INITIAL OPTIONS ASSESSMENT REPORT

RAIL DELIVERY GROUP

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FINAL

Prepared by:

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Disclaimer:

1. BACKGROUND AND INTRODUCTION

This report forms part of RDG's ongoing work on the charges and incentives regime for use of Network Rail's infrastructure. It follows the development of RDG's vision for the regime; its assessment of the current regime; work on potential alternative States of the World;[1] and an analysis of the factors that impact the form and/or effectiveness of the regime.

The purpose of this report is to set out the high-level assessment of 22 potential options for changes to the charges and incentives regime, and then to identify which of those options RDG will consider as part of a more detailed assessment that will take place later in the review. The criteria used in this assessment are largely based on RDG's Vision for charges and incentives.

This report is intended to be standalone but it will also inform RDG's detailed assessment of options. The main body of the report is intended as a guide to the high-level assessment annexes, which provide more detail on the assessment of each option.

1.1. Scope of this chapter

This introductory section sets out:

- the context for the report;
- the list of options considered and those selected from it for more detailed assessment;
- the approach to this stage of analysis; and
- the structure of the remainder of the report.

1.2. Purpose

The purpose of this report is to:

- set out our approach to, and findings of, a high level assessment of 22 potential options for changes to the charges and incentives regime for use of Network Rail's infrastructure; and
- identify the options that RDG will consider as part of a more detailed assessment later in the review.

This report is intended to be standalone but it also informs RDG's detailed assessment of options.

[1] Further information on the States of the World is provided in Section 3.4.

1.3. Introduction

RDG's Contractual and Regulatory Reform workstream is carrying out a review of the charges and incentives regime. This project began in Spring 2014 and is expected to be completed by the end of 2015.

Once completed, RDG's review should allow the industry to constructively inform the Office of Rail and Road's (ORR's) next periodic review process (the 2018 Periodic Review (PR18)), and future reviews, by presenting the industry's own views on the regime.

By setting out the industry's views before the start of PR18, RDG can provide ORR with information that can help inform ORR's decisions, and potentially allow it to prioritise work in certain areas.

RDG has commissioned Cambridge Economic Policy Associates (CEPA) to assist in Phase 3 of its review. This follows RDG's previous work in Phases 1 and 2 of the review,[2] which produced:

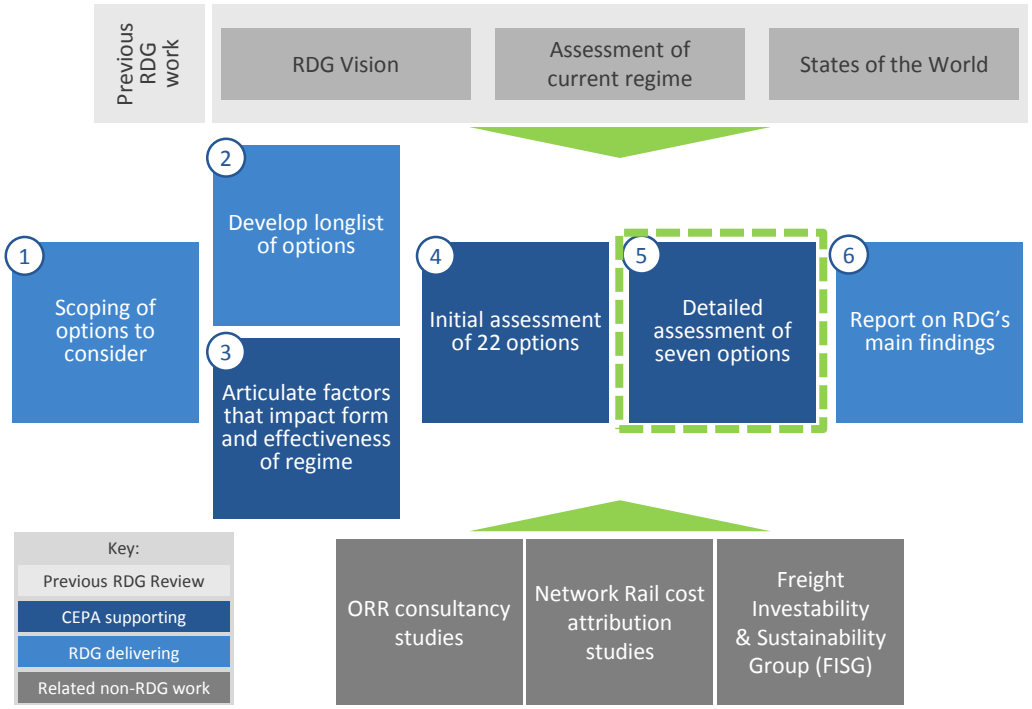
- RDG's vision for the charges and incentives regime in the long run (the RDG Vision); [3]
- an assessment of the current charges and incentives regime;[4] and
- a description of current and potential alternative States of the World (SoWs). [5]

CEPA is working with RDG, in Phase 3, to develop and assess options for a new and/or updated charges and incentives regime. The assessments developed in this phase of work reflect CEPA's independent assessment of a number of potential options for change to the current charges and incentives regime. These assessments have had the benefit of significant input from RDG representatives and the wider rail industry e.g. in order to scope options which mitigate industry concerns or reservations about a particular form of charge. This input has allowed us to ensure that the development of the options and our assessments of them are grounded in the reality of the range of business models currently in operation within the rail industry.

The objective of Phase 3 of RDG's Review of Charges is to develop options for changes to the charges and incentives regime. As shown in Figure 1.1 below, work has already been completed to establish an initial list of options for reform and to review the factors that affect the form and/ or effectiveness of the charging and incentives regime.[6]

[2] The publications to date in RDG's Review of Charges are accessible via: http://www.raildeliverygroup.com/what-we-do/our-work-programme/contractual-regulatory-reform/review-of-charges.html.
[3] RDG (Dec 2014) *"RDG vision for the charges and incentives regime in the long run"* available here
[4] RDG (May 2015) *"Assessment of the current charges and incentives regime"* available here
[5] RDG (May 2015) *"Current and potential alternative states of the world"* available here
[6] CEPA (Sep 2015) *"Review of factors impacting the Form and/or the Effectiveness of Charges and Incentives"*

Figure 1.1: How this report fits into Phase 3 of the RDG Review of Charges



Source: CEPA amendment of RDG diagram

1.4. Overview of assessment methodology

The RDG Vision, established in Phase 1, provided the assessment criteria used to assess each option. The descriptions of current and potential alternative SoWs, established in Phase 2a, provided a set of scenarios under which the options could be assessed. The work to assess the current charges and incentives regime, completed in Phase 2b, informed the RDG work at the start of Phase 3 to establish an initial list of options for assessment. The RDG's charges and incentives user guide,[7] developed as part of RDG's Review of Charges, helped to identify the counterfactual elements of the regime against which options could be assessed. The work on factors impacting the form and/or the effectiveness of charges and incentives, also completed in Phase 3, informed the analysis of what could be achieved by each option in different SoWs.

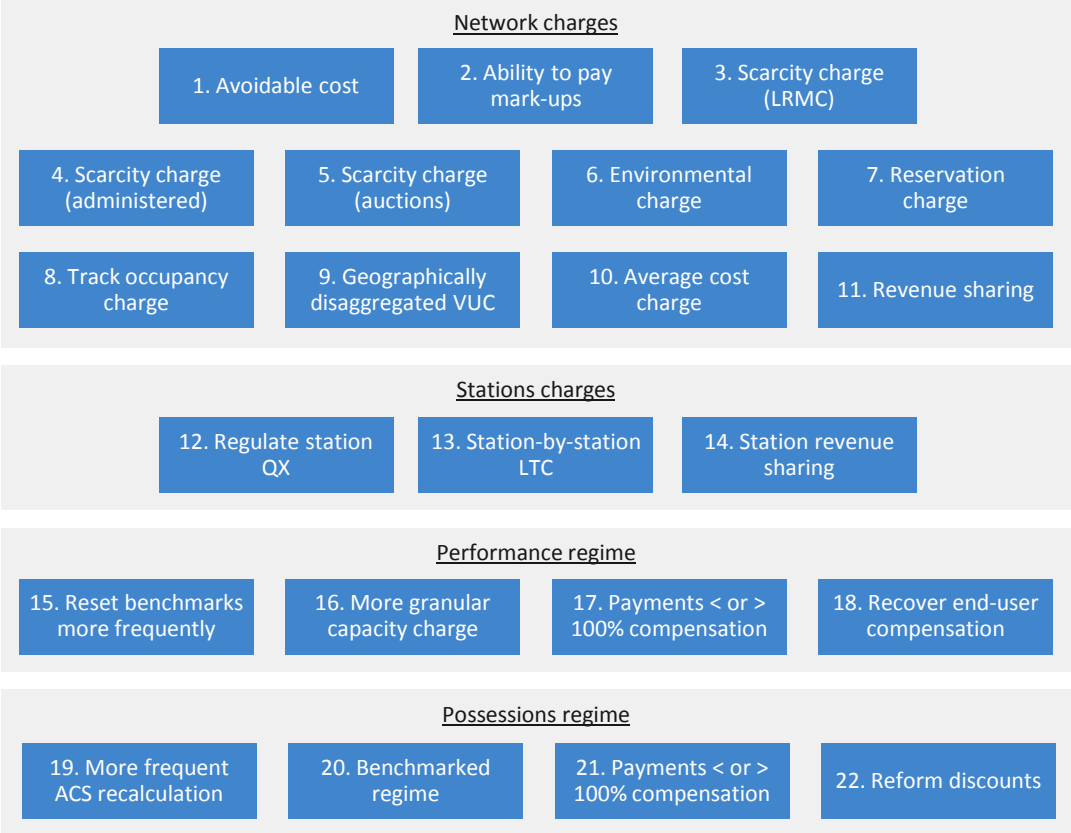
In addition to the principal role of identifying a small number of options to be assessed in further detail, this report serves as a standalone resource with its full set of option assessments provided in Annexes A to D. The individual assessments capture industry views on each option under each SoW. As such, they provide a useful body of evidence should the ORR wish to pursue options which have not been subject to further detailed assessment or if the sector were to move towards a SoW that is not currently anticipated.

[7] RDG (Jul 2014) "Charges and incentives user guide" available here

1.5. The list of options

Figure 1.2 identifies the list of options considered in the report.

Figure 1.2: List of 22 options for the charges and incentives regime considered in this report



1.6. Input from RDG representatives

Our findings have been discussed with RDG and other industry representatives through a series of workshops and one-to-one meetings to gather the information we required to develop our findings.

The project was guided by a working group (Review of Charges Executive Group) which included representatives from passenger operators, freight operators, Network Rail and governments (Department for Transport (DfT), Transport Scotland and Welsh Government), with ORR attending as an observer.

1.7. Report structure

The remainder of this report is structured as follows:

- Section 2 introduces the list of 22 options for which initial assessments have been completed.
- Section 3 sets out the assessment methodology applied and the criteria used as part of it.

- Section 4 presents the results of the analysis of the list of options.
- Section 5 provides the rationale for the selection of options for further detailed assessment.

Annexes A - D contain completed initial assessments for each of the 22 options. Annexes E (descriptions of the assessment criteria) and Annex F (information on alternative SoWs) are provided for ease of reference when reading the individual assessments. Annex G provides a summary of industry discussion which led to the selection of options for detailed assessment.

2. CHARGES AND INCENTIVES OPTIONS

This section introduces the list of 22 options for the charges and incentives regime assessed in this report. The list comprises a mix of network charging options, stations options and options related to the performance and possessions regime.

The options were identified through discussions with RDG representatives.

2.1. Scope of this chapter

This section sets out:

- how the list of charges and incentives options was constructed in collaboration with the industry; and
- presents the list of 22 options considered in this report.

2.2. Approach to constructing the list of options for assessment

The options considered in this report were developed out of earlier phases of work completed by RDG. RDG identified an initial list of options from discussions that drew on the gaps in the regime identified during Phase 2 (the 'bottom-up' review) and workshops at the beginning of Phase 3 with RDG representatives to consider more fundamental changes to the regime (the 'top-down' review).

The bottom-up review drew on the RDG Phase 2b assessment of the current regime, identifying changes to address particular gaps in the current regime. The top-down review 'cast a wider net', making the list more comprehensive. That information was used by RDG to establish a set of options spanning:

- network charges;[8]
- station charges;
- the performance regime; and
- the possessions regime.

Working with RDG, we subsequently developed the list to include the 22 options considered within this report. These options span the range from incremental to radical change that RDG considered in the Phase 3 option development.

The network charges options that we have considered were primarily drawn from the top-down review but, in collaboration with RDG representatives, supplemented by options

[8] Network Charges encompass the charging packages being considered by ORR – cost based, value based, incremental, competition and complexity.

previously considered by CEPA in work for the ORR.[9] Two top-down options were removed from the initial list as they related to funding.[10] Funding is a defining external factor of each SoW, which is considered across all options, rather than being considered as options in themselves. With input from RDG representatives, we refined definitions to enable an initial impact assessment to be developed. As part of this process, the "geographical disaggregation" option was refined into a geographically disaggregated variable usage charge (Geog. VUC). "Metric based charging" was also redefined as a train-minute based track occupancy charge, as employed by HS1.

The performance and possessions regime options were initially extensively drawn from the bottom-up review. It was agreed with RDG that the number of options should be reduced to remove similar options. As a result, some options were merged or removed in line with views expressed by the industry.[11]

Station charges options were similarly drawn from the bottom-up review but their selection was also informed by views expressed as part of the RDG station charges working group. The initial list had numerous stations options which were narrowed down to three following discussions with RDG.

2.3. The options

Table 2.1 sets out the 22 options considered in this report. The table presents each option within the four categories noted above as indicates how the options considered in this report relate to the 'themes' of the regime that were considered in Phase 2. These themes are:

- **Use of capacity:** How the regime can support the efficient allocation and use of existing network capacity, and provide signals for, and recover the costs of, creating new capacity.
- **Running costs:** How the regime recovers the costs of supporting, operating, maintaining and renewing the GB rail infrastructure to keep it in its current (or 'as-is') state.
- **Customer experience:** How the regime can improve the end-user experience.
- **Performance:** How the regime measures, incentivises and compensates for improved/poor performance.
- **Possessions:** How the regime incentivises and/or enables efficient use of planned possessions.

[9] CEPA (Jun 2010) *"High level review of track access charges and options for CP5"* available here
[10] "All fixed costs recovered via Network Grant" and "All fixed costs recovered via operator charges."
[11] For example, two options proposing to remove the current capacity charge, with cost recovery being achieved through two other charges have been grouped together for this initial assessment.

Table 2.1: List of options for assessment

Option	Area of the regime				
	Use of capacity	Running costs	Cust. experience	Performance	Possessions
Network charges					
1. Avoidable cost	✓	✓	✓		
2. Ability to pay mark-ups		✓			
3. Scarcity charge (long run marginal cost "LRMC")	✓		✓		
4. Scarcity charge (administered)	✓		✓		
5. Scarcity charge (auctions)	✓		✓		
6. Environmental charge		✓			
7. Reservation charge	✓				
8. Track occupancy charge	✓				
9. Geog. VUC	✓	✓	✓		
10. Average cost charges		✓			
11. Revenue sharing	✓		✓		
Stations charges					
12. Regulate station qualifying expenditure (QX)		✓	✓		
13. Station-by-station long term charge (LTC)		✓	✓		
14. Station revenue sharing	✓		✓		
Performance regime					
15. Reset benchmarks more frequently	✓	✓	✓	✓	
16. More granular, rebranded capacity charge	✓	✓	✓	✓	
17. Payments < or > compensation[12]			✓	✓	✓
18. Recover end-user compensation			✓	✓	
Possessions regime					
19. More frequent access charge supplement recalculation			✓		✓
20. Benchmarked regime			✓		✓
21. Payments < or > 100% compensation			✓		✓
22. Reform discounts			✓		✓

The assessments contained in Annexes B to E of this report provide full descriptions of each option, and the counterfactual elements of the current regime they would replace.

