against these principles).</p>	

¹⁷ This could be combined with a multiplier if the train paths identified are used.

¹⁸ See Box 1.3 in our supporting document on our findings on system operation issues, opportunities and challenges.

¹⁹ This is a Network Rail-owned document that has been developed with its customers. It is based on a set of operator rules as to what is acceptable in terms of disruption to passenger flows and limits of access on routes.

System operator activities	Possible outcome-based measures	Possible capability / progress-based measures
Manage the operational timetable, including scheduling nearer-term engineering access	17. Delay minutes due to planning errors. 18. Incident delay minutes due to planning errors.	
Manage short-term capacity allocation (STP for passenger services and the spot market for freight)	<i>We have not identified any possible measures in this area</i>	
Operators' satisfaction with NSO services	19. Survey of operators' satisfaction.	
Overall measures of capacity		i. Programme to establish / improve measures and management of capacity.

3. The NSO's financial framework

Summary

This chapter explains our decision to require Network Rail to report on its NSO costs (including its capital costs). It sets out our further thinking regarding the need for additional mechanisms (or protections) to support the NSO to undertake capital investment and the merits of having financial incentives associated with the NSO's operational performance. It also explains why we do not intend to set direct charges on operators for NSO services.

Introduction

- 3.1 As discussed in chapter 1, our regulation and monitoring of Network Rail does not focus in detail on the financial aspects of the NSO's activities. Network Rail does not report separately on the NSO's costs.
- 3.2 We consider that the NSO settlement should focus attention on the NSO's treatment of its costs (in addition to its performance) and should improve incentives on the NSO to behave efficiently and effectively, consistent with the approach to routes' settlements. However, the NSO's functions and purpose differ from that of the routes in some important respects, which could mean the NSO financial framework needs to differ. For example:
- The NSO has a wider set of stakeholders than any one route (as discussed in chapter 2); it supports all routes and operators, as well as funders, franchise authorities and the ORR;
 - The outcomes supported by the NSO include some that are difficult to measure and which are only realised over the longer-term. Reflecting this, it is important to 'invest' in the NSO's capability, data and tools. This is in some ways analogous to the need to maintain the condition of the physical assets held by the routes, as this determines future performance and efficiency;
 - The level of Network Rail spending on the NSO is much less than on a route and it does not directly obtain revenue from charges. Its operating costs are around £25m (including some support costs that are presently allocated directly to the routes rather than to the NSO); and
 - The NSO is relatively asset-light. It has a much lower capital expenditure programme than a route (e.g. of around £8m in 2015/16, a year of

relatively high spend) and its capital assets, which are IT rather than physical structures, tend to have a shorter ‘useful life’ compared to enhancements to the physical network (e.g. a new railway bridge).

3.3 Reflecting the above, we consider, in turn, the following aspects of the NSO financial framework:

- The reporting of the NSO’s costs;
- The treatment of the NSO’s capital expenditure;
- The merits of setting the NSO’s allowed revenue (rather than merely allocating the outturn costs) and whether the NSO’s revenue could vary to reflect its performance (for example, through financial incentives); and
- The role for direct charges on operators to reflect the NSO services they receive.

3.4 Table 3.1 summarises our thinking on the design of the NSO financial framework. This is discussed in more detail in an impact assessment in Annex B.

Reporting of the NSO costs

3.5 In our working paper 3, we said that the NSO should report on its expenditure, possibly as part of annual regulatory financial reporting. Stakeholders were supportive of this approach, for example;

- The RDG advocated “*financial and output control processes within Network Rail that are sufficiently robust to prevent NSO work streams being readily stopped and resources moved ...demonstrated by a high level breakdown of costs and reporting these alongside any anticipated impact on outcomes*”.
- Network Rail supported “*a transparent allocation of NSO costs to the routes*” and said that “*the costs of the NSO would then be cross-charged, in a transparent manner to routes*”.

3.6 We consider that the benefits of separate cost reporting, in terms of increasing the focus on the NSO’s activities, will outweigh its relatively small administrative cost. **As such, we will require Network Rail to report on both its operating costs and its capital expenditure.**

3.7 We would expect that the NSO’s operating costs include its use of central support costs, such as HR and accommodation. This is because this provides a

more accurate picture of the full cost, supporting comparisons over time and with the value of its outputs.

The treatment of NSO capital costs

3.8 The NSO will report on its capital expenditure and be subject to a set of specific outputs. We are also exploring whether an additional mechanism is required to support capital expenditure or investment by the NSO. An example of the latter is discussed in Box 3.1.

3.9 The objective of an additional mechanism would be to:

- Accurately assess total NSO costs in a particular period so that they can be compared with outputs and the costs of other means of achieving the outputs;
- Encourage (or, at the very least, not discourage) the NSO from undertaking longer-term investment; and
- ‘Protect’ the NSO’s capital budget (to minimise the risk that, by treating it in the same way as operating expenditure, it is more likely to be used to fund unexpected projects elsewhere in Network Rail).

3.10 Where they mentioned the issue, stakeholders’ responses to working paper 3 did not generally support the creation of a RAB for the NSO²⁰. However, there was some support for a form of protection of its investment budget.

3.11 We are considering three approaches:

- **Creating a NSO RAB.** The NSO RAB would reflect the value of the NSO’s assets so that new capital expenditure for the NSO would be reflected, and capitalised, in the NSO RAB. As such, the capital costs would not be charged to the routes but would be capitalised in a RAB and depreciated over an appropriate asset life. The charge to routes would be the return on and depreciation costs of the RAB;
- **Specific change control / governance procedures on changes to the capital budget:** As at present, Network Rail could allocate NSO capital expenditure to Network Rail routes. However, to give confidence to the NSO’s customers, funders and ORR that the capital budget is appropriately prioritised, there could be additional governance and/or processes to follow before capital budgets were significantly reduced. This

²⁰ RDG considered it unnecessary as all cost recovery should be through cost allocation to routes. Network Rail said the NSO could be adequately incentivised without a RAB.

would need to be done in line with our wider approach to settlements, recognising that Network Rail ultimately decides how to spend its money; and/or

- Create a **memorandum account** that, while expensing NSO capital expenditure as an operating cost, enables a part of it to be moved between years and control periods (as currently takes place with Network Rail's existing memorandum account).

Box 3.1: Network Rail Model Office work

Around five per cent of delay minutes are attributed to NSO planning errors in the timetable.

The NSO uses the Train Planning System (TPS) to create timetables. This was purchased in 2008 but only about 30% of its functionality is used. Network Rail undertook the Model Office project to consider how the TPS could be used to identify conflicts in the timetable and, in turn, to support its objective of a zero defect timetable (thus reducing overall delay minutes). This work was conducted over 2014 and 2015.

Currently, the TPS suggests that there are a large number of timetable conflicts but it is not clear if this is actually the case or whether there is a problem with the underlying data. The Model Office work sought to assess this, using the Oxford to Birmingham Moor Street route as a test case. This involved 'cleaning' the relevant input data (e.g. characteristics of the infrastructure and rolling stock used); testing how accurate the TPS could be against real time data; and, from there, seeking to identify where conflicts were identified and whether they would be 'real' ones.

One of the findings of the Model Office work related to the level of inaccuracies in the input data (e.g. the track characteristics or the rolling stock used), with Network Rail suggesting it would take almost 20 person years to 'clean' the data.

We understand that Network Rail is considering whether additional funding could be used to improve the input data on other routes. Improving this input data *could* be one example of where additional investment might benefit the wider network over the longer-term, possibly in a relatively cost-efficient way.

The merits of setting the NSO's regulated revenue and the role for performance-related financial incentives

- 3.12 One approach to the treatment of the NSO's revenue would be to use its forecast of likely and efficient cost to calculate what revenue it should receive for each relevant period over CP6.
- 3.13 However, it may also be appropriate to allow the NSO to gain (or lose) revenue based on good (or bad) performance. For example, the NSO could earn additional revenue under a (revised) volume incentive that reflected the contributions it made to accommodating additional rail traffic, or to share in performance gains where it has successfully reduced timetabling errors.
- 3.14 Stakeholders' views were mixed with most, including Network Rail, considering a separate revenue requirement to be unnecessary. Go-Ahead said that financial measures "*appear to have little impact in incentivising Network Rail..., perhaps due to the unique way [it] is funded and governed*". However, RDG, while saying that there is no need for the creation of a billing mechanism for routes to pay for NSO services, also suggested that a share of the volume incentive could be explored as a potential income source for the NSO. This could be more easily done in the context of a regulated revenue.
- 3.15 On reflection, there appear to be three advantages of a separate revenue allowance:
- It provides a degree of protection for the NSO budget;
 - It demonstrates the importance we attach to the NSO by putting it on an 'equal footing' with the routes; and
 - It supports transparency about expected and outturn costs, which could provide a helpful incentive to manage the NSO's costs. However, we note that the overall NSO budget is relatively small (and so the benefits would be too) and that, given the scope for particularly cost-effective and operational projects, it may not be appropriate to drive down NSO's costs to a significant extent.
- 3.16 These benefits suggest that **there is a good case for establishing a baseline revenue allowance for the NSO**. We are mindful of the need to establish a proportionate approach to setting this baseline, in light of the relatively moderate costs involved.