[12] These options relate to payments being set at a level greater or less than compensation, the same is true of option 21.

3. ASSESSMENT METHODOLOGY

This section sets out the methodology used for the initial analysis of charges and incentives regime options. It builds on earlier stages of the RDG Review of Charges.

3.1. Scope of this chapter

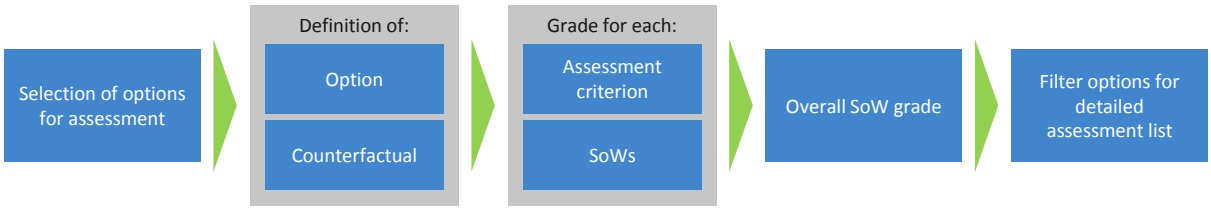
This section describes:

- the initial assessment methodology;
- the SoWs used;
- the "traffic light" grading system used; and
- how overall grades were awarded to each option.

3.2. Initial assessment methodology

Figure 3.1 provides an overview of the high-level assessment process.

Figure 3.1: Initial assessment process



The high-level impact assessments used standardised templates, designed with input from RDG workshop attendees. The templates include assessments against nineteen agreed criteria and sections to capture relevant wider information to inform the selection of options for further detailed assessment. These sections comprise:

- a description of the option at a sufficient level of detail for the high-level analysis;
- the counterfactual charging and incentive arrangements, which identify the benchmark the proposal was assessed against;
- factors impacting the form and/or the effectiveness of the proposal as identified earlier in Phase 3 of the review of charges;
- implications of the proposal for different stakeholders; and
- other options/existing charges and incentives that complement or conflict with the option being considered.

We assessed each option based on our judgement of how it performed against 19 agreed criteria, which are set out in Section 3.3. The main assessment assumed that each option would operate in the current SoW. However, we also made subsidiary assessments of the options in the seven alternative SoWs, set out in Section 3.4.

Each option was assessed based on its performance against the relevant counterfactual, i.e. an assessment of whether or not the option being assessed would be an improvement on the relevant part of the existing regime.

We graded each option using a directional "traffic light" system, described in Section 3.5. We used this simple grading system in light of the qualitative nature of these initial assessments. Each assessment includes an overall traffic light grading for each option in each SoW. This overall grading reflects an 'in the round' judgement; it is not a simple sum of the subsidiary grades. The overall rating is supported by a qualitative summary of the reasons for it. These grades have been used to inform the selection of options for further detailed assessment (see Section 3.6).

3.3. Assessment criteria

As shown in Figure 3.2, the assessment criteria we used for the initial assessment of options were drawn directly from the RDG Vision. Using the RDG Vision in this manner ensured that the assessments captured the most important considerations for RDG.

Figure 3.2: Assessment criteria

Axioms

- System safety
- Consistency with law
- Funding of Network Rail efficient costs
- Allowance for market conditions
- A single approach to the network as a whole

Objectives

- Service costs recovery
- Efficient whole-system whole-life industry net costs
- Efficient long run investment decisions
- Efficient performance management
- Efficient use of network capacity

Judgement criteria

- Predictability
- Simplicity
- Transparency
- Low transaction costs

Outputs

- Network Rail accountability
- Non-arbitrary allocation of costs
- Optimal traffic growth
- Aligning industry incentives
- Value for money for funders, taxpayers and users

Full descriptions of the criteria are provided in Annex E. They are similarly drawn from the RDG Vision. A small number of minor clarifications, capturing industry feedback on how the RDG Vision should be used for the initial assessments, were made to the descriptions of four of the nineteen criteria:

- **Consistency with law:** clarified to note particular regulations and laws that would be captured, as well confirming that this would be the criterion to capture specific impact tests considered by ORR such as those regarding the environment.

- **Allowance for market conditions:** clarified to note that legal considerations related to market conditions would be captured here rather than under consistency with law.
- **Simplicity:** clarified to capture an extended description developed in Phase 2b[13] of RDG's work and to note that it would capture practicality i.e. is it possible to calculate and apply the charges at the required level of granularity.
- **Value for money for funders, taxpayers and users:** a description was provided by RDG for this criterion as it was not defined in the RDG Vision. This reflects the use of the "Output" category of the RDG Vision as criteria rather than the outcomes that would occur when the other criteria were fulfilled.

The criteria used here differ from the "proposed criteria" that the ORR presented at the "discussion on the structure of charges" workshop on 21st July 2015 but the differences are primarily in presentation and emphasis rather than substantive content.

3.4. SoWs

A number of the external factors that interact with the charges and incentive regime may vary over the medium to long term. These have the potential to influence the effectiveness of any given charging or incentive option. A SoW therefore describes the broader industry arrangements in which the charges and incentives regime might operate.

Seven alternative SoWs were developed during Phase 2a of RDG's Review of Charges[14] and have been adopted here to allow the impact assessments to capture a broader range of potential future industry landscapes. These are in addition to the current SoW, which describes the industry as it is today, i.e. considering Network Rail (as the infrastructure provider), passenger and freight services, funders, governments and regulation. Alternative SoWs reflect potential changes along one, or several dimensions that affect these market participants. These are listed in Table 3.1. Further detail is provided in Annex F.

Table 3.1: Alternative SoWs

No.	SoW	(Short name)
1.	A more dynamic railway	(Dynamic railway)
2.	On-rail competition via flexible franchising	(On-rail comp)
3.	More highly specified franchises	(Specified franchises)
4.	Freight protection / subsidy	(Protect freight)
5.	Beneficiary pays for capability	(Beneficiary pays)
6.	Change in approach to capacity allocation	(Capacity allocation)

[13] L.E.K. (May 2015) *"Assessment of the current charges and incentives regime"* available here p7
[14] RDG (May 2015) *"Current and potential alternative states of the world"* available here

No.	SoW	(Short name)
7.	More regional decision making	(Regional powers)

Although the assessments consider all SoWs, the descriptions of impacts for each assessment criterion were primarily provided with respect to the current SoW. Impacts in the current SoW were often common across alternative SoWs, so comments were only made by exception for alternative SoWs.

3.5. Traffic light grading system

At this initial stage of analysis, there was no single metric or method to assess each charging option mechanistically. However, we adopted a "traffic light" system to indicate how well an option was expected to perform against each criterion. The following ratings were given with reference to the current charges and incentives regime:

- Red (-): indicates that the option is expected to have a negative impact on a given criterion (compared to the current regime);
- Amber (=): indicates that the expected impact on the criterion was equivalent to the current regime; and
- Green (+): indicates that the option is expected to have a positive impact on a given criterion (compared to the current regime).

These ratings were considered under each SoW for each criterion. It is important to reiterate that each option has been considered in isolation. Therefore, ratings reflect the impact of the introduction of that particular option only and not any other charges that could be introduced alongside it to mitigate any anticipated negative impacts or enhance the positive.

An example of scoring for one assessment criterion is shown in Figure 3.3 below.

Figure 3.3: Example of traffic light system

	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Funding of NR efficient costs	=	+	+	-	-	=	=	=

Each traffic light score was also accompanied by a brief description justifying the rating.

It is important to stress that the traffic lights indicate a directional impact only and are not directly related to potential magnitudes of impacts. A particular option may receive a mixture of Red, Amber and Green ratings based on individual criteria while receiving, say, a Green rating overall. Furthermore, the individual grades were not designed to capture relative magnitudes of impacts. Any such observations were made in the accompanying commentary or reserved for the overall grading.

3.6. Overall assessment grades

Each charging option received an overall grade based on a balanced consideration of the individual grades for each assessment criterion. The overall assessment grade is not a simple sum of the individual grades because at this stage they provide no indicator of weight. However, the overall grade was informed by the individual criteria grades and used to inform the decision of whether or not to advance a particular option to the next, more detailed, stage of assessment. The overall grade is supported by an explanation for the grade in each assessment template.

We recognised that there could be synergies between certain options that might offset negative impacts of one another. However, as we assessed each option in isolation, the impact of potential synergies was not reflected in an option's overall traffic light grade but was captured with in the "options that complement and conflict with proposed option" section of the assessment template. This information was used to identify combinations of options that could be considered together even where some would not be taken forward if considered in isolation.

Based on overall grades of the options and separate consideration of potential combinations of options, we were therefore able to define an initial list of potential charges and incentives options / packages for further assessment. To narrow this list further, we consulted industry stakeholders and sought feedback through a workshop held on 25th August 2015 and via separate one-to-one meetings. This feedback has allowed us to select options for more detailed assessment in the next stage of work. Further detail on how options were selected for detailed assessment is provided in Section 4.

4. SELECTION OF OPTIONS FOR DETAILED ASSESSMENT

The initial assessment of options conducted in this report is a filtering exercise to identify a set of options for detailed analysis. This chapter discusses the selection of options for further assessment, which is informed by the findings of the initial assessment, discussions with RDG and industry representatives as well as wider stakeholders.

4.1. Scope of this chapter

This chapter addresses the selection of options for detailed assessment. This chapter sets out:

- the initial classification of options; and
- the final list of options for further detailed assessment as agreed with RDG representatives.

4.2. Overview of approach

The approach to selecting options for further analysis, as part of the detailed assessment, was as follows:

- we carried out the assessment of 22 options that had been agreed with RDG representatives, and determined a provisional, overall, grading for each option;
- we discussed the provisional option grades with RDG representatives to consider practical issues related to the options;
- we finalised the initial assessment grading for each option, having reflected on discussions with RDG representatives; and
- informed by the grading of options, RDG representatives selected the options to take forward to the detailed assessments.

4.3. Initial grading of options

The high-level assessments were completed independently by CEPA but discussed with RDG's Review of Charges Executive Group. A process of moderation, undertaken by CEPA, across the options and feedback from industry led to some changes to the initial classification. For instance, the **reservation charge** option shifted from amber to green, reflecting CEPA's view that there was merit in assessing the relative benefits of an administered scarcity charge against a reservation charge. This view was supported by discussions with Network Rail which suggested that a reservation charge could be beneficial as part of the wider work that is going to change the basis on which capacity is allocated; in particular the shift from paths to more general access rights. CEPA also initially rated the **geographically disaggregated variable usage charge** green on the basis that a key driver of

change to the regime is to increase cost reflectivity. Our attention was drawn however to the work undertaken in this area in PR13 and the potential for a charge developed on this basis to increase costs on lightly used areas of the Network and reduce them on congested sections. The initial assessment was regraded amber to reflect this.

The final grading of each option in both the current and alternative SoW is reflected in the initial assessment overview tables set out below.

Table 4.1: Overview of initial option assessments in the current SoW

Option group	Network charges											Station charges			Performance regime				Possessions regime			
Option	Avoidable cost	Ability to pay mark-ups	Scarcity charge (LRMC)	Scarcity charge (administered)	Scarcity charge (auctions)	Environmental charge	Reservation charge	Track occupancy charge	Geog. VUC	Avg. cost charge	Revenue sharing	Regulate station QX	Station-by-station LTC	Station revenue sharing	Reset benchmarks more frequently	More granular rebranded capacity charge	Payments < 100% compensation	Recover end-user compensation	More frequent ACS calc.	Benchmarked possessions regime	Possessions compensation < 100%	Reform discounts
Option No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Axiom																						
System safety	=	=	=	=	-	=	=	=	=	=	=	=	=	=	=	=	=*	=	=	=	=*	=
Consistency with law	=	=	=	=	-	=	=	=	=	-	=	=	=	=	=	=	=	=	=	=	=	=
Funding of Network Rail efficient costs	=	=	=	=	-	=	=	=	=	-	=	=	=	=	=	+	=	=	+	=	=	=
Allowance for market conditions	=	+	=	=	-	-	=	=	-	-	=	=	=	=	=	=	-*	-	=	=	-*	=
A single approach for the network as a whole	+	=	+	=	-	=	=	+	=	+	-	+	+	-	+	=	=	=	=	=	=	=
Objective																						
Service costs recovery	=	=	=	=	-	=	=	=	=	=	=	=	+	=	-	+	=	=	+	=	=	=
Efficient whole-system whole-life industry net costs	=	=	=	+	-	+	+	=	+	=	+	=	+	+	=	+	+	=	=	=	=	+
Efficient long run investment decisions	=	=	=	=	-	+	=	=	+	=	=	=	=	=	=	=	-*	+	+	=	=	=
Efficient performance management	=	=	=	=	-	=	=	=	=	-	=	=	=	=	=	=	+	+	=	=	+*	+
Efficient use of network capacity	=	+	=	+	-	-	+	=	+	-	=	=	=	=	-	+	=	=	+	=	-	+
Judgement criteria																						
Predictability	=	=	-	-	-	=	-	=	=	+	=	=	-	=	+	=	=	=	-	=	=	=
Simplicity	=	=	-	-	-	-	=	=	-	+	=	+	+	-	+	=	=	=	-	+	=	+
Transparency	+	=	+	+	-	=	+	=	=	+	=	+	+	=	+	+	=	=	=	+	=	=
Low transaction costs	-	=	=	-	-	-	-	=	-	+	=	-	-	-	-	-	=	-	-	=	=	=
Outcome																						
Network Rail accountability	=	=	=	=	-	=	=	=	+	=	+	=	+	+	+	=	-*	+	+	=	-*	=
Non-arbitrary allocation of costs	+	=	+	=	-	+	=	=	+	-	=	=	+	=	-	=	=*	=	+	=	-	=
Optimal traffic growth	=	+	=	+	-	-	=	=	+	-	=	=	-	=	+	+	=	=	=	=	=	=
Aligning industry incentives	+	=	+	+	-	=	+	-	=	-	+	=	+	+	=	=	+	+	+	-	+*	+
Value for money for funders, taxpayers and users	=	=	=	+	-	-	+	=	=	-	=	=	+	=	=	+	-	+	=	=	-*	=
Overall																						
Option assessed in isolation	=	=	=	+	-	-	+	-	=	-	+	=	-	-	=	+	=	+	=	=	=	+

*Key: * Grading would change if direction of options 17 and 21 flip.*

Table 4.2: Draft initial assessments overall grading under each SoW

Option group	Network charges											Station charges			Performance regime				Possessions regime			
Option	Avoidable cost	Ability to pay mark-ups	Scarcity charge (LRMC)	Scarcity charge (administered)	Scarcity charge (auctions)	Environmental charge	Reservation charge	Track occupancy charge	Geog. VUC	Avg. cost charge	Revenue sharing	Regulate station QX	Station-by-station LTC	Station revenue sharing	Reset benchmarks more frequently	More granular rebranded capacity charge	Payments < 100% compensation	Recover end-user compensation	More frequent ACS calc.	Benchmarked possessions regime	Possessions compensation < 100%	Reform discounts
Option No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Current SoW	=	=	=	=	-	-	+	-	=	-	+	=	-	-	=	+	=	+	=	=	=	=
A more dynamic railway	+	=	+	+	-	-	+	-	=	-	+	=	-	-	+	+	=	+	+	=	=	=
On-rail competition via flexible franchising	+	=	+	+	-	-	+	-	=	-	+	=	-	-	+	+	=	+	=	=	=	=
More highly specified franchises	=	=	-	-	-	-	-	-	=	-	+	=	-	-	=	+	-	+	=	=	=	=
Freight protection / subsidy	=	=	-	=	-	-	+	-	=	-	+	=	-	-	=	+	=	+	=	=	=	=
Beneficiary pays for capability	+	=	+	=	-	-	+	-	=	-	+	=	-	-	=	+	=	+	=	=	=	=
Change in approach to capacity allocation	+	=	+	+	-	-	+	-	=	-	+	=	-	-	=	+	=	+	=	=	=	=
More regional decision making	=	=	=	=	-	-	+	-	=	-	+	=	-	-	=	+	=	+	=	=	=	=

4.4. Selecting options for detailed assessment

A key part of the project was to select a relatively small number of options for more detailed assessment. As the initial assessment overview indicates, only capacity auctions rated poorly throughout the assessment, although some other options were given red grades overall e.g. for reasons of practicality or legality. The majority of options assessed were found to have some positive attributes in the current or alternative states of the world. There was therefore an element of choice involved in deciding which options to consider further.

The options for detailed assessment were provisionally selected during a workshop with RDG's Review of Charges Executive Group. The selection was then confirmed following the workshop, to gather the views of the Executive Group members that could not attend. As pre-reading for the workshop, participants were provided with the initial assessment templates and an initial assessment overview table.

The options selected for detailed assessment include three network charges. These were selected because they address known issues related to the allocation of fixed costs and scarce capacity. There are also two performance regime options and two which relate to the possessions regime. These were selected, in the main, because they investigate the relationship between the infrastructure manager and the operators.

However, no stations charges options were taken forward for more detailed assessment. The group considered that the most significant issues in relation to stations were structural and contractual. Therefore, whilst charges are an important consideration for stations, the group thought that the other issues should be addressed before seeking significant reform of stations charges. The three stations charges options considered in the initial assessment were discussed with a working group reviewing stations charging, which agreed with these conclusions.[15]

The options selected for detailed assessment are spread across each of the areas of the existing regime that RDG identified in phase 2 of its work (see table 2.1 above).

Table 4.3 describes the options selected for detailed assessment and provides a summary of the rationale for selecting the particular options. Annex G supplements this through a more detailed summary of the discussion at the workshop

It is important to note however that selection of the seven options should not be interpreted as representing an industry consensus that **any** of these options represent an improvement on the present charging system. Similarly, the fact that an option was not selected for detailed assessment should not be seen as a rejection of that option, but rather that it did not merit more detailed investigation at this stage.

[15] RDG (Oct 2015) *"Review of Charges: Stations Charges"*

The seven options shown in Table 4.3 are those where RDG considered that there was merit in undertaking more detailed analysis because:

- the option scored well in the initial assessment, and RDG wanted to explore the opportunities of the option further; or
- RDG thought that the option was likely to be considered in the next periodic review and wanted to set out industry views, supported by further evidence, to inform the debate in PR18.

Annex G provides further detail on participant views of the options.

Table 4.3: Summary of options selected for detailed assessment

Area	Option	Summary
Network charges	1. Avoidable cost (Option 1)	• Avoidable cost provides an alternative means by which to allocate fixed cost. It fits well with ongoing work being undertaken by Brockley Consulting for Network Rail that is assessing the ability to allocate costs on this basis. Although it was graded amber by the initial assessment in the current SoW, it has more positive attributes in other SoWs. • It was considered that this option would be developed as a mark-up which is why the initial assessment option of marks-ups was not selected for further assessment.
	2. Administered scarcity charge (Option 4) noting linkages to Geographically Disaggregated VUC (Option 9) and differences to LRMC (Option 3)	• The scarcity-based options are relevant to the ongoing debate about how to allocate capacity. They consider alternative approaches to this in part to prompt debate about which might be most effective. • Both options have the potential to add value in the current SoW, although benefits may be greater in SoWs which encourage greater competition. • As is the case for avoidable cost, these options also consider elements of other initial assessments that were not progressed to this stage of the analysis e.g. scarcity charge options could fit well with further geographic disaggregation of the VUC.
	3. Reservation charge (Option 7)	
Performance regime	4. Reset benchmarks more frequently (Option 15)	• Selected for detailed assessment given its potential to address the current issues with the capacity charge: the capacity charge's link to the Schedule 8 performance regime was not considered to be sufficiently clear in name or application. • This option was initially rated amber, whilst a more granular and rebranded version of the capacity charge was rated green. • However RDG and industry participants considered that the issues with the current charge are significant and require a wholesale re-evaluation of the approach rather than a degree of 'tweaking'. • Other stakeholders were concerned about the cost redistribution effect of removing the capacity charge. We considered that these can be addressed straightforwardly and that this would be considered further in the detailed assessment of this option.
	5. Recover end-user compensation (Option 18)	• This option was selected for detailed assessment given that the performance regime is not considered to give adequate attention to the short-term impact of delays which require passenger operators to

Area	Option	Summary
		provide passengers with compensation. • Passenger compensation is currently undergoing a series of changes, with the move to Delay Repay and C2C introducing automatic refunds in 2016, industry therefore considers that it is an appropriate time to consider how passenger compensation requirements could be incorporated into Schedule 8. • CEPA initially gave preference to the revenue sharing option but industry representatives were of the view that this was considered in PR13. There was a strong preference to undertake further analysis of end user compensation given the current profile of this issue so this item was added to the list of detailed assessments and revenue sharing was removed.
Possessions regime	6. More frequent ACS calculation (Option 19)	• This option was selected for detailed assessment as it addresses concerns in the industry about over-recovery of Schedule 4 costs by Network Rail when the workplan used to set the ACS at the periodic review subsequently changes resulting in a lower number of actual possessions being taken.
	7. Reform Schedule 4 discounts (Option 22)	• This option involves reforming the notification discount factors applied to Schedule 4 compensation rates when possessions are booked more than a given amount of time in advance of taking place. The option was selected for detailed assessment as a result of industry concerns that the current discount structure may incentivise early notification of possessions but not the efficient planning of work. • It is also considered an area where the approach may not have kept up to date with the fact that passengers now have better information and more immediate access to information about timetables and impact of engineering works. • The option was rated amber by CEPA because the impacts are more difficult to estimate and or may depend on how the option is implemented; this option would need to be part of and consistent with the wider possessions planning regime if it is to be effective. Despite reservations about the scale of benefit it was considered, by industry to be an area worthy of further analysis.

ANNEX A NETWORK CHARGING INITIAL ASSESSMENTS

This annex includes the high-level assessments for options 1-11 relating to reforms to network charging:

- Option 1: Avoidable cost;
- Option 2: Ability to pay mark-ups;
- Option 3: Scarcity charge (LRMC);
- Option 4: Scarcity charge (administered);
- Option 5: Scarcity charge (auctions);
- Option 6: Environmental charge;
- Option 7: Reservation charge;
- Option 8: Track occupancy charge;
- Option 9: Geog. VUC;
- Option 10: Average cost charges; and
- Option 11: Revenue sharing.

Option 1: Avoidable cost

Franchised passenger operators are currently allocated a share of NR's net revenue requirement based on their share of traffic metrics (e.g. train miles). This allocation takes the form of Fixed Track Access Charges (FTACs), which are considered to be a mark-up. This methodology could be replaced with an avoidable cost approach to attributing these costs, also implemented in the form of a mark-up, to establish a stronger causal link between infrastructure costs and train services. This should give rise to an allocation of costs and charges that are more cost reflective.

Key characteristics

Description of option

Under an avoidable cost approach, a causal link would be established, using long run incremental cost (LRIC) principles, to allocate "fixed" costs to operators.

In general, LRIC approaches capture the cost of providing large changes in output over a timeframe where capacity could change to meet demand efficiently. An avoidable cost approach is a form of LRIC that examines reductions in demand. It examines what expenditure could be avoided if demand were to decrease by a given, potentially large, increment. The HS1 "OMRCA2" charge is currently set on this basis.[16] The freight only line charge also has features of an avoidable cost charge.[17]

Under this option, the ORR would calculate the avoidable costs for an operator (both passenger and freight) by examining what elements and features of the current network could in the long run be avoided at lower levels of traffic, for example:

- in a "minimal traffic" scenario, such as only running one train per day; or
- when an individual operator's traffic (or potentially a group of similar services) is removed entirely.[18]

A similar complementary approach could be used to attribute the cost of forecast capital expenditure within a price control to particular operators. Historic and future costs calculated and attributed in such a manner would then be charged to operators. The methodology would not be expected to recover charges sufficient to cover all fixed costs alone but would likely cover a substantial fraction of them.[19]

Description of counterfactual

The current regime allocates portions of "fixed" costs to franchised passenger services for recovery as a mark-up through the fixed track access charge (FTAC). The allocation process is relatively simple but is seen by some operators as being "arbitrary." Fixed costs are defined as NR's residual revenue requirement after deducting income from other charges and sources. Given that the DfT has announced its intention to remove or significantly reduce the Network Grant, we anticipate a large increase in the level of fixed costs from the start of CP6.[20]

[16] ORR (2014) "ORR's Approval of HS1 Ltd's Five Year Asset Management Statement" available on the ORR website here p92

[17] For information on the freight only line charge see RDG (2014) "Charges and Incentives User Guide" available on the RDG website here p14

[18] NR (2015) "Network Rail's review of the existing approach to cost attribution and cost allocation for the GB rail network" available on the ORR website here p51

[19] For example, in addition to the OMRCA2 charge, HS1 has a separate charge to allocate common costs. ORR (2014) p92

[20] See "Written question – 7552" available on the Parliament website here

Option 1: Avoidable cost

Each eligible operator's share of fixed costs is determined based on its share of total traffic metrics. Fixed costs are not allocated to freight operators but certain costs beyond wear-and-tear are recovered from freight as mark-ups in special cases.[21]

Relevant factors impacting the form and/or the effectiveness of the option

- Franchising (Factors Report Section 3.2)
- Track access arrangements (Factors Report Section 3.3)
- Approaches to specifying future outputs (Factors Report Section 3.4)
- Economic viability of freight/ open access operators (Factors Report Section 4.4)
- Economic viability of franchised operators (Factors Report Section 4.4)
- Data availability, measurement, and billing (Factors Report Section 4.7)

Impact on stakeholders

An avoidable cost approach would result in a change to how fixed costs are currently recovered through charges. While its introduction would not affect the total income to NR, it could have a profound impact on the level of charges paid by some operators and result in a redistribution of the burden of industry costs between funders. It is likely that freight and open access operators would bear a higher share of fixed costs but their ability to bear any potential increase will depend on what happens with the level of other charges. The incidence of fixed costs amongst franchised passenger operators would also likely change compared to the current arrangements.

NR highlighted that the anticipated increase in fixed costs from the start of CP6 due to changes in money flows will mean that the approach used to allocate them will have a greater impact than it has to date. Therefore, the approach used is relevant for both for NR and for DfT in how it responds to price signals. Transport Scotland clarified that at the point of preparing this assessment, the Scottish Government had not finalised its position on changes in money flows.

Freight operators in particular have expressed the view that the information behind the avoidable cost approach would be valuable but that using that information to set charges would not.

Other options that complement and conflict with proposed option

As noted above, total attributed costs may sum to less than the fixed cost residual revenue requirement. Certain "common costs,"[22] which cannot be specifically associated with any increment of output may need to be recovered through charges or through a block grant. The portion recovered through charges could be achieved through the current FTAC approach of allocating costs based on shares of simple traffic metrics or an equiproportional mark-up (EPMU) over attributable costs. Alternatively, it could be recovered through ability to pay mark-ups (Option 2), differentiating between operators based on their price sensitivity.

As an approach focussed on the recovery of fixed costs, this approach is unlikely to be compatible with average cost charging (Option 10).

[21] For example, the freight-only charge is applied to terminal lines with segments only used by freight and which would be closed if freight services ceased to operate. See NR (2013) "Freight Only Line Charge" available on the NR website here p1.

[22] For example, the costs of the minimal traffic rail network or unused assets.

Option 1: Avoidable cost

Performance against criteria								
Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
	There is no material impact of this charging approach on system safety. As an approach to the fixed charge, this option should have limited incentive properties in this area.							
Consistency with law	=	=	=	=	=	=	=	=
	Article 31.3 of Directive 2012/34 requires that "[…] the charges for the minimum access package and for access to infrastructure connecting service facilities shall be set at the cost that is directly incurred as a result of operating the train service."[23] Commission Implementing Regulation (EU) 2015/909 of 12 June 2015 appears to set out a minimal notion of "cost that is directly incurred" using a very short-run approach[24] but the allocation of fixed charges using LRIC appears to be permitted as a basis for setting mark-ups by use of the wording of Article 31.3: "In order to obtain full recovery of the costs incurred by the infrastructure manager a Member State may, if the market can bear this, levy mark-ups on the basis of efficient, transparent and non-discriminatory principles, while guaranteeing optimal competitiveness of rail market segments." We note, however, that there is a lack of consensus in the industry as to whether such an approach would in fact be legal.							
Funding of NR efficient costs	=	=	=	=	=	=	=	=
	This approach relates to how fixed costs are allocated to (and thus paid for by) different operators. As a result, it is not expected to affect the overall level of funding of NR. It is assumed that any avoidable cost approach would be complemented by a charge to recover common costs. A further assumption is that any subsequent decisions for operators to exit the market would not have an impact on NR funding, at least in the long term.							

[23] Directive 2012/34/EU of the European Parliament and of the Council of 21 November 2012 establishing a single European railway area Text with EEA relevance available on the EUR-Lex website here

[24] Commission Implementing Regulation (EU) 2015/909 of 12 June 2015 on the modalities for the calculation of the cost that is directly incurred as a result of operating the train service, available on the EUR-Lex website here

Allowance for market conditions	=	=	=	=	=	=	=	=

Commission Implementing Regulation (EU) 2015/909 of 12 June 2015 makes the following provision that "the level of charges must not […] exclude the use of infrastructure by market segments which can pay at least the cost that is directly incurred as a result of operating the railway service, plus a rate of return which the market can bear." This implies that operators or perhaps even funders of public service obligation contracts who could not afford to pay these charges would have to be protected from them.

These protections might apply to at least some freight and open access operators but it is not clear to what extent the protection would extend to small increases in charges as there is not a clearly defined procedure or robust evidence base in place.

It is important to note that if the avoidable cost approach were determined to be a cost directly incurred, rather than a mark-up, the abovementioned protections would not be binding. One freight operator indicated that if this were the case, it might only be possible to sustain a viable sector under a "protect freight" SoW, in which there would be some difficult questions to answer regarding its legality under state aid legislation and it might be necessary to consider other options to offset the impact to provide compensation for wider economic benefits not considered in the avoidable cost charge.

A single approach for the network as a whole	+	+	+	+	+	+	+	+

While the detail of the implementation (for example, in considering the nature of the relevant decrements in demand) would vary by location and funding arrangements (for example, in the SoW "protect freight," it might be possible to recover greater costs from freight operators through mark-ups) the avoidable cost methodology would be applied across the network.

As the current allocation is only applied to franchised passenger operators, this criterion has been marked positively.

Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=

We do not anticipate that this option would have any impact on Network Rail's ability to recover the total efficient costs of providing and improving all services.

Efficient whole-system whole -life industry net costs	=	+	+	=	=	=	=	=

This option would likely result in a rebalancing of fixed costs from franchised passenger operators to freight (and potentially to open access) operators. In principle, such a change might lead to a change in the mix of services provided, altering both the balance of passenger versus freight and the pattern of services provided within each sector. However, as the key elements of service provision are centrally planned, it is not clear to what extent this signal could influence service provision under the current regime. In addition, there is a pass-through of access charges during franchise contracts (i.e. train operators would be indifferent to the level of charges) such that any impact of pricing signals is limited to franchise bidding processes. In the "specified franchises" SoW, the price signal would be even weaker. As a result, this criterion is marked most positively in SoWs that assume a change that would enable the rebalancing of charges to modify service provision. There is potential for beneficial impacts in other SoWs but the link from charges to outcomes is less certain.