3.17 The existence of a revenue allowance for the NSO also provides a baseline to which financial incentives could be added. There are some charges and incentives of which a share might be credited (or debited) to the NSO, notably the volume incentive, capacity charge and schedule 8 payments; see Box 3.2. However, assessing the NSO's contribution would not be simple.

3.18 Furthermore, we note that financial incentives would expose it to financial risk that could be difficult for the NSO to manage. To address this (as well as reflecting the untested nature of our approach), we could design the financial incentives in such a way that they focus on providing an opportunity for the NSO to earn additional revenue (rather than being exposed to additional risk).

3.19 There are also other factors to consider:

- The design of any mechanism could depend upon the approach taken to charges reform in PR18;
- The limitations of financial incentives on the publically-owned Network Rail, and the merits of focusing on transparency of information / reputational incentives;
- A risk of over-complicating the SO settlement, given that the NSO is only recently established in its present form; and
- An administrative cost to establish this approach.

External charges for the NSO

3.20 Working paper 3 discussed the possibility of the NSO raising at least some of its revenue directly from operators, potentially through the creation of a new charge. Stakeholders' responses were generally opposed to this.

3.21 Although there is merit in the NSO offering to undertake commissioned work for a fee, there may be legal and administrative complexities to the NSO introducing charges to TOCs for its basic services.

3.22 Reflecting this, **we do not intend to set direct charges on operators for NSO services in CP6**. This is consistent with our approach to (other) charges and incentives for PR18, in particular around seeking to simplify the charging framework.

Box 3.2: Possible access charges and financial incentives for the NSO

Access charges play an important role in Network Rail's relationship with its customers, and have a number of different purposes, including:

- A mechanism for Network Rail to recover the efficient costs it incurs in providing infrastructure and services to train operators;
- A means to allocate costs to, and be recovered from, those that cause those costs to be incurred; and
- Price signals to train operators, their suppliers and funders to incentivise efficient use of the network.

Complementing charges, we also use financial incentive mechanisms to incentivise particular behaviours (of Network Rail and operators) and to improve outcomes.

A number of Network Rail's current charges and incentive mechanisms relate (at least in part) to the activities undertaken by the NSO, for example:

- **The volume incentive** – an incentive that rewards / penalises Network Rail when outturn passenger and freight traffic (and passenger revenues) are above / below forecast levels. As the NSO is responsible for managing network capacity, some of the incentives provided by the volume incentive could be targeted at the NSO (for example by allocating a proportion of the payments to the NSO);
- **Schedule 8** – a regime that provides financial incentives to Network Rail and operators to reduce delay. Delays in relation to all incidents on the network are recorded and allocated to the party causing the incident. This includes delay due to timetable planning errors (and other NSO activities). These delays, and the payments associated with them, could be allocated to the NSO in order to incentivise it to reduce such delays;
- **The capacity charge** – the capacity charge provides Network Rail with additional revenue, to cover the increase in schedule 8 payments that typically results from adding traffic. The NSO is involved in decisions around allowing additional traffic on the network; a proportion of capacity charge revenues could be directed at the NSO.

Table 3.1: Summary of our thinking on aspects of the NSO’s financial framework

Aspect of the NSO financial framework		Our thinking
NSO costs	Reporting of NSO costs	<ul style="list-style-type: none"> • Network Rail will report on both operating costs and capital expenditure via annual regulatory financial reporting • Cost definitions should include NSO’s support costs
	Treatment of NSO capital budget	<ul style="list-style-type: none"> • Options include relying on annual regulatory financial reporting; creation of an NSO RAB; or a special memorandum account.
NSO revenue	Setting of an NSO regulated revenue / role for NSO financial mechanisms	<ul style="list-style-type: none"> • Establish a baseline revenue requirement linked to the forecast costs in the NSO’s business plan. • Option to allow the possibility of NSO’s revenue to vary to reflect its performance.
TOC changes for NSO	Funding of NSO services met through via charges	<ul style="list-style-type: none"> • We do not intend to set direct charges on operators for NSO services

Annex A: Stakeholder feedback on what functions and activities the NSO should undertake, and how

1. In their responses to working paper 3, several stakeholder responses discussed their views on what the role of the NSO should be. We set out below a summary of those views that we suggest that Network Rail considers as it develops its approach to the system operator. These views include as follows:
 - Industry planning, holistic timetabling²¹ and management of industry and business codes and policies²²;
 - Increasing capacity²³ and identifying strategic paths and/or pre-defined paths²⁴;
 - Supporting high-performing devolved routes with a clear national framework for capacity allocation²⁵ (including disruptive engineering network access, diversionary routing capability and capacity)²⁶;
 - Supporting national governments and competent authorities with development of transport strategies²⁷, cooperation with project developers and funders,²⁸ and supporting ORR with quality information (e.g. regarding capacity)²⁹;
 - Promoting and protecting system and cross-network benefits³⁰, and engaging with routes, operators and funders to identify choices to meet their long term needs³¹;

²¹ Respondents mentioning timetabling specifically: Freightliner, FTA, MTR Crossrail, RDG and RFG

²² Network Rail and RDG

²³ Arriva

²⁴ CILTUK and Freightliner

²⁵ Network Rail and RDG

²⁶ Freightliner and FTA

²⁷ Network Rail and RDG

²⁸ CILTUK, Network Rail and RDG

²⁹ Network Rail

³⁰ Go-Ahead Group, Network Rail and Welsh Government

³¹ Arriva, Network Rail, RDG and TfL

- Efficient and fair planning and management of the network (e.g. by comparing different service options and options for network development)³²;
- operational research into new ways of working to unlock potential capacity including timetabling interventions³³;
- Supporting technological change³⁴; and
- Publication of information including a potential single point of information for all information relevant to network access (Register of Infrastructure, Network Statement, Capacity Statement, Vehicle Register)³⁵.

³² Freightliner, Network Rail, RDG and RFG

³³ RDG

³⁴ RDG

³⁵ RDG

Annex B: Impact Assessment regarding the design of the NSO settlement

Introduction

1. This Annex sets out more detail, by way of an impact assessment, on the designs of a regulatory approach to Network Rail's system operator function, focusing on the NSO financial framework in particular. It has sections describing:
 - a. The current situation;
 - b. The different aspects of a regulatory settlement;
 - c. The criteria for assessment;
 - d. The options for the regulatory framework; and
 - e. An evaluation of those options.
2. It is intended to provide further, more detailed analysis of our thinking which should, in turn, inform stakeholders' views on the questions we pose in chapter 3. Box B1 provides an explanation of some of the terms used in this Annex.

Current situation

3. As discussed in chapter 1, our regulation of the NSO business unit is not separately conducted. The main elements are:
 - a. Network Rail has obligations relating to the system operator set out in its Network Licence. There is a general obligation to secure the operation of the network "*with best practice and in a timely, efficient and economical manner so as to satisfy the reasonable requirements of persons providing services relating to railways and funders*". There are also specific obligations relating to planning and timetabling;
 - b. Measures are reported in Network Rail's system operator dashboard. However, with the exception of delay minutes caused by NSO planning errors, the dashboard measures are general railway performance indicators to which the NSO contributes but which are also influenced by other factors; and
 - c. The NSO costs are not separately identified. Costs are recorded for the network strategy and capacity planning unit in which the SO predominantly sits but these do not include all system operator-related functions; the support costs of services provided to the NSO (e.g. HR, accommodation);

or the costs³⁶ of any capital assets used by the NSO (e.g. new timetabling IT systems).

4. The licensee company, Network Rail, is a single corporate entity but it is organised with a set of route 'business units', comprising a number of geographically defined operational routes and a freight and national passenger operator (FNPO) route, whose services operate across the geographical routes.
5. There are also six central functions closely related to route activities, including the NSO, the costs of whose activities are allocated to routes³⁷. All Network Rail's railway revenue is (notionally) allocated across the routes and all Network Rail's costs are allocated across the routes. However, there are different ways in which this could be done. The costs of the six central functions closely related to route activities are presently allocated to routes as rechargeable costs. The costs of less closely related support services and associated capital costs are also charged directly to routes, rather than being recharged to the closely related function in the first instance. Thus, for example, the NSO's accommodation costs are charged to routes as accommodation costs and not as system operation costs.

Box B1: Terms used in this impact assessment

Regulated revenue-related terms

- Regulated revenue: A sum of money determined by the regulator, that a regulated business is allowed to charge its customers. It is normally set in such a way that it is expected to cover the costs of the business if they are efficiently incurred. The costs are calculated as the sum of the business' operating and capital costs.
- Operating costs: Day-to-day or 'current' expenditure. Much of the operating costs for the NSO relate to staff costs e.g. of train planners.
- Capital expenditure: Expenditure on investment, the cost of which is spread over a longer time period by capitalising it in the business' 'capital assets'. Capital expenditure for the NSO could include a new IT system to help develop the timetable, for example.