Efficient long run investment decisions	=	=	=	=	=	+	=	+

As discussed above, an avoidable cost allocation of fixed costs would be more cost reflective than the status quo. This has the potential to encourage more efficient long-term investment decisions but providing effective investment incentives requires a regulatory regime that is fully aligned with that objective.

This option has been marked as neutral for the current SoW as there are a number of features that might reduce the effectiveness of the investment incentives. In particular, the central planning nature of the investment decision making process. If decisions are taken centrally and are based on a wide range of variables, price signals may not make a difference or may only have a limited impact.

The SoWs "beneficiary pays" and "regional powers" have been marked positively as they would reduce the central planning features of the regime and thus more likely to enable effective investment incentives.

One freight operator suggested that the greatest benefit from the avoidable cost approach is the information that it provides. This could inform better decision making even in a centrally planned system. However, they argued that going the next step and using the information to set charges would not be a good idea.

Efficient performance management	=	=	=	=	=	=	=	=

There is not a clear direct impact of this charging approach on performance management.

Efficient use of network capacity	=	+	+	=	=	+	+	=

As discussed above, this option would be more cost reflective than the status quo. This has the potential to encourage efficient use of network capacity but providing effective use of capacity incentives requires a regulatory regime that is fully aligned with that objective.

This option has been marked as neutral for the current SoW as it has a number of features that would reduce the effectiveness of use of capacity incentives. As for the criterion "Efficient long run investment decisions," the central planning and contractual nature of the capacity allocation process may limit or eliminate the impact of price signals.

The SoWs "dynamic railway," "on-rail competition," "beneficiary pays" and "capacity allocation" have been marked positively, as these would reduce certain central planning and contractual features, and thus are more likely to enable capacity allocation incentives.

Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=

It is not clear if once implemented, an avoidable cost approach would be any more or less predictable over time than the current approach. Movements might be less "arbitrary" than they currently are as they would need to be driven by changes in the nature of use of capacity or operators' ability to bear charges. However, it is not clear if it would result in charges that would be more or less predictable for all or any particular type of operator.

Simplicity	=	=	=	=	=	=	=	=

Avoidable cost charges would apply in a manner similar to the current FTAC.

Transparency	+	+	+	+	+	+	+	+

This option would make the charging regime more transparent by establishing a causal link between use of the network and the recovery of costs.

Low transaction costs	=	=	=	=	=	=	=	=

Avoidable cost charges would be more complicated to determine than the current FTAC, creating set-up and ongoing transaction costs. It is possible that some of the information required for this approach is not currently available and it may not be straightforward to determine how charges would respond to a given change in usage.

While large set-up costs are anticipated, the level of ongoing transaction costs is not clear. However, once up and running there could be significant disagreement between parties about which methodology to use, updates to the methodology over time or in areas where judgement is required to determine the appropriate allocation of costs.

One passenger operator anticipated that such discussions could present an opportunity for operators to "game" the regime. However, that may already exist to some extent under the current regime, where there may be opportunities for operators to contest aspects of the more simplistic approach currently in place to determine the allocation of fixed costs.

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	=	+	=	=	=	+	=	=

There is not a clear direct impact of this charging approach on accountability under regimes in which investment decisions are made by the government. But implementing avoidable cost charging could improve accountability in a scenario in which NR needs to identify the beneficiaries of capital expenditure. As a result, the SoWs that could potentially involve NR making more investment decisions are marked positively. These are the SoWs "dynamic railway" and "beneficiary pays."

Non-arbitrary allocation of costs	+	+	+	+	+	+	+	+

The avoidable costs approach should represent an improvement in the allocation of fixed costs to operators but it is acknowledged that certain common costs might retain a separate simplistic allocation methodology.

In the "protect freight" SoW, any greater burden of costs might be reversed for freight but the changes would still flow through to other operators. Therefore, as for the other SoWs, the "protect freight" SoW is still marked positively.

Optimal traffic growth	=	+	+	=	=	+	+	=

In principle, in the SoWs allowing greater responsiveness of operators to charges, the greater cost-reflectivity of avoidable costs might support efficient long-run investment decisions and efficient use of network capacity. One freight operator noted however, that it is important to understand that this greater cost-reflectivity would not necessarily reflect broader net benefits to society. There would remain a role for public funding to ensure traffic growth reflects societal considerations.

Aligning industry incentives	+	+	+	+	+	=	+	+

This charging approach should lead to better aligned incentives. Avoidable cost charging would create a clearer causal link where operators would be charged for capital expenditure incurred for their benefit by NR. This could increase the role for operators and their funders to take a role in network planning. This effect might be achieved in the "Beneficiary pays" SoW even without avoidable cost charging.

Value for money for funders, taxpayers and users	=	+	+	=	=	+	+	=

For the reasons discussed above, the introduction of avoidable cost charging would be expected to have a significant impact on value for money in the current SoW. However, we expect that it could have potential to deliver improved value for money in certain alternative SoWs where there is greater ability for pricing signals to affect operators' and funders' behaviour.

Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	=	+	+	=	=	+	+	=

The approach used to allocate fixed costs affects the price signals faced by funders and operators. Given the anticipated changes in money flows, the approach adopted will have greater importance than it has had to date. Moving to an approach based on avoidable costs presents a clear alternative to move beyond the current simplistic arrangements, with the potential to send more informative price signals for the use of scarce resources.

At this stage it is difficult to separate out the benefit of being able to take advantage of the greater knowledge that NR, operators and funders would have about the network through conducting avoidable cost analysis and the benefit that might arise from using the avoidable cost information to set charges. There is consensus in the industry regarding the informational benefits of this approach but less so on its use to set charges.

In the current SoW, we anticipate that the benefits of this approach would be predominantly informational. These may or may not outweigh the significant burden of the calculations and the expectation that certain open access or freight operators might not be able to bear the additional charges. The potential for this more sophisticated approach to provide its greatest impacts lies in alternative SoWs where price signals are stronger.

Option 2: Ability to pay mark-ups

The current structure of fixed charges used to allocate fixed costs to franchised passenger operators and less price sensitive freight traffic reflects operators' ability to pay at a high level. This option considers a more granular approach to determining the mark-up that would more closely reflect specific users' ability to pay.

Key characteristics

Description of option

Mark-ups for ability to pay, above charges to cover the direct cost caused by track usage, are explicitly permitted by EU track charging law. In particular, EU law says that mark-ups based upon ability pay may be used to achieve cost recovery. This concept can be compared to the economic theory known as "Ramsey pricing." [25] Ramsey prices weight the recovery of fixed costs towards customers that are less price sensitive. Ramsey pricing is rarely applied explicitly, since price sensitivity is rarely directly observable. However, mark-ups based upon objective measurable factors, which act as a proxy for ability to pay, and multi-part tariffs, are more common.

In practice, the present UK tariffs are a multi-part tariff with a fixed charge for some operators. These fixed charges can also be seen as a kind of mark-up on the direct cost charges. The present fixed traffic access charge (FTAC) is based upon traffic metrics. This can itself be seen as a proxy for ability to pay, albeit rather crude. Those freight charges that charge more to categories of freight less likely to transfer to road (currently coal, iron ore and spent nuclear fuel) are also an example of ability-to-pay charging currently in place.

In the following, we consider that fixed charges are the most likely form of mark-up based upon ability to pay. Our main option in the following is a more granular approach to determining the mark-up (replacement for FTAC) that better approximates ability to pay but plainly mark-ups for ability to pay can also be constructed as increased variable charges, as Ramsey pricing anticipates.

Description of counterfactual

Crude mark-ups are currently used in the GB rail sector to allocate fixed costs. The rail users who are considered to be the most price sensitive (freight operators and open access passenger operators) do not pay fixed track access charges, while franchised passenger operators, who are less price sensitive owing to their franchises, pay the fixed charges. Mark-ups are also applied to some freight traffic, for example, a freight specific charge is levied on less price sensitive commodities with few alternative modes of transportation (i.e. coal, nuclear, iron ore).

Relevant factors impacting the form and/or the effectiveness of the option

- EU Legal Framework (Factors Report Section 2.2)
- Franchising (Factors Report Section 3.2)
- Economic viability of franchised operators (Factors Report Section 4.4)
- Data availability (Factors Report Section 4.7)

Impact on stakeholders

Under the current State of the World, users who currently face a mark-up (either a FTAC or a freight

[25] This theory is based upon standard welfare economics, where the social welfare optimum, regardless of cost recovery, is achieved when customers are charged at short run marginal cost, which we take to be essentially the same as the "direct cost caused". Ramsey prices are those one-part prices (i.e. without fixed charges or complex schedules) which aim to achieve cost recovery, while minimising distortions from the pattern of demand that would be achieved in the social welfare optimum, assuming pure monopoly.

Option 2: Ability to pay mark-ups

specific charge) could find themselves either facing a higher mark-up, or the removal of the mark-up. In the case of franchised passenger operators there will be no overall financial impact on the operators owing to the Franchise payment adjustment regime. However, where services within a franchise are affected differently there is likely to be a response by the operator. If mark-ups are constructed in whole or part as mark-ups on variable charges, rather than fixed sums, this could alter the patterns of services that operators choose to provide, within the range of discretion they have.

Alternative states of the world could see a greater impact, especially when franchised passenger operators are more exposed to market conditions.

Determining where these mark-ups should be levied when they will have a significant impact will be an important and ongoing process involving all stakeholders.

Other options that complement and conflict with proposed option

Given that the role of this charging approach is the allocation of fixed costs, it would be an alternative to the avoidable costs or metric based options. They should be mutually exclusive.

This approach would, however, be complementary with the other charging options, such as scarcity charging or environmental charges that are seeking to capture additional short-run costs (although the level of the mark-up would then be reduced assuming that the level of overall revenue is unchanged).

Clearly there are a wide range of options as to how various charges and further mark-ups could be constructed and interact, so it is hard to be specific.

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
	No change							
Consistency with law	=	=	=	=	=	=	=	=
	No change assuming applied to fixed costs as now.							
Funding of NR efficient costs	=	=	=	=	=	=	=	=
	No change							
Allowance for market conditions	+	+	+	+	+	+	+	+
	More responsive to the specifics of the routes/times etc. through the greater granularity which should make the operator and NR more responsive to market conditions. There will be constraints on this owing to the need to ensure socially necessary services, but more commercially viable services will be affected.							
A single approach for the network as a whole	=	=	=	=	=	=	=	=
	No change							
Objectives	**Current**	**Dynamic railway**	**On-rail comp**	**Specified franchises**	**Protect freight**	**Beneficiary pays**	**Capacity allocation**	**Regional powers**
Service costs recovery	=	=	=	=	=	=	=	=
	No change							

Efficient whole-system whole -life industry net costs	=	=	=	=	=	=	=	=
	No change							
Efficient long run investment decisions	=	=	=	=	=	=	=	=
	No change since this is focused on ensuring revenue collection rather than increasing revenue. It is possible that the focus could drop below the existing level if the lack of investment enhances the ability to charge mark-ups. However, this risk may be limited.							
Efficient performance management	=	=	=	=	=	=	=	=
	No change							
Efficient use of network capacity	+	+	+	+	+	+	+	+
	The greater granularity should provide better signals for efficient use of the existing network capacity, although this will have to take account of the need for socially necessary services. This would be through the greater information and transparency that would occur with respect to where viable commercial services exist.							
Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=
	Placing a greater emphasis on mark-ups and needing a more granular calculation could make this approach less predictable – especially as there are multiple approaches to estimating the mark-ups. Additional processes would be needed and having to estimate the ability to charge mark-ups could make this closer to a negative assessment rather than an unchanged.							
Simplicity	=	=	=	=	=	=	=	=
	As per above, moving to a more granular system with potentially more detailed calculations could make this a more complex approach than currently employed. Could make this closer to a negative assessment rather than an unchanged.							
Transparency	=	=	=	=	=	=	=	=
	No change – although the greater granularity could in principle make this less transparent, depending on how it is implemented.							
Low transaction costs	=	=	=	=	=	=	=	=
	No change – although again the greater granularity and need for regular updating could increase the transaction costs associated with delivering this option. This could be more important in some states of the world.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	=	=	=	=	=	=	=	=
	No change – although if the transparency of the charging regime does degrade then this criteria could be affected.							

Non-arbitrary allocation of costs	=	=	=	=	=	=	=	=
	No change – although if the greater granularity improves the effectiveness of the regime this could be linked to an improvement in the non-arbitrariness of the regime.							
Optimal traffic growth	=	+	+	+	=	+	+	+
	If the regime improves the allocation of costs to non-responsive users then growth in traffic will be encouraged in those areas where price responsive customers exist. This focus on commercial viability of routes and the need to recover funds from price in-sensitive users could bias the traffic growth in ways which are sub-optimal, unless the whole regime is aligned. There would be no change in the current state of the world owing to the impact of franchises blunting much of the impact. It is also likely that the protect freight state of the world could be neutral or negative as there is a discontinuity between who should pay the mark-ups and the price in-sensitivity of some freight services.							
Aligning industry incentives	=	=	=	=	=	=	=	=
	No change.							
Value for money for funders, taxpayers and users	=	=	=	=	=	=	=	=
	No change.							
Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	=	=	=	=	=	=	=	=
	While there are clearly some advantages to shifting to a more granular version of the existing mark-up, it is unlikely that these improvements would be sufficiently significant to warrant an improved score. This is especially true when considering the likely impact on some freight services. In addition, there could be concerns about the level of mark-up necessary to ensure full cost recovery and what would happen if those mark-ups could not be levied.							

Option 3: Long-run marginal cost (LRMC) scarcity charge

The current regime employs a variable usage charge (VUC) to recover wear and tear costs but which does not attempt to capture the longer run capacity enhancement costs from using network assets when capacity is scarce. Introducing a LRMC charge provides one option to capture that cost in charges, sending price signals to operators and to their funders about the longer-run costs generated by the train services they provide. The LRMC scarcity charge option would result in a variable charge greater than wear and tear when network constraints are present, sending price signals to operators based on forecast expenditure required to accommodate a small increase in traffic.

Key characteristics

Description of option

Under the LRMC scarcity charge option, new variable charges would be calculated to complement the VUC. These charges would be calculated based on the expected cost of future investment required to accommodate small increases in traffic at each location/time where capacity is constrained. Out of the range of options that could be introduced to manage scarcity, this option is the most focused on promoting efficient investment in the network. Charging more where capacity is scarce would contribute to the efficient use of existing assets but it would not seek to match supply and demand in the short run.

In general, LRMC charging captures the cost of providing a one unit change in output in a timeframe when all inputs can be varied.[26] In the case of the rail network, a LRMC scarcity charge would charge users of constrained infrastructure the cost to NR of enhancing the network to accommodate one additional train. This would be levied in addition to the direct wear and tear cost associated with the running of the train, already captured in the VUC. It would only be paid at constrained locations/times but any revenue collected would reduce fixed charges across the network.

We expect that detailed work would be required to identify where constraints exist. The optimal definition might not be as narrow as the EU legal definition of being "congested infrastructure" nor as broad as simply being busy. Achieving "congested infrastructure" status requires a request for access to have been rejected. Currently there are only four such locations on the network but we understand that this underestimates the existence of constraints as operators might not be requesting access where they know it will be denied. Parts of the network might also simply be busy as they are efficiently using spare capacity but would not necessarily be able to justify or support the cost of enhancements.

Given the "lumpy" nature of changes to rail capacity, it is quite possible that significant charges could be levied before an enhancement is realised and the constraint relieved, allowing the charge to fall to zero. For LRMC charges to function on this basis, they would require frequent monitoring and updates to capture where constraints have emerged or been relieved.