³⁶ Return on and depreciation of the asset base.

³⁷ The six central functions closely related to route activities are: corporate; network strategy and capacity planning; safety-technical-engineering; route services; digital railway; and infrastructure services.

- Capital costs: The annual cost of the use of assets, calculated as the return on and depreciation of the regulatory asset base.
- Regulatory asset base (RAB): The value of a regulated business's capital assets for regulatory purposes, particularly the calculation of capital costs. It is normally increased in each period by capital expenditure and decreased by depreciation.
- Depreciation: The amount by which the value of a capital asset reduces in a given time period.
- Return: The allowed 'profit', normally equal to the allowed rate of return times the RAB.

Other terms

- Capacity charge: A charge made to TOCs and credited to Network Rail's routes to cover the expected increase in performance regime costs when additional services are run.
- Central business: An activity carried out centrally by Network Rail and not forming part of a route.
- Financial incentive: A payment that has the effect of encouraging a particular type of behaviour.
- RAB addition: An addition to the regulatory asset base. In the case of the volume incentive, the income is not charged to customers immediately but is deferred and added to the RAB so that it can be recovered at a later date, probably in the next and future price control periods.
- Route: A business unit within Network Rail, normally responsible for a geographically distinct area that operates, maintains and enhances the network, services customers and is credited with charges to them for network use.
- Freight and national passenger route (FNPO): A route with no distinct geographical area that serves freight and national passenger train operators.
- Volume incentive: A payment to Network Rail's routes based on train miles, passenger revenue and freight gross ton miles which encourages them to be more responsive to demand for use of network capacity.

Aspects of settlement

6. There are many possible forms that a regulatory settlement for a business can take. They can be thought of under three broad headings:

- a. **Transparency:** the extent to which costs and outputs are reported;

- b. **Targets and regulated revenue:** where targets or allowances are set for costs and outputs and/or the business's revenue is limited to an amount that will cover expected costs; and/or
- c. **Financial incentives:** where revenue varies with performance.

Description of the options

7. We have taken combinations of the aspects of the settlement to construct scenarios that present options whose impacts can be assessed; they are summarised in Table B1. Each scenario that has been constructed adds further elements to the previous one so they can be assessed sequentially, but it would be possible to construct other options by mixing the attributes in other ways.

Table B1: Summary of options considered

Option	Cost definition	Revenue determination	Charges & incentives	Output regulation
1. Current situation	NSO unit operating costs not reported	Costs allocated to routes using existing Network Rail methods	Reputational incentives	Network Rail published dashboard
2. Enhanced reporting	NSO operating costs (narrow definition) and capex	Costs allocated to routes using existing Network Rail methods	Reputational incentives	Industry / ORR specify and monitor some measures
3. Regulated revenue	Wider definition to include attributed central costs and RAB return/dep'n	Set equal to expected costs	Allowed revenue charged to routes	Industry / ORR specify and monitor some measures, including against regulated outputs
4. Enhanced incentives	Wider definition to include attributed central costs and RAB return/dep'n	Set equal to expected costs plus or minus incentive impact of variation in drivers	Some revenue charged using drivers (e.g. volume incentive)	Industry / ORR specify and monitor some measures, including against regulated outputs and some financial incentives
5. Semi-independent NSO	Wider definition to include attributed central costs and RAB return/dep'n	Set equal to expected costs plus or minus variation in drivers & charges	Charges to both routes & TOCs	Industry / ORR specify and monitor some measures, including against regulated outputs and some

Option	Cost definition	Revenue determination	Charges & incentives	Output regulation
				financial incentives and charges

8. The following sections describe the options, set out the criteria to be used and then assess the options.

Current situation

9. The first option is to do nothing and continue with the current situation. The NSO's costs (i.e. its operating costs but excluding charges from other central businesses), would be allocated to routes as part of Network Rail's central business costs using its present methods. This would not be separately reported or published. Selected measures would continue to be published in Network Rail's system operation dashboard.

NSO enhanced reporting

10. Under 'Enhanced reporting', the NSO's operating costs and capital expenditure are reported to ORR and published. There may also be some further specification of measures to be monitored.

NSO's regulated revenue

11. Option 3 introduces the concept of regulated revenue. Under Options 1 and 2 the NSO's actual outturn costs are allocated to routes. Under Option 3, Network Rail's routes would have an allocated cost of a 'regulated revenue' for their use of NSO services that has been estimated in advance on the basis of the NSO's expected costs. If outturn costs differ from the allowed revenue, the NSO will record a surplus or a deficit. Network Rail could then use the surplus or deficit in a management incentive plan (MIP) or to invest in improvements to the NSO or to use more widely across the business (potentially subject to certain regulatory reporting³⁸).