Description of counterfactual

The current VUC is designed to recover direct wear and tear costs only. Variable charges currently neither capture short-run nor long-run marginal scarcity costs. Furthermore, there is no direct link between the need for enhancements and charging. Timetabling is managed administratively and new capacity is predominantly funded by fixed track access charges, the Network Grant and NR's

[26] We note that while in theory this approach would examine the impact of a one unit change in output, in practice the size of the increment would need to be set at a level that would allow calculations to be made, and then averaged by the size of the increment.

Option 3: Long-run marginal cost (LRMC) scarcity charge

commercial income.[27]

Relevant factors impacting the form and/or the effectiveness of the option

- Franchising (Factors Report Section 3.2)
- Track access arrangements (Factors Report Section 3.3)
- Network scope and specification (Factors Report Section 4.3)
- Economic viability of freight/ open access operators (Factors Report Section 4.4)
- Data availability, measurement, and billing (Factors Report Section 4.7)

Impact on stakeholders

Some users operating at constrained locations/times would pay higher variable charges under LRMC. Some users operating (mainly) on unconstrained track and paying fixed charges could benefit from lower fixed charges, due to higher receipts from variable charges (assuming constrained users' demand is relatively inelastic).

The introduction of LRMC charging would provide a market test of whether operators (and/or those funding them) would be willing and able to pay for an expansion of capacity. This could have a profound impact on how the ORR and the industry plan and select enhancements.

Other options that complement and conflict with proposed option

A LRMC charge is focused on managing scarcity and therefore would not work in tandem with an administered scarcity charge (Option 4) or scarcity auctions (Option 5). The present capacity charge does some of the work of a scarcity charge, so either this would cease, or only LRMC charges in excess of the capacity charge would be applied.

A LRMC charge, or other charge focused on scarcity could complement any move towards a geographically disaggregated VUC (Option 9). Previous work by NR has indicated that wear and tear costs are lowest in some of the busiest areas. A charge capturing scarcity of capacity might help avoid encouraging additional services where capacity is tightest.

Complemented by an avoidable cost approach to the allocation of fixed costs (Option 1), it would be possible for charges to both signal the need for investment in constrained areas and to recover the costs from those users once incurred.

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=

There is no unambiguous material impact of this charging approach on system safety but charging for the use of scarce capacity might decrease pressure on assets in constrained areas.

[27] Enhancements are currently financed by bonds, and not depreciated. The interest cost of the bonds is covered through the funding sources we mention, and it is in this sense that we assert that enhancements are funded in this way.

Consistency with law	=	=	=	=	=	=	=	=

Paragraph 4 of Article 31 (directive 34/2012) states: 'The infrastructure charges referred to in paragraph 3 may include a charge which reflects the scarcity of capacity of the identifiable section of the infrastructure during periods of congestion.'

Some stakeholders have argued to us that law only permits that a scarcity charge may be levied only in locations which have been declared as "congested infrastructure" (Article 47). At present only four (rather unlikely) locations on the GB network meet this test, although a number of others are expected to be added. The Article 47 test requires that access requests have to have been turned down in order to declare it as congested infrastructure. In the UK, there are a large number of likely congested areas where operators would not put effort into an access application because the constraints are already widely known, hence are not likely to exhibit an explicit denial of a request. We would however observe, in opposition to this view, that there is no cross-reference between Articles 47 and 31, nor is the defined term "congested infrastructure" used in Article 31. The directive recognises that infrastructure may cease to be congested if scarcity charges apply.

In addition, the recent implementing rules,[28] which define costs that may be considered to be directly incurred, do not specifically mention scarcity charging. The rules are new and therefore untested but may imply that this form of charge cannot be considered to be a direct cost. But this does not necessarily exclude it from being a charge for the minimum infrastructure package (Art 31.3), which is the infrastructure charge cross-referred at Article 31.4. **Further legal analysis is required in this area.**

Funding of NR efficient costs	=	+	+	-	-	=	=	=

This option would be a new charge through which NR could recover its revenue requirement. Forecast receipts would be matched by a corresponding reduction in fixed charges so overall we do anticipate any impact on NR's aggregate funding.

If funds raised from the charge were regarded as a contribution to enhancement costs, then there may be a positive impact on this criterion but this would depend on the value attached to the charge. In SoWs where there is more competition for capacity, this option would have greater impact. Where there is less competition/greater protection the option would deliver little if any added value.

We note that the overall level of receipts will be a function of the gap between supply and demand and operators' price sensitivity. Where capacity is truly constrained and demand outstrips demand, there could be an increase in overall receipts from variable charges. However, if the charges were poorly targeted and levied on some trains where there were no constraints, any subsequent reductions in demand could result in a net decrease in variable charge receipts.

[28] The Commission Implementing Regulation (EU) 2015/909 of 12 June 2015 *on the modalities for the calculation of the cost that is directly incurred as a result of operating the train service*

Allowance for market conditions	=	=	=	=	=	=	=	=

Many operators require some additional flexibility to manage for instance seasonal demand or new requirements as they arise. This is particularly the case for certain types of freight. Current access rights make allowance for this through the access rights regime, which ranges from fixed rights through to options to use additional spare capacity. Scarcity charges such as LRMC raise the issue of how this required flexibility in traffic levels would be accommodated. There are ways of managing this issue but these would likely require detailed analysis and charges set on a granular basis. A cruder form of the charge would make this criterion red across all SoW.

A LRMC scarcity charge levied as a cost directly incurred (assuming this would be legal) could affect freight and open access operators directly, assuming that franchise operators would be protected from such a charge. It could detrimentally affect financial viability by pricing freight off rail or otherwise impacting the financial viability of other small operators. However, it seems likely that a LRMC scarcity charge would only apply in peak periods and in limited locations and this would offer a significant degree of protection to these users.

A single approach for the network as a whole	+	+	+	+	+	+	+	+

The LRMC methodology could be applied across the network, even though at many locations and times the charge would not materially change as a result.

Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=

A LRMC charge levied as a part of the charge for the minimum package of access rights would reduce the size of the fixed cost that needs to be recovered elsewhere. The overall level of contribution would depend on the scale of the charge but it should also be noted that the charge would only be applied on those sections of the railway that are congested so the overall financial effect may not be material.

Efficient whole-system whole-life industry net costs	=	+	+	=	=	=	=	=

In principle, LRMC charges would signal that enhancements in congested areas should only be provided if there were end users willing and able to pay for the necessary investment to increase capacity. However, as the key elements of service provision are centrally planned, it is not clear to what extent this signal could influence service provision under the current regime. In addition, there is a pass-through of access charges during franchise contracts (i.e. train operators would be indifferent to the level of charges) such that any impact of pricing signals is limited to franchise bidding processes. In the “specified franchises” SoW, the price signal would be even weaker. As a result, this criterion is marked most positively in SoWs that assume a change that would enable the LRMC signals to modify service provision. There is potential for beneficial impacts in other SoWs but the link from charges to outcomes is less certain.

Efficient long run investment decisions	=	=	=	=	=	+	=	+

LRMC provides a mechanism to signal willingness to pay for investment based on charges raised from those who would benefit from it. However, providing effective investment incentives requires a regulatory and institutional regime that is fully aligned with that objective. For example, it may be necessary to introduce charging structures such as Avoidable Cost to link the recovery of expenditure back to those who demanded it. Once bottlenecks are eased and scarcity eliminated, the LRMC charge would fall. There may be a time inconsistency problem if users' willingness to pay cannot be translated into recovery of those costs.

The LRMC option for the current SoW has been marked neutral as the current regime has a number of features that would reduce the effectiveness of the investment incentives. In particular, the central planning nature of the investment decision making process. The point here is that price signals do not matter (or matter less) if decisions are taken centrally considering other variables. Nevertheless, it might be possible, even under a central planning scenario, to introduce a monetary incentive to explicitly forecast if final users are willing and able to pay for an expansion of capacity.

The SoWs "beneficiary pays" and "regional powers" have been marked positive, as these would reduce the central planning features and thus are more likely to enable effective investment incentives.

Efficient performance management	=	=	=	=	=	=	=	=

This option might relieve some congestion in certain SoWs but there is not a clear direct impact of this charging approach on performance management.

Efficient use of network capacity	=	+	+	=	=	=	+	=

Same reasons as those discussed in the efficient whole-system whole-life industry net cost criterion. In addition, in SoW "capacity allocation," the regime might be designed in such a way that a LRMC charge could signal the efficient allocation of existing capacity.

Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	-	-	-	-	-	-	-	-

The lumpy nature of rail investments and need to respond to changes in or the removal of network constraints could result in volatile LRMC measures. It would be possible to smooth the cost of investments over time in a similar manner to the broader revenue requirement (which includes some smoothing of investment costs over their useful economic lives) but the way in which the investment costs are specified or whether a given train service is deemed to be constrained might be difficult to predict.

Simplicity	-	-	-	-	-	-	-	-

Determining the point at which additional investment is required and calculating LRMC charges could be complicated to implement in practice. Furthermore, we anticipate that the identification of train services subject to network constraints (and more specifically to avoid disincentivising services at unconstrained times) might require hour-by-hour charging.

Transparency	+	+	+	+	+	+	+	+

The LRMC option could make the regime more transparent in terms of which train services are demanding network expansion or which operators' funders are supporting it.

Low transaction costs	-	-	-	-	-	-	-	-

Imposition of LRMC scarcity charges would imply a degree of monitoring and management that does not currently exist. Furthermore, we expect significant transitional costs might be incurred as part of developing systems to impose hourly charges.

Offsetting this would be the benefit of identifying underutilised capacity that could be used more effectively and generation of funds towards investment costs.

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	=	+	=	=	=	+	=	=

There is not a clear direct impact of this charging approach on accountability under regimes in which investment decisions are made by the government. But implementing a LRMC charge could improve accountability in a scenario in which investment decisions are made by NR, as it could be possible to confirm ex-post if end users were willing and able to pay for the improvements. As a result, the SoWs that could potentially involve NR making more investment decisions are marked positively. These are the SoWs "dynamic railway" and "beneficiary pays."

Non-arbitrary allocation of costs	+	+	+	+	+	+	+	+

LRMC would attribute the long-run cost of enhancing the rail network for additional traffic. This is a real cost regardless of whether any expenditure is incurred. It is not currently captured in charges.

Applying this charge requires identifying the train services that generate LRMCs and their levels in each case. The level of the LRMC at each constraint is subject to significant uncertainty and likely requires a number of judgements to be made. For example, one open access passenger operator highlighted that there are key questions that would need to be answered in each case around what capacity is needed, how it might be best created and how the infrastructure manager (who may have incentives to postpone investments) would guarantee that the additional capacity would be created. The process might be more straightforward with investment due to take place within the current or subsequent price control period. Consideration of investments due to take place afterwards would be more speculative.

Optimal traffic growth	=	+	+	=	=	+	+	=

In principle, in the SoWs allowing greater responsiveness of operators to charges, the greater cost-reflectivity of avoidable costs might support efficient long-run investment decisions and efficient use of network capacity. One freight operator noted however, that it is important to understand that this greater cost-reflectivity would not necessarily reflect broader net benefits to society. There would remain a role for public funding to ensure traffic growth reflects societal considerations.

Aligning industry incentives	+	+	+	+	+	=	+	+

This charging approach should lead to better aligned incentives. LRMC would signal to operators and their funders that scarce capacity is valuable, and on the other side NR is rewarded for delivering that valued capacity. This effect might be achieved in the "Beneficiary pays" SoW even without LRMC charging.

Value for money for funders, taxpayers and users	=	+	+	-	-	+	+	=

For all the reasons discussed above, the introduction of a LRMC charge to deal with scarcity could be expected to be beneficial mostly in the SoWs that could potentially be aligned with the introduction of such charge. In SoWs with even less flexibility or greater protection for operators than the current SoW, it is even less likely that a LRMC charge would be able to produce efficiency benefits that outweigh the costs of implementation.

Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	=	+	+	-	-	+	+	=

The long-run impact of train services on network investment is not currently captured in variable usage charges. Introducing a LRMC charge in addition to the cost of wear and tear where network constraints exist would introduce that cost into price signals to operators and any funders specifying the train services they operate. If these more informative price signals are able to flow through to operational decisions, they have the potential to create efficiency gains by shaping the pattern of use of the network to reflect the long-run costs of using it.

In the current SoW, we anticipate that the benefits of this approach would be predominantly informational due to the limited ability of franchised passenger operators in particular to alter their service levels or even to feel the financial impacts of the charge. These may or may not outweigh the significant burden of the calculations, the risk of charging train services for scarcity where it does not exist and the expectation that certain open access or freight operators might not be able to bear the additional charges. The case for this charge is even weaker in SoWs where ability or incentive for operators to respond to this charge is reduced. The potential for this more sophisticated approach to provide its greatest beneficial impacts lies in alternative SoWs where price signals are felt by decision makers more strongly.

Option 4: Administered Scarcity charging

The current regime employs a variable usage charge (VUC) to recover wear and tear costs but which does not attempt to capture the value of using network assets when capacity is scarce. The administered scarcity charge option would result in a variable charge greater than wear and tear when network constraints are present, sending price signals to operators based on an estimate of the full economic value (or opportunity cost) of reserving a path. This charge might apply LRMC principles (see option 3). But there is sufficient flexibility in the concept that it could also be an opportunity cost based measure of scarcity, based upon the most valuable excluded use of the capacity, and that is what we consider here. Such a charge could be set at a level sufficient to encourage operators and funders to give up paths that are not needed and / or utilise alternative routes where available to avoid congested areas. The mechanics of levying any such charge would need to be carefully considered given that it values only opportunity costs and not wider social or environmental benefit.

Key characteristics

Description of option

Scarcity costs arise where the presence of a train prevents another train from operating or requires it to take an inferior path. Here we consider an opportunity cost based charge, which means the opportunity cost to society of the capacity limit, i.e. the most valuable excluded use of the capacity. This may differ from the opportunity value to an operator, because of competition for passengers and industry revenue allocation mechanisms, but these additional values are not related to scarcity. This cost can be recovered through a scarcity charge levied **on top of** a variable charge that recovers wear and tear costs. A scarcity charge is intended to facilitate a more efficient allocation of capacity on the rail network by incentivising users, and potentially service funders, to only acquire paths for which their willingness to pay is greater than that associated with competing path allocations.[29]

The design of a scarcity charge could vary from a simple flat rate reservation charge (paid when a path is reserved and which we consider in assessment 7) to an administered[30] scarcity charge (where train operators would be charged an estimate of the full economic value of reserving a path) to a fully-fledged market based allocation e.g. auction (which we consider in assessment 5). ***In this assessment we focus on the option of an administered scarcity charge, additional to the variable charge, and based on an estimate of opportunity cost***. The charge would be paid irrespective of whether the path is used. The present capacity charge has some of the effect of a scarcity charge, and this option implies either that the capacity charge would cease, or else the scarcity charge would be based on scarcity costs in excess of the capacity charge. An administered scarcity charge is not currently used in rail in the UK but is used in other regulated industries e.g. by Ofcom for parts of the radio spectrum.

Description of counterfactual

The current regime contains a variable charge to recover short-run marginal wear and tear costs only. Variable charges currently neither capture short-run nor long-run marginal scarcity costs. (Short run scarcity cost is the loss of revenue, net of operating cost, to the industry from not having access to the best slot. Long run scarcity cost is the cost of increasing capacity to relieve the scarcity). Furthermore, there is no direct link between the need for enhancements and charging at present.

Timetabling is managed administratively and new capacity is predominantly funded by fixed track access charges, the Network Grant and NR's commercial income.

[29] This form of charging considers on rail scarcity, it will not affect the disparity between charging approaches to road and rail.

[30] Based on an administrative calculation of cost, rather than a market mechanism such as an auction.

Option 4: Administered Scarcity charging

Relevant factors impacting the form and/or the effectiveness of the option

Practical issues relating to the imposition of a opportunity cost based scarcity charge (by reference to the factors report) include:

- 2.2 EU legislation and 2.3 UK legislation which raise issues about the legality of a general scarcity charge in rail.
- 3.2 The franchising regime. Which would limit the impact of any such charge to freight and other small operators.
- 3.3 A mixed use network. The varying business models of UK operators are not necessarily compatible with a scarcity charge which would not value wider social or environmental benefits.
- 4.4 Economic viability – a scarcity charge may have a detrimental impact on smaller operators whose business model relies on environmental or social benefits being valued within the charging system.

In the past practical issues have been considered significant, with the preference being for simpler to implement reservation charges but there is scope for a debate around the effectiveness in incentive terms of a deposit based reservation charge versus an additional scarcity charge.

Impact on stakeholders

- Under current franchising arrangements, a scarcity charge would likely have a limited impact on franchised passenger operators between franchise competition processes assuming existing protections extend to scarcity charges and that passenger operators continue to have limited scope to change the level of service that they offer. Notwithstanding that, it could have some positive, but marginal impact when franchised operators use the limited flexibility available between franchise competitions and / or in bidding processes. It has been suggested previously that Franchised Passenger Operators would become subject to the charge only when they seek an increase to services.
- However, such a charge, if not carefully created, could adversely impact operators for which a greater degree of flexibility of service is required e.g. demand for freight commodities can be varied (seasonal), and generally be subject to a greater degree of change/amendment than passenger services. It should be possible to design the charge largely to accommodate this, but that would require that it be applied on a granular basis
- In SoWs that increase franchise flexibility and competition, this option could have a more significant effect. The opposite would be true where franchises are more highly specified and/or freight has a greater degree of protection from charges, particularly if the charge were developed on a relatively crude basis.

Other options that complement and conflict with proposed option

It would be necessary to consider the role of such charges alongside other related charges e.g. the capacity charge (which has some congestion impacts) and the volume incentive that this charge might replace and to consider how the fixed charge might be amended as a result of scarcity charges being levied.

Option 4: Administered Scarcity charging								
Performance against criteria								
Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
	There is no unambiguous material impact of this charging approach on system safety but charging for the use of scarce capacity might decrease pressure on assets in constrained areas and therefore have some positive benefit on safety.							
Consistency with law	=	=	=	=	=	=	=	=
	Paragraph 4 of Article 31 (directive 34/2012) states: *'The infrastructure charges referred to in paragraph 3 [*being costs directly incurred*] may include a charge which reflects the scarcity of capacity of the identifiable section of the infrastructure during periods of congestion.'* However one interpretation of the access and management regulations that has been put to us is that they mandate that a scarcity charge may only be levied only in locations where Infrastructure Congestion has been declared. At present only three locations on the GB network meet this test although a number of others are expected to be added. The Infrastructure Congestion test requires that access requests have to have been turned down in order declare congestion. In the UK there are a large number of likely congested areas where operators would not put effort into an access application because the constraints are already widely known. In addition, the recent implementing rules,[31] which define costs that may be considered to be directly incurred, do not specifically mention scarcity charging. The rules are new and therefore untested but may imply that this form of charge cannot be considered to be a direct cost. **Further legal analysis is required in this area.**							
Funding of NR efficient costs	=	+	+	-	-	=	=	=
	This option would be a new charge through which NR could recover its revenue requirement. Forecast receipts would be matched by a corresponding reduction in fixed charges, so overall we do anticipate any impact on NR's aggregate funding. If funds raised from the charge were regarded as a contribution to enhancement costs, then there may be a positive impact on this criterion but this would depend on the value attached to the charge. In SoWs where there is more competition for capacity, this option would have greater impact. Where there is less competition/greater protection the option would deliver little if any added value. We note that the overall level of receipts will be a function of the gap between supply and demand and operators' price sensitivity. Where capacity is truly constrained and demand outstrips demand, there could be an increase in overall receipts from variable charges. However, if the charges were poorly targeted and levied on some trains where there were no constraints, any subsequent reductions in demand could result in a net decrease in variable charge receipts.							

[31] The Commission Implementing Regulation (EU) 2015/909 of 12 June 2015 *on the modalities for the calculation of the cost that is directly incurred as a result of operating the train service*

Allowance for market conditions	=	=	=	=	=	=	=	=
	Many operators require some additional flexibility to manage, for example, seasonal demand or new requirements as they arise. This is particularly the case for certain types of freight. Current access rights make allowance for this through the access rights regime which range from fixed rights through to options to use additional spare capacity. Scarcity charges raise the issue of how this required flexibility in traffic levels would be accommodated. There are ways of managing this issue but these would likely require detailed analysis and charges set on a granular basis. A cruder form of the charge would make this criterion red across all SoW. A scarcity charge levied as a charge for the minimum access package (if legal) could impact freight and open access operators directly, assuming that franchise operators would be protected from such a charge. It could detrimentally affect financial viability by pricing freight off rail or otherwise impacting the financial viability of small passenger operators. However it seems likely that a scarcity charge would only apply in peak periods and in limited locations and this would offer a significant degree of protection to these users.							
A single approach for the network as a whole	=	=	=	=	=	=	=	=
	This approach, as per the current planning led mechanism, could be applied to all operators irrespective of type.							
Objectives	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=
	A scarcity charge levied as a part of the charge for the minimum package of access rights would reduce the size of the fixed cost that needs to be recovered elsewhere. The overall level of contribution would depend on the scale of the charge but it should also be noted that the charge would only be applied on those sections of the railway that are congested so the overall financial effect may not be material.							
Efficient whole-system whole -life industry net costs	+	+	+	+	+	+	+	+
	This approach would be beneficial, at least at the margin, in contributing in advance to the costs of future additional capacity. As noted elsewhere, the scale of the benefit might be limited and would need to be considered in further more detailed analysis. The positive effects of this option might be more significant in SoW where there is greater competition.							
Efficient long run investment decisions	=	=	=	=	=	=	+	=
	This approach could be beneficial, at least at the margins, in identifying areas where capacity is truly constrained but arguably existing planning based approaches have similar effect. In a SoW that places greater overall emphasis on efficient use of capacity, this option might have benefit over current arrangements, which rely on historic access rights.							
Efficient performance management	=	=	=	=	=	=	=	=
	This approach has no direct impact on the occurrence of disruption.							

Efficient use of network capacity	+	+	=	=	+	+	+	+

A scarcity charge provides a financial incentive to more carefully consider the capacity required to operate services rather than rely on pre-existing rights that perhaps fail to recognise the potential for improvements to capacity allocation.

The effect of this option might be greater in those SoWs where there is greater competition, but would have little or no effect in SoWs where wider protections are given to operators.

Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	-	-	-	-	-	-	-	-

A scarcity charge may adversely affect predictability of charges generally as capacity constraints will change over time causing charges to fluctuate within or between reviews depending on how the charge is administered.

Simplicity	-	-	-	-	-	-	-	-

Establishing the basis of the charge up front would be time consuming and potentially complex versus the current planning based approach, but the administered nature of the charge would make the process more straightforward thereafter (potentially except in circumstances where new capacity is added). Planning would still be required, since a competitor could still find a slot profitable, as it would take over some of the existing fare income.

Transparency	+	+	+	+	+	+	+	+

Current track access arrangements are established in bilateral contracts that are not necessarily publicly available or easy to review. The imposition of a scarcity charge would bring greater transparency to poor use of capacity and result in overall nearer optimal use of the network.

Low transaction costs	-	-	-	-	-	-	-	-

Imposition of scarcity charges would imply a degree of monitoring and management that does not currently exist. Offsetting this would be the benefit of identifying underutilised capacity that could be used more effectively and generation of funds towards investment costs.

Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	=	=	=	=	=	=	=	=

This option has no direct impact on NR's accountability, any more than any of the capacity charge mechanisms previously employed.

Non-arbitrary allocation of costs	=	=	=	=	=	=	=	=

Unlike a reservation charge, a scarcity charge would be imposed on top of other charges i.e. it would be an additional charge on top of the variable usage charge rather than an up-front contribution to costs that would likely be incurred in any event. The charge would be set administratively to recover the proportion of costs considered to represent opportunity costs.

Optimal traffic growth	+	+	+	=	=	+	+	+
	A reservation charge could contribute to all the objectives of this criterion but would be more positive in SoW where there is greater competition since it should free some capacity for use by other operators. Its impact is likely to be inhibited in SoW with additional protections.							
Aligning industry incentives	+	+	+	=	=	+	+	+
	This option recognises that industry incentives may not be aligned and places weight on industry participants giving up unused access, or access that does not reflect the scarcity costs it imposes. Current planning based approaches seek to achieve the same thing, but the imposition of a mechanism that creates a common basis for discussions and should improve transparency.							
Value for money for funders, taxpayers and users	+	+	+	+	+	+	+	+
	A scarcity charge could contribute to all the objectives of this criterion. But the overall scale of impact may be small in the current state of the world, given that capacity is not an issue on many parts of the network, and because freight would likely need to retain a significant degree of flexibility in order to manage inherent fluctuations in demand. The impact would be larger in SoWs which encourage a larger degree of competition, and then mainly on the parts of network where more competition is likely to arise.							
Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	+	+	+	-	-	=	+	=
	In the current SoW an administered scarcity charge as described above, and if legal, could have positive benefits in incentivising better use of existing capacity. But in some forms it could adversely affect freight and other smaller users of the network, although there would be some scope to design it to limit that impact. Impact on franchised passenger operators under the current regime are likely to be limited given that current arrangements provide protection from change and also limit the scope to change service levels. But it may encourage funders to consider whether their use of scarce capacity gives value for public funds, when they are excluding commercial operators. Assuming adverse impacts could be managed e.g. that freight operators retained the flexibility required etc., the overall impact could be positive but may be small overall in financial terms. More detailed analysis would be required to assess whether likely benefits outweigh issues such the transaction costs involved in introducing and managing a scarcity charge. However, in alternative SoWs which introduce greater on-rail competition, or which place greater emphasis on the financial value of capacity, this option could have greater positive impact (although it would need to be weighed against other options e.g. reservation charging). Conversely, in SoW where operators have increased protection from change, the option would have less impact.							

Option 5: Capacity auctions

The current variable charges neither capture short-run nor long-run marginal scarcity costs. Auctioning capacity would represent a market-based allocation that would reflect users' willingness to pay for scarce network capacity. A key benefit of auctions is the ability to set a market price, a key downside is the difficulty of including the value the wider benefits e.g. the environmental and social benefits of rail. Auctions are not currently used in rail but are in other industries such as telecoms.

Key characteristics

Description of option

Scarcity costs arise where the presence of a train prevents another train from operating or requires it to take a sub-optimal path. This cost can be recovered through a scarcity charge levied **on top of** a variable charge that recovers wear and tear costs. A scarcity charge is intended to facilitate a more efficient allocation of capacity on the rail network by incentivising users to only acquire paths for which their willingness to pay is greater than that associated with competing path allocations[32].

The design of a scarcity charge could vary from a simple flat rate reservation charge (paid when a right or path is booked and which we consider in assessment 7) to an administered[33] scarcity charge (where train operators would be charged an estimate of the full economic value of reserving a path – see option 4) to a fully-fledged market based allocation e.g. auction. **The capacity auction approach is considered in this option**. This approach is not currently used in rail but is used in other regulated industries e.g., energy capacity auctions, mobile telephony spectrum auctions.

Description of counterfactual

The current regime contains a variable charge to recover short-run marginal wear and tear costs only. Variable charges currently neither capture short-run nor long-run marginal scarcity costs. (Short run scarcity cost is the loss of revenue to another operator from not having access to the best slot. Long run scarcity cost is the cost of increasing capacity to relieve the scarcity). Furthermore, there is no direct link between the need for enhancements and charging at present.

Timetabling is managed administratively and new capacity is predominantly funded by fixed track access charges, the Network Grant and NR's commercial income.

Relevant factors impacting the form and/or the effectiveness of the option

Practical issues relating to the imposition of capacity auction (by reference to the factors report) include:

- 2.2 EU legislation and 2.3 UK legislation which raises issues about the legality of auctions in rail – see consistency with law below.
- 3.2 The franchising regime. Auctions would require a shift away from government specification of services to market valuation of available capacity.
- 3.3 A mixed use network. The varying business models of UK operators are not necessarily compatible with an auction which would not value wider social or environmental benefits.
- 4.4 Economic viability – the auction mechanism may have a detrimental impact on smaller operators whose business model relies on environmental or social benefits being valued within the charging system

More specifically it would be difficult to:

[32] This form of charging considers on rail scarcity, it will not impact the disparity between charging approaches to road and rail.

[33] Based on an administrative calculation of cost, rather than a market mechanism such as an auction.

Option 5: Capacity auctions

- Define when capacity is constrained and this would require for example an annual update of usage patterns and making use of a capacity utilisation index.
- Define a track capacity right which is sufficiently well-described to be auctioned, while being useful and comparable to all the competing users who might bid for it. Such specific definition would be incompatible with Network Rail's current approach which is to make access rights less specific in order to provide a degree of flexibility in timetabling.
- To allocate slots on an efficient basis – different network users require differing degrees of flexibility.
- Construct a market mechanism to set the charge with its wider effects on policy e.g. how social benefit delivered is valued in the system and the approach to franchising.

In the past practical issues have been considered prohibitive, with the preference being for simpler to implement reservation charges or an administered scarcity charge.

Academic studies suggest that auctions are unlikely to be practically feasible in such complex circumstances as railways except in very limited and special circumstances. The paper "A combinatorial auction mechanism for airport time slot allocation", S Rassenti, V Smith and R Bulfin, Bell Journal of Economics 1982, considers the similar problem of auctioning airport slots, and finds that while it is feasible to solve such an auction, it does not deliver a price that separates accepted from rejected bids. Although the paper appears optimistic, the difficulty with implementing such an auction in practice – which has never been done – is the complex nature of the bids that bidders would need to construct and deliver to the auctioneer – it is dubious that bidders would in fact be capable of making an optimal set of bids representing the options and constraints that affect them.

Some simpler auctions with constraints have been implemented for example, mobile telephony spectrum auctions, gas pipeline capacity auctions, and UK Treasury liquidity insurance auctions, are all examples of such auctions.[34] Ofcom recognises that the auction methods sometimes used for selling mobile telephony spectrum are not appropriate for other parts of the radio spectrum where there is a complex and detailed management task more akin to railway scheduling. For such parts of the spectrum, assignments of spectrum, defined by frequency and location, are offered at administrative prices representing the scarcity and demand for them.

The scheduling problems of railways typically present a far more complex set of constraints than airports, more akin to that of the more difficult areas of radio spectrum. We would therefore be very sceptical that a plausible and practical auction design is available even for limited parts of the network e.g. Intercity routes.

Impact on stakeholders

- Even if a practicable auction design could be developed, it would require major change to the current approach to franchising and would have a significant impact on current bidding processes – **we consider that a capacity auction could not operate in many states of the world accordingly most are marked red in the following analysis. We only consider this option in SoW 1, 2 and 6.**
- It would give operators control in setting the market value of paths such that government would no longer set the service specification. Given the implications of this, it is likely that any auction based scarcity mechanism could only operate on parts of the network.

[34] See for example, "The product mix auction: A new auction design for differentiated goods", P Klemperer, Journal of the European Economic Association, 2010. This describes in simplified form the auction the Bank of England now uses, solved using linear programming methods. But linear programming methods do not suffice to solve the airport auction described by Rassenti, Smith and Bulfin, which required much more difficult integer programming methods.

Option 5: Capacity auctions

- An auction could result in freight and smaller operators being priced off sections of the railway and may therefore raise questions of legality
- In SoWs that increase franchise flexibility and competition this option could have a more positive effect but retain significant downsides. The opposite would be true where franchises are more highly specified and/or freight has a greater degree of protection from charges.

Other options that complement and conflict with proposed option

It would be necessary to consider the role of auctions alongside the current capacity charge (which has links to congestion) and the volume incentive and to consider how the fixed charge might be amended as a result of scarcity charges being levied.