12. It is also assumed that there is a more comprehensive definition of costs so that the NSO is better able to make choices between different methods of achieving its objectives. There are two aspects to the wider definition: a) other central business SO-related costs (such as HR and accommodation) are charged to the NSO and not directly to routes; and b) Network Rail's RAB is split to identify separately the assets allocated to the NSO and new NSO investment is

³⁸ The management of financial resources across routes is discussed in our Network Rail Financial Framework initial consultation document which we expect to publish in December 2016.

capitalised in this separate RAB whose return and depreciation are costs of the NSO.

13. Outputs are set for some of the measures with the possibility of enforcement or other action if they are not met.

Enhanced incentives

14. Option 4 extends the use of regulated revenue so that it also includes NSO's 'earnings' from financial incentives. Financial incentives would enable the NSO to earn (or possibly lose) revenue based on its performance, i.e. the values of certain outputs. This could be in the form either of the allocation of shares in revenues or costs presently assigned to routes (e.g. performance payments, volume incentive, capacity charge) or of incentive rates on specific measures. If it is the latter, where the incentive is not a share of a route's income and so not necessarily correlated with route revenue, it could increase routes' financial risk. To avoid that, it may be necessary for the payment to the NSO to be financed through a memorandum account that delays payment to a subsequent control period (like the volume incentive) rather than through a charge to routes.

Semi-independent SO

15. The fifth option represents a departure from Network Rail's present business model in that it envisages the NSO charging Network Rail's customers (i.e. train and freight operating companies) directly for its services, either for individual pieces of commissioned work or for NSO services more widely.

Criteria for assessment

16. There are many criteria that can be applied in assessing these options. In Figure 2.1 of working paper 3 ORR has set out a number of pros and cons of having a more focused approach to regulating the NSO. Some are listed in the table below.

Figure C1: High-level summary of the possible pros and cons of having a tailored and more focused approach to regulating

Pros	Cons
<ul style="list-style-type: none"> • Enables more focus by Network Rail, ORR, funders, and customers regarding the NSO's performance • Facilitates investment in the capability of the NSO • Encourages Network Rail and users to think of the NSO as a service provider and, in turn, enables those customers to hold the system operator to account • Drives transparency of costs and performance, possibly improving efficiency of decisions • Allows regulation to be designed to reflect the nature of the NSO activities (e.g. investment in data improvements and technology) • Facilitates the devolution of responsibilities to the routes, and ORR's proposals for more route-level regulation 	<ul style="list-style-type: none"> • Risk that a discrete settlement for the NSO acts as a barrier to effective decision-making across all (system operation and route) functions • There may be a limit to the extent our regulation and monitoring can target the NSO given that Network Rail remains a single company • Undermines Network Rail's flexibility in running its business by making it more difficult for it to move certain functions between the routes and the centre • Likely to require different ways of working, both of ORR and stakeholders, to reflect regulation / monitoring of Network Rail's routes and its NSO

17. While Figure B1 gives examples of pros and cons of more focused NSO regulation it does not provide a clear method of assessing them. That requires higher-level criteria, for example the six desired outcomes set out in the Initial Consultation Document. These are:

- a. More efficient: Cost-effective decisions on operating, maintaining and renewing the network;
- b. Better used: Improving performance and accommodating more services;
- c. Expanded effectively: Informing decisions on safe, timely and cost-effective enhancements;
- d. Safer: Maintaining and improving safety;
- e. Available: Taking effective decisions on possessions and mitigating their overall impact; and
- f. Reliable: Taking effective decisions to limit delays and cancellations and their impact on users.

18. All of these high-level objectives relate in some way to economic efficiency, which can be regarded as an even more general objective, albeit still subject to other considerations such as the interests of stakeholders and the promotion of competition. We therefore consider that NSO regulation should encourage efficient trade-offs between the NSO's main outputs and inputs - performance, capacity and costs - while having regard to the impact on stakeholders and on competition.
19. Presently (and as discussed in our supporting document), there is a view held by some stakeholders that the balance is skewed in favour of performance and costs and against capacity. Six of the fifteen responses to the consultation mentioned this concern. Several responders also expressed the view that timetabling is currently an incremental exercise, in that it takes the existing timetable as a base, and that the approach to medium-term capacity allocation is overly focused on existing service patterns. The NSO may need to be more proactive and to operate more independently.

Evaluation of the options

20. Each option adds additional features to the previous option. We therefore compare pairs of options sequentially.

2. Enhanced reporting v 1. Current situation

21. Option 2 requires, in addition to the current situation, the clear identification of a core system operator business and the recording, reporting and publication of its expenditure (both capital and current). The recorded expenditure is on Network Rail's present definition and so the current expenditure would exclude items such as the NSO's use of accommodation and HR. The capital items will be capital expenditure (spending on investment), not capital costs (the cost of the assets used). Option 2 also involves some further scrutiny of measures by ORR.
22. We estimate that the additional cost reporting would involve only minor expense. This would also be true of costs of monitoring within ORR and, most likely, by wider industry. The cost of additional scrutiny of outputs depends on the degree of that scrutiny but we assume that it is based on Network Rail's system operation dashboard (perhaps enhanced by a measure of capacity), and so does not involve significant expense.
23. The main benefit of option 2 is that it provides some more focus by stakeholders – Network Rail, ORR, funders, and customers – on the NSO's performance, though this also depends on the effectiveness of the actual requirements placed on the NSO. Subject to this, it could also increase the ability of all parties to assess achievements and compare them with costs. In so far as it enhances the

ability to accommodate additional train services, it could even tend to enhance competition.

24. The definition of the NSO business unit might reduce flexibility and make it marginally more difficult for Network Rail to reorganise its businesses but we do not think this would be significant and/or would be addressed through change control mechanisms being developed for the wider PR18 programme.
25. The benefits of Option 2 are hard to quantify but even small increases in efficiency can potentially bring large gains so it is likely that the benefits of the option will outweigh its small costs.

3. Regulated revenue v 2. Enhanced reporting

26. Option 3 involves three additional items: setting a regulated revenue (rather than automatic cost pass-through to routes), a wider definition of costs and setting outputs.
27. The setting of regulated revenue adds several features:
 - a. It provides additional pressure for cost control with the further possibility of the surplus or deficit on costs forming an element of a management incentive plan (although other less broadly based measures could be used in a MIP under options 1 & 2). The costs are relatively small, around £25 million on the narrow definition of the NSO compared to Network Rail's annual expenditure of £7-8 billion. However, the administrative costs of setting and reporting regulated revenue are also likely to be small³⁹;
 - b. A separate revenue allowance might raise the profile of the NSO and help to enable it to optimise the mix of resources that it uses because it would be more autonomous and less controlled through specification of individual budget items;
 - c. It also provides an accounting basis that generates a surplus or deficit to which the impact of financial incentives can be added, if required; and
 - d. It could make the business less liable to cuts in its budget that resulted from cost overruns elsewhere because the budget would be considered as a whole rather than in its individual components.
28. On the other hand, there may be a risk that a discrete settlement could act as a barrier to effective decision-making across all (system operation and route) functions. It could also reduce Network Rail's flexibility in running its business by

³⁹As distinct from the costs of changing the cost definition, which are discussed separately.

making it more difficult for it to move certain functions between the routes and the centre or within the centre.

29. The wider definition of costs has two aspects: the inclusion of charges by other central businesses and the calculation of capital costs (rather than basing revenue on capital expenditure).
- a. The main benefit of the change would be that reported costs would more closely resemble full economic costs and provide a better comparison with the value of outputs.
 - b. The main disadvantage is the administrative cost, which involves changes in other parts of NR and could be significant relative to the size of the NSO in both cases. However, if route-level regulation introduces changes to reporting, the additional costs of reporting all the NSO's costs may be small.
 - c. Moreover, in the second case (i.e. calculating capital costs), while the capital cost of the regulatory asset base represents an economic cost it differs slightly from the way that regulatory revenue is calculated for routes and for NR as a whole⁴⁰.
 - d. Since the NSO's capital expenditure is primarily IT, a comparatively short-life asset, a different rate of depreciation would need to be set. It might also be argued that there may be little loss of accuracy in using capital expenditure⁴¹ rather than capital costs.

30. We retain an open mind as to whether the benefits of setting regulated revenue outweigh the costs, although these are mostly common to route-based regulation as a whole and can be addressed by adopting flexible processes for change. Setting revenue on the basis of a comprehensive definition of current costs was Network Rail's stated intention for all its central business units⁴² and presents a more accurate view.

31. However, the benefits of setting a separate RAB may not outweigh its disadvantages and at least three options are feasible:

⁴⁰ It is based on debt, rather than the RAB. In the final determination Network Rail's efficient financing costs are calculated and used instead of the return on the RAB. The difference, which is excluded, is the equity surplus. Other adjustments are also made, including accelerated depreciation of the RAB.