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	N/A	=	=	N/A	N/A	N/A	=	N/A
	There is no unambiguous material impact of this charging approach on system safety but charging for the use of scarce capacity might decrease pressure on assets in constrained areas and have a limited beneficial impact.							
Consistency with law	N/A	=	=	N/A	N/A	N/A	=	N/A
	EU law explicitly provides for scarcity charges, Article 31.4 of Directive 2012/34 says "The infrastructure charges referred to in paragraph 3 may include a charge which reflects the scarcity of capacity…" Paragraph 3 refers to "the charges for the minimum access package and for access to infrastructure connecting service facilities [which] shall be set at the cost that is directly incurred as a result of operating the train service." However, the recent implementing rules[35], which define costs that may be considered to be directly incurred, do not specifically mention scarcity charging. The rules are new and therefore untested but may imply that this form of charge cannot be considered to be a direct cost. In addition, one interpretation of the access and management regulations that has been put to us is that they mandate that any form of scarcity charge may only be levied only in locations where Infrastructure Congestion has been declared. At present only three locations on the GB network meet this test although a number of others are expected to be added. The Infrastructure Congestion test requires that access requests have been turned down. In the UK there are a large number of likely congested areas where operators would not put effort into an access application because the constraints are already widely known. **Further legal analysis is required in this area.**							
Funding of NR efficient costs	N/A	=	=	N/A	N/A	N/A	=	N/A
	The objective of this option is to incentivise better use of capacity – this approach could be beneficial, at least at the margins, in identifying areas where capacity is truly constrained but arguably existing planning based approaches have similar effect.							

[35] The Commission Implementing Regulation (EU) 2015/909 of 12 June 2015 *on the modalities for the calculation of the cost that is directly incurred as a result of operating the train service*

Allowance for market conditions	N/A	-	-	N/A	N/A	N/A	-	N/A
	It is possible that the market value set by an auction would result in freight and open access operators being priced off parts of the network where the wider benefits of this type of traffic would not be valued. This approach would likely raise legal issues.							
A single approach for the network as a whole	N/A	-	-	N/A	N/A	N/A	-	N/A
	A noted above we consider this option is impractical in most circumstances and it would only be possible to construct a workable auction for specific parts of the network e.g. access to major stations. We do not consider that it could be established as a single approach to capacity management in any state of the world.							
Objectives	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	N/A	=	=	N/A	N/A	N/A	=	N/A
	An auction would raise additional funds from variable charges, and reduce the size of the fixed cost that needs to be recovered elsewhere. The overall level of contribution to overall costs would depend on the scale of the charge but it should also be noted that this option could only be applied on certain sections of the railway that are congested (and amendable to an auction) so the overall financial effect may not be material. Depending on the scope of any capacity auction (where applied, times of day) it could result in lower traffic levels if freight traffic is displaced and therefore result in lower revenues.							
Efficient whole-system whole -life industry net costs	N/A	=	=	N/A	N/A	N/A	=	N/A
	This approach could be beneficial, at least at the margins, in identifying areas where capacity is truly constrained but arguably existing planning based approaches have similar effect without introducing the complexity of an auction.							
Efficient long run investment decisions	N/A	=	=	N/A	N/A	N/A	=	N/A
	This approach could be beneficial, at least at the margins, in identifying areas where capacity is truly constrained but this option would have limited application and would be complex to construct.							
Efficient performance management	N/A	=	=	N/A	N/A	N/A	=	N/A
	This option has no direct impact on the occurrence of disruption.							
Efficient use of network capacity	N/A	+	+	N/A	N/A	N/A	+	N/A
	An auction would provide a financial incentive to more carefully consider the capacity required to operate services rather than rely on pre-existing rights which perhaps fail to recognise the potential for improvements to capacity allocation.							
Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	N/A	-	-	N/A	N/A	N/A	-	N/A
	An auction may adversely affect the predictability of charges generally as capacity constraints will change over time causing charges to fluctuate within or between reviews depending on how the auction is administered.							

Simplicity	N/A	-	-	N/A	N/A	N/A	-	N/A
	Establishing the basis of an auction even on a limited basis would be time consuming and complex versus the current established planning based approaches.							
Transparency	N/A	+	+	N/A	N/A	N/A	+	N/A
	Current track access arrangements are established in bilateral contracts that are not necessarily publicly available or easy to review. The imposition of an auction would not necessarily improve the position although it could if bid prices were made public at an appropriate point in time.							
Low transaction costs	-	-	-	N/A	N/A	N/A	-	-
	Imposition of an auction would imply a degree of complexity in design that does not currently exist and may not be practicable.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	-	=	=	N/A	N/A	N/A	=	-
	No change							
Non-arbitrary allocation of costs	N/A	+	+	N/A	N/A	N/A	+	N/A
	An auction would be imposed on top of other charges i.e. it would be an additional charge on top of the variable usage charge. The charge would be set by the market based on the value of the paths available to those bidding, in that sense it would not be arbitrary.							
Optimal traffic growth	N/A	-	-	N/A	N/A	N/A	-	N/A
	By allocating traffic to the highest value use, it should assist optimal traffic growth in an economic sense, but fails to account for the social and environmental value delivered by large parts of the railway and a number of operators.							
Aligning industry incentives	N/A	-	-	N/A	N/A	N/A	-	N/A
	Although notionally aimed at aligning incentives this option places emphasis on the financial value of paths which fails to account for the social and environmental value delivered by large parts of the railway and a number of operators.							
Value for money for funders, taxpayers and users	N/A	+	+	N/A	N/A	N/A	+	N/A
	An auctions would aid identification of the value of paths and make more transparent the social support provided by government funding of the railway.							
Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	N/A	-	-	N/A	N/A	N/A	-	N/A
	Overall we are not convinced that it would possible to develop a capacity auction for widespread use in a railway environment. Even on a limited basis we consider that the overall benefits of managing congestion etc. would be negated by the complexity of the approach and its potential negative impacts on smaller users of the network. An auction based scarcity charge would not be practicable in the current or most other SoW, it would require change to government policy and significant redesign of key processes such as franchising.							

Option 6: Environmental charge

Currently the only charge that captures external environmental costs is the coal spillage charge. An environmental charge would capture a broader set of external environmental costs (e.g. emissions and noise) associated using the rail network, allowing these external costs to be internalised by train operators.

Key characteristics

Description of option

There are a number of material environmental impacts associated with operating rail services such as noise, atmospheric pollution and effluents. These environmental impacts impose a social cost that could in theory be reflected in specific track access charges. The objective of this charge would be to 'internalise' these social costs and provide incentives to operators to reduce their environmental impact. The existing coal spillage charge is a charge of this nature that internalises the additional cost imposed on NR by coal freight and is generally acknowledged to have been successful in reducing pollution from coal spillage. Environmental charges would cover wider external costs (outside the rail sector directly) and therefore represent a move away from the current commercial approach to track access charges that only captures private costs incurred by NR.

The most important (though not the only) environmental impacts from rail travel are gaseous emissions and noise. The specification of the environmental charge would require one to:

- quantify each environmental cost driver;
- quantify the environmental impact; and
- value the impact in monetary terms.

The methodology for quantifying impacts may differ substantially but would be supported by the existing large body of research (e.g. DfT's WebTag methodology).[36] The EC has also stated that it will set out methodology on how to apply charges to capture impacts of noise.[37]

The environmental charge would also need to be applied by type of operator and area of incidence. For noise impacts, it may also require taking account of the time at which train noise occurs. It would therefore be data intensive but be consistent with the principle of cost reflectivity from a social perspective.

Careful application of charges would be important to avoid double counting environmental charges. For example, the cost of carbon for electricity is already covered by the EU ETS at source. Furthermore, the form of the charge may be constrained by EU legislation.[38] As explained below, EU legislation requires, in practice, that environmental charges are revenue neutral for NR. Therefore, this option in practice would achieve a redistribution of charges in the industry while keeping the overall level of funding constant. This would be done by levying the environmental charge and reducing other charges (such as the FTAC) by an equal amount.

In practice, this charge would likely be calculated by attributing a cost imposed on society versus the counterfactual of not travelling / transporting goods. This would be an adequate counterfactual if other modes of transport also included similar charges, as then the charge would facilitate a choice of transport mode taking proper account of environmental factors in that choice. In the absence of such charging in other modes, a charge calculated in this way would have the effect of distorting

[36] Also, for example: INFRAS (2000/04), External Costs of Transport; ITS Leeds (2001), Surface Transport Costs and Charges 1998; and OECD (1994), Internalising the Social Costs of Transport.
[37] 2012/34/EC Article 31 section 5.
[38] Likewise for any environmental charges captured in diesel fuel duty.

mode choice to modes that did not have environmental charging.[39] This is especially relevant for freight, for example, where transportation via rail is less harmful than by road. This charge would not consider the relative benefits versus road. This relative benefit is considered in the state of the world '*Protect Freight*' through a subsidy to freight operators.

Description of counterfactual

There are mechanisms in place to subsidise rail freight in recognition of its positive environmental impact (as opposed to transporting the same freight by road) but the only explicit charge to reflect the negative environmental impact caused by rail traffic is the coal spillage charge. There are also environmental standards embodied in planning and administrative processes such as the Part E of the Network Code and Key Performance Indicators for sustainable development in NR's price review framework.

Environmental impacts are also considered on a case-by-case basis. At PR13 for example, it was decided not to levy a freight-specific charge on carrying biomass fuel due to the risk that it could result in exclusion of the use of the infrastructure by this fuel, which could potentially have wider environmental knock-on effects beyond the transport system.[40]

Relevant factors impacting the form and/or the effectiveness of the option

- EU Legal Framework (Factors Report Section 2.2.)
- Franchising (Factors Report Section 3.2)
- Economic viability of freight/ open access operators (Factors Report Section 4.4)
- Data availability, measurement, and billing (Factors Report Section 4.7)

Impact on stakeholders

Due to EU legislation (2012/34/EU), NR would be held revenue neutral after the application of environmental charges (explained under 'Consistency with law' below). Therefore, charges would be redistributed within the industry but not increased overall.

Open-access and freight operators are exposed to changes in charges in the short term and would therefore be impacted immediately by an environmental charge. This may encourage modal switching (e.g. to road transport) for some services. This may be inefficient if other modes do not pay similar environmental charges. Freight may also be more highly impacted due to potentially higher environmental costs they have (e.g. if freight relies more on diesel locomotives than passenger services and operate at times when the social cost of noise may be greater).

Franchises are protected from changes in charges in the short term. This means that government (and therefore taxpayers) bear the cost of environmental charges. Therefore, those people who bear the environmental cost will also pay for a portion of the charge. However, in the long run an environmental charge will provide price signals that incorporate the environmental cost of running a particular route.

Overall it is likely that freight operators would pay more while others (e.g. franchised passenger services) would pay less due to offsetting environmental charges with other charges (e.g. FTAC) to ensure revenue neutrality for NR. It is therefore unclear what the impact on passengers might be and would be highly dependent on the particular route.

[39] A more appropriate counterfactual would be, for example, transportation by road. However, this would be far too complicated as it would require bespoke calculations for each service and judgements on the alternative routes (by road) and their associated environmental costs.

[40] CEPA (2010) "High Level Review of Track Access Charges and Options for CP5"

Option 6: Environmental charge

Other options that complement and conflict with proposed option

The application of some environmental charges is potentially location-specific, since the social costs of noise and certain kinds of pollution vary by location. Therefore, it requires detailed local knowledge and would potentially complement Charging Option 9 ('Geographic Disaggregation of the VUC'). An environmental component could also be incorporated into the LRMC to capture the social costs of additional capacity.

Due to the requirement of revenue neutrality implied by EU legislation, it is also potentially interlinked with all other charging components. Levying an environmental charge would require one or some of these other charges to be reduced. First Economics noted in a discussion paper that adjusting other charges, especially variable charges, could cause distortions and decrease efficiency.[41]

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
	No clear direct impact.							
Consistency with law	=	=	=	=	=	=	=	=
	The application of environmental charges is restricted by EU legislation (2012/34/EU). Article 31, section 5 notes: *The infrastructure charges referred to in paragraph 3 may be modified to take account of the cost of environmental effects caused by the operation of the train. Any such modification shall be differentiated according to the magnitude of the effect caused.* *… Charging of environmental costs which results in an increase in the overall revenue accruing to the infrastructure manager shall however be allowed only if such charging is applied to road freight transport in accordance with Union law.* Thus environmental charges are clearly legal, and the required application of them in such a way that NR's total revenue would not change is simply what would happen anyway given that NR is regulated.							
Funding of NR efficient costs	=	=	=	=	=	=	=	=
	The lack of equivalent charges on other modes of transport means that the environmental charge would need to be revenue neutral from NR's perspective. Even if equivalent charges were to exist for other modes, EU legislation states that the use of any increased revenues from an environmental charge is to be determined by the State. Therefore, in practice from NR's perspective this charge would simply rearrange its funding sources in a manner unrelated to its costs.							

[41] Ibid.

Allowance for market conditions	-	-	-	-	-	-	-	-
	The environmental charge would disproportionately affect freight and open-access users in the short term if environmental charges were not offset against other charges that they pay. These users may operate on thinner margins than franchisees and may be less able to bear increased costs. In particular, some less profitable passenger services run on diesel and would face a higher environmental charge. There may be some switching of freight from rail to road, which has relatively higher environmental impact. Under the 'Protect freight' state of the world, the adverse impact on freight is mitigated. This is because freight could receive a subsidy for their relative environmental friendliness compared to road haulage and, net of the environmental charge, may still be better off. However the burden on open-access operators persists. We have therefore marked it red.							
A single approach for the network as a whole	=	=	=	=	=	=	=	=
	There is currently no explicit environmental charge. A new charge would be consistently applied across the network. Therefore, there is no change in the extent to which a single approach is applied.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=
	This would not affect service cost recovery as the environmental charge would have to be revenue neutral. However, other charges (e.g. FTAC) would have to be adjusted to ensure this revenue neutrality.							
Efficient whole-system whole -life industry net costs	+	+	+	+	+	+	+	+
	Whole life costs include social costs. If sufficiently large, the environmental charge would incentivise a movement towards more environmentally friendly vehicles and network overall, including electrification. Electric trains are, for example quieter and less polluting and have lower social costs associated with them compared to, say diesel. Without quantifying the environmental impact, it is difficult to tell whether the social benefits outweigh the investment costs. Nonetheless, it will allow social costs to be factored more fully into service patterns. Therefore, this option is graded as green.							
Efficient long run investment decisions	+	+	+	+	+	+	+	+
	The environmental charge could incentivise a movement towards more environmentally friendly vehicles and network overall, including electrification. Electric trains are, for example quieter and less polluting and have lower social costs associated with them compared to, say diesel. Without quantifying the environmental impact, it is difficult to tell whether the social benefits outweigh the investment costs. Nonetheless, it should allow social costs to be captured more accurately and thus long-run investment decisions to be informed by what is socially optimal. Therefore, this option is graded as green.							
Efficient performance management	=	=	=	=	=	=	=	=
	No obvious impact on performance management.							

Efficient use of network capacity	-	-	-	-	-	-	-	-

It is clear that environmental charges need to be considered in the context of the broader transport policy and charges that are levied on other modes. Variable environmental charges (even when the overall effect on NR is revenue neutral) affect mode choice. Introducing a charge to discourage use of the rail network, when equivalent charges are not applied to other modes, could result in inefficient underuse of the railway network. In particular, most road users do not pay for marginal social costs incurred.

This option was previously been rejected by the ORR at CP4 on the basis that rail transport is relatively environmentally friendly and equivalent charges do not exist for other modes of transport.[42]

Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=

The environmental charge itself would be set based on environmental impact that is defined by geography and vehicle type. It may require other charges (such as FTAC) to be adjusted more frequently to ensure revenue neutrality of NR, but this is in practice not a significant departure from current use of the FTAC as a balancing item. Therefore, this option is graded as amber.