⁴¹ Alternatively, IT investment could be undertaken by a separate central IT business and billed to the SO as an annual leasing charge.

⁴² "Central costs will be transferred to all business units; central functions will thus have their own costs transferred out on a fully costed basis i.e. including enablers such as accommodation costs and HR support." Network Rail Route Cost Allocation Handbook Jan 2015 p20.

- a. Capitalising expenditure in a RAB and charging its return and depreciation;
 - b. Setting revenue on the basis of expected capital expenditure rather than expected capital costs, perhaps with some form of change control on the expenditure; and/or
 - c. Setting revenue on the basis of expenditure but also establishing a memorandum account that, while expensing NSO capital expenditure as an operating cost, enables a part of it to be moved between years and control periods as does NR's existing memorandum account.
32. Option 3 also assumes some setting of outputs. In principle, we expect there to be benefits in setting outputs on the NSO. However, the costs and benefits of outputs need to be assessed in the light of each particular measure and the methods of monitoring and enforcing it; this has not been detailed at this stage but will be considered in the context of further work on the particular NSO outputs. The benefits of increasing output incentives or correcting what are perceived as skewed incentives need to be offset against the administrative costs and the danger of introducing distortions by prioritising some outputs and levels of output achievement above others.

4. Enhanced incentives v 3. Regulated revenue

33. Under option 4 the NSO's regulated revenue is not completely determined in advance but depends also on its performance on particular outputs. This could be an allocation of revenues presently assigned to routes (e.g. NSO-attributed delay minute revenue or a share in volume incentive or capacity charge revenue).
34. Such incentives would be likely to directly influence the behaviour of the NSO, encourage the rest of Network Rail and other stakeholders to think of it as a service provider and firmly establish the NSO as an autonomous business unit. Incentives on volume measures could encourage the creation of further train paths, including paths for open access and freight, possibly promoting competition.
35. However, in setting a value for incentives, there would be difficulty in calculating both the value of outputs and the degree of responsibility of the NSO in achieving them. This could lead to a danger of distorted incentives, particularly given the small size of the NSO's costs and revenues relative to the size of and possible fluctuations in output values. There would be some administrative expense, but this would be small if the incentive were merely an allocation of a share in an existing incentive.

36. On balance we think it worth pursuing the possibility of using financial incentives, including a volume measure to correct the perceived imbalance in existing incentives. This could be a share in the volume incentive and/or the capacity charge⁴³. The NSO's costs could include its appropriate contribution to schedule 8 costs as a performance incentive.

5. Semi-independent SO v 4. Enhanced incentives

37. There may be benefit in the NSO responding to commissioned work from TOCs and charging them for it. Alternative views can be tested, particularly as regards the availability of additional capacity, including for competitive suppliers. The SO would sometimes be able to test its processes and abilities by competing with other providers. We therefore consider that the SO should offer to provide commissioned work.

38. However, there are disadvantages to the SO introducing charges to TOCs for its basic services that account for the bulk of its activity. Establishing the legal basis for such charges and quantifying them could be complex. Altering the billing system to include the charges and then levying them could be expensive relative to the size of the income. We therefore consider that the introduction of such a system is not warranted, at least not for CP6.

Conclusions

39. It seems likely that the benefits of introducing cost reporting by the NSO will outweigh its small costs. Setting revenue on the basis of a comprehensive definition of current costs is Network Rail's stated intention for all its central business units and presents a more accurate view. However, the benefits of setting a RAB may not outweigh its disadvantages and it may be preferable to set revenue on the basis of expected capital expenditure rather than expected capital costs, perhaps with a change control process and/or a memorandum account.

40. It may also be attractive to pursue the use of financial incentives, including a (revised) volume measure to correct the perceived imbalance in existing incentives.

41. Although there is merit in the NSO offering to undertake commissioned work, there are disadvantages to the SO introducing charges to TOCs for its basic services and we consider the introduction of such a system is not warranted in CP6.

⁴³ The capacity charge is levied on capacity utilisation and so falls when capacity is increased but this only occurs when the charge is rebased at a review, not during a price control period. It does not therefore present a problem for its use as an incentive.



© Crown copyright 2016

This publication is licensed under the terms of the Open Government Licence v3.0 except where otherwise stated. To view this licence, visit nationalarchives.gov.uk/doc/open-government-licence/version/3 or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or email: psi@nationalarchives.gsi.gov.uk.

Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.

This publication is available at orr.gov.uk

Any enquiries regarding this publication should be sent to us at orr.gov.uk