Simplicity	-	-	-	-	-	-	-	-

The concept of an environmental charge is very simple and very intuitive but in practice may be very complex to implement. It would require significant data at about impacts at a potentially granular geographic level. It would also require these impacts to be updated periodically to take account of changing urban landscapes (e.g. if new housing is built near a railway this will increase the noise impact associated with running vehicles over that track). This charge would also complicate billing, as operators would potentially have to pay different levels of environmental charge if they cross charging boundaries.

It would also make the role of the FTAC (or charge that would have to be adjusted to ensure revenue neutrality) more ambiguous. Overall, it would complicate the regime. Therefore, this option is graded as red.

Transparency	=	=	=	=	-	=	=	=

As long as the monetisation of environmental impacts is underpinned by the extensive academic literature or other existing government valuation techniques there is no reason why the environmental charge would not be transparent. However, compared with the counterfactual there is no relative increase in transparency. Therefore, this option is graded as amber.

In the 'Protect freight' state of the world the environmental charges, which may affect freight, may be combined with other environmentally related subsidies for freight (for example to allow them to benefit from their relative environmental friendliness compared to road haulage). This would make the net charge applied to freight less transparent as it conflates two opposing charges. Therefore, the option is graded as red in this state of the world.

[42] ORR (2007) "Advice to Ministers and framework for setting access charges"

Low transaction costs	-	-	-	-	-	-	-	-
	The application of environmental charges would require data on route geography, affected population and type of operator/vehicle. This relatively high data burden would increase the transaction costs compared to the counterfactual, therefore given Red.							
Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	=	=	=	=	=	=	=	=
	No obvious impact on NR accountability.							
Non-arbitrary allocation of costs	+	+	+	+	+	+	+	+
	There is no impact on the cost reflectivity in terms of costs incurred by NR in providing services. However, it would attribute higher costs to those operators that impose greater environmental costs. Therefore, the social cost reflectivity is greater, therefore given Green.							
Optimal traffic growth	-	-	-	-	-	-	-	-
	The environmental charge will encourage a switch to road transport to some extent. This may have a detrimental impact on traffic growth in rail. Without equivalent charges for road transport, it is likely that this will cause a movement away from the socially optimal split of rail/road usage. This may be different from the optimal traffic growth from a net cash perspective, for which there is no obvious benefit. Assuming the socially optimal split between rail/road is desirable, this option is graded as red.							
Aligning industry incentives	=	=	=	=	=	=	=	=
	No clear direct impact.							
Value for money for funders, taxpayers and users	-	-	-	-	-	-	-	-
	It is not clear that environmental charges provide value for money compared to the counterfactual. The requirement for environmental charges to be revenue neutral for NR means that other charges/ revenue sources need to be adjusted downwards. In theory, this could be any charge but, as discussed above, would likely be the FTAC. Therefore, there is no clear benefit or detriment to value for money for taxpayers. There may be value for money as a result of higher incentives on electrification and the relatively lower social impact of electric vehicles. On the other hand, there will be a detriment to value for money due to mode inconsistency. The environmental charge will encourage a switch to road transport to some extent, which is generally found to be more environmentally harmful. This latter impact is likely to be larger than the former. Therefore, this option is graded as red overall.							

Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	-	-	-	-	-	-	-	-

While an environmental charge would provide a mechanism by which additional social costs of rail usage are internalised by operators and also serve to incentivise more environmentally friendly practices we find that the main obstacle is the lack of equivalent charges in other modes. At PR08 environmental charges were dismissed by ORR for these same reasons. Charging based on net environmental impacts versus road could solve the problem of asymmetric charging in rail versus road, but this would add to the complexity of calculating charges.

There is a real risk that environmental charges would encourage some users to switch to alternative modes of transport (e.g. freight moving to road) that would be relatively more harmful to the environment.

It may be possible that environmental protection could be encouraged through other means such as incentives to reduce emissions (e.g. through electrification) and energy efficiency designs (e.g. of rolling stock). NR has set out a number of possible non-charging initiatives in their Sustainable Rail Programme document *Managing rail's environmental impacts in CP5 and beyond*.

Option 7: Reservation charge

The current variable charges neither capture short-run nor long-run marginal scarcity costs. A reservation charge would force users to value network capacity by requiring a generally non-refundable deposit to secure capacity. This would encourage operators to manage their network usage more efficiently and discourage booking capacity beyond what they predict will be required. Options for the mechanics of a reservation charge would need to be considered further but it would likely be classified as a cost directly incurred, based on a prepayment of a portion of an existing charge e.g. the VUC. The financial impact would only be felt if reserved right were not used. Some examples of reservation charges, HS1 for instance, allow for some/all of the deposit to be returned if a booked path is not required, returned and subsequently used by another operator.

Key characteristics

Description of option

In this option, NR would levy an upfront capacity reservation charge (deposit) on capacity that is booked. This fee would not be returned if the capacity were unused. HS1 levies such a charge to discourage block booking of capacity that might be used by other operators and to provide certainty of available capacity where new services are being added. On HS1, the charge is set for train operators at 25% of the applicable investment recovery charge and for freight at 25% of OMRC. The mechanism also provides an incentive to return unused capacity where this capacity is then used by another operator.

Description of counterfactual

Planning processes in the rail industry such as ORR's Track Access Policy, Route Utilisation Strategies (RUSs) and the Network Code currently guide industry decision making regarding the level, type and pattern of traffic on the GB rail network. They are used as the principal mechanisms for incorporating capacity utilisation and path reservation/ holding into industry decision making. Introduction of a reservation charge would involve adopting a more explicit price incentive approach to capacity utilisation and route allocation compared to the planning approaches currently adopted in the GB rail industry.

Relevant factors impacting the form and/or the effectiveness of the option

Practical issues relating to the imposition of a opportunity costs based scarcity charge (by reference to the factors report) include:

- 4.4 Economic viability – a reservation charge may have a detrimental impact on operators that require some degree of flexibility to accommodate seasonal demand etc.…
- 4.7 Data Billing etc. – although more straightforward than an administered scarcity charge we are advised by Network Rail that there may be issues with updating the current billing system to allow for billing a reservation charge deposit.

However a form of reservation charge could be more straightforward to implement than an opportunity cost based scarcity charge (see options 3 and 4) since it would likely be built around prepayment of a charge already known. For instance HS1 applies a flat fee approach i.e. the fee does not vary by location or time of day.

Impact on stakeholders

Under current franchising arrangements, a reservation charge would likely have little impact on franchised passenger operators between franchise competition processes, assuming existing protections extend to reservation charges and that franchised operators continue to have limited scope to change the level of service that they offer. However, to the extent that franchised operators have some scope to change the level of service, both during the franchise and when bidding, it could have some impact at the margin.

Option 7: Reservation charge

Such a charge, depending on its structure, could significantly and adversely affect train operators that require a degree of flexibility– the most obvious example being in relation to demand for freight commodities which can be seasonal, subject to other short-term variations, and generally be subject to a greater degree of change/amendment than passenger services.

In SoWs that increase franchise flexibility and competition, this option could have more impact. The opposite would be true where franchises are more highly specified and/or freight has a greater degree of protection from charges.

Other options that complement and conflict with proposed option

It would be necessary to consider the role of reservation charges alongside other related charges e.g. the capacity charge which also has some effect on congestion.

When considered previously by ORR[43] its initial preference was for the charge to contribute to enhancement costs with acknowledgement that the overall financial contribution would likely be small. ORR asked NERA[44] to consider the case for such a charge (as a charge not a prepayment as is the case on HS1).

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
	There is no clear/direct impact of this charging approach on system safety. It is likely to lead to a reallocation of capacity with the result that this option will not materially change the status quo.							
Consistency with law	=	=	=	=	=	=	=	=
	Regulation 15(1) of the Railways Infrastructure (Access and Management) Regulations 2005 provides for a capacity reservation charge: 15.—(1) *The infrastructure manager may levy an appropriate charge for capacity that is requested but not used, and the imposition of this charge must provide incentives for efficient use of capacity.*							
Funding of NR efficient costs	=	+	+	-	-	=	=	=
	If funds raised from the charge were regarded as a contribution to enhancement costs, then there may be some positive impact on this criterion but this would depend on the value attached to the charge. When these were considered previously ORR suggested that the charge would be low. However, there is also a potential benefit in reallocation of/ optimal use of existing capacity with consequential impacts on enhancement costs. In SoW where there is more competition for capacity, this option would have greater impact, although other capacity-based options might be even more beneficial. Where there is less competition/greater protection the option would deliver little if any added value.							

[43] http://orr.gov.uk/__data/assets/pdf_file/0006/3597/chargestruct_wrkshp_140706.pdf
[44] http://orr.gov.uk/__data/assets/pdf_file/0016/3733/cnslt-NERA-report_pv.pdf

Allowance for market conditions	=	=	=	=	=	=	=	=
	Most operators require some degree of flexibility to manage seasonal demand or new requirements as they arise. For example current freight access rights make allowance for this through differing categories of right which range from fixed rights through to options to use additional spare capacity. Reservation charges raise the issue of how this required flexibility in traffic levels would be managed.							
A single approach for the network as a whole	=	=	=	=	=	=	=	=
	This approach, as per the current planning led approach, could be applied to all operators irrespective of type. This is the case on HS1.							
Objectives	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=
	This option has no direct impact on cost recovery.							
Efficient whole-system whole-life industry net costs	+	+	+	+	+	+	+	+
	This approach could be beneficial, at least at the margin, in reducing the need to fund additional capacity. As noted elsewhere, the scale of the benefit might be limited and would need to be considered in further analysis. The positive effects of this option might be more significant in SoW where there is greater competition.							
Efficient long run investment decisions	=	=	=	=	=	=	+	=
	This approach could be beneficial, at least at the margins, in identifying areas where capacity is truly constrained and ensuring optimal use of the assets before enhancement is considered. In a SoW that places greater overall emphasis on efficient use of capacity, this option might have benefit over current arrangements that rely on historic access rights.							
Efficient performance management	=	=	=	=	=	=	=	=
	This option has no direct impact on the occurrence of disruption.							
Efficient use of network capacity	+	+	=	=	+	+	+	+
	A reservation charge provides a financial incentive to more carefully consider the capacity required to operate services rather than rely on pre-existing rights, which are perhaps insufficiently dynamic to reflect ongoing changes to demand patterns. The effect of this option might be greater in those SoWs where there is greater competition, but would have little or no effect in states where wider protections are given to operators.							
Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	-	-	-	-	-	-	-	-
	May adversely affect predictability of charges, e.g. for freight which are inherently subject to some degree of volatility e.g. seasonal demand for coal.							

Simplicity	=	=	=	=	=	=	+	=
	While this is the most straightforward of the scarcity related options there is nothing to suggest that it would be simpler to administer than the current arrangements, which appear to be well understood. This option would have the advantage of simplicity in a SoW that places greater emphasis on the value of capacity.							
Transparency	+	+	+	+	+	+	+	+
	Current access arrangements are established in bilateral contracts that are not necessarily publicly available or easy to review. The imposition of a reservation charge would bring greater transparency to use of capacity and may result in overall more optimal use of the network.							
Low transaction costs	-	-	-	-	-	-	-	-
	Imposition of reservation charges would imply a degree of monitoring and management that does not currently exist and concerns have been expressed by Network Rail about the ability of the current billing system to implement the option of a deposit based system. Offsetting the costs of this would be the benefit of identifying underutilised capacity that could be used more effectively and which might offset some investment costs.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	=	=	=	=	=	=	=	=
	Reservation charges would in principle place greater emphasis on NR's management of capacity and its ability to obtain optimal utilisation of the network. Arguably existing efficiency incentives e.g. the efficiency assumed by ORR in its determination of costs, have a similar effect currently in incentivising NR to make best use of existing assets before investing further.							
Non-arbitrary allocation of costs	=	=	=	=	=	=	=	=
	A reservation charge could be levied as a flat fee for simplicity or variable basis to reflect the opportunity cost of the capacity not taken up. HS1 applies an arbitrary 25% of the applicable access charge (IRC/ORMC) presumably for reasons of simplicity.							
Optimal traffic growth	=	+	+	=	=	=	=	=
	A reservation charge should contribute to all the objectives of this criterion but the scale of the benefits may not be great overall given the need to maintain some flexibility and given the lower incentive effect of a deposit based system over a new charge. The option could be more positive in SoW where there is greater competition since it could free capacity for use by other operators.							
Aligning industry incentives	+	+	+	+	+	+	+	+
	This option recognises that industry incentives may not be aligned and places weight on industry participants giving up unused access. Current planning based approaches seek to achieve the same thing but the imposition of a pre-payment mechanism creates a common basis for discussions and should improve transparency.							

Value for money for funders, taxpayers and users	+	+	+	+	+	+	+	+

A reservation charge should contribute to all the objectives of this criterion but the scale of impact may not be great overall given the need to maintain some flexibility for freight operators and given the lower incentive effect of a deposit based system over a new charge.

Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	+	+	+	-	-	=	+	=

In the current SoW, reservation charges could have some positive benefits in incentivising better use of existing capacity but in some forms could significantly adversely impact freight and small passenger operators (e.g. Charter). Impacts on franchised passenger operators under the current regime are likely to be small given that the current arrangements provide protection from change and limit the scope to change service levels. This form of scarcity management has some precedent given that it is in use on HS1 and is being considered for Crossrail.

Assuming adverse impacts could be managed such that freight and other smaller operators retain the flexibility required, the overall benefit could be positive but may be small. More detailed analysis would be required to assess whether likely benefits outweigh issues such as the transaction costs involved in introducing and managing a reservations system.

In alternative SoWs that introduce greater rail competition or which place greater emphasis on the value of capacity this option could have higher positive impact (although it would need to be weighed against other options for value based charging). In SoW where operators have increased protection from change, the option would have less impact.

Option 8: Track occupancy charge

Currently, fixed charges are allocated between train operating companies based on shares of traffic metrics. Under this option, fixed charges would be allocated based on the duration of scheduled journeys. It could be used as a method to charge for capacity when there are capacity constraints.

Key characteristics

Description of option

A track occupancy charge is seen as a relatively simple way to charge for capacity where there are capacity constraints. Fixed charges would be assessed based on scheduled journey times of timetabled services in minutes instead of current traffic measures. We envisage that this type of charge would apply to both passenger and those freight operations that could bear the charge.

Charging based on time on track would result in proportionately higher charges being paid by train services running below the average speed. It is based on the assumption that capacity constraints result in bottlenecks that increase journey times such that measures of time on track are reflective of capacity constraints.

This method of charging is used as part of the track access charging framework for HS1. That framework provides that track access charges may include:

- an investment recovery charge (to recover the costs relating to the construction of HS1 and, potentially, any further investments in relation to HS1); and
- a charge to recover operating and maintenance costs and lifecycle repayment (renewal) costs (OMRC).

The principles of the investment recovery charge are to reflect the usage of the HS1 through line by train operators and to recover a significant part of the long-term capital costs of the HS1 project over the life of its concession. The charge is set in terms of track occupancy (i.e. time spent on the HS1 through line) through a maximum charge per minute per train service per timetabled path (not actual paths used). The apportionment of costs for the OMRC charge is also set on basis of minutes used of the HS1 through line. As for the HS1 framework, we assume that stopping time at stations would be removed from the time on track measure to avoid disincentivising stopping services. While we do not know if it would be feasible, similar arrangements could be put in place for time spent by freight trains in passing loops to allow faster services to pass.

It is worth noting that the track occupancy charge option could be applied to assess charges corresponding to both variable and fixed costs. We envisage, however, that this option would likely be used for the latter. We assume that variable costs such as wear and tear would be most accurately captured through engineering estimates based on traffic metrics rather than time on track. One open access operator noted that they could not easily identify any directly incurred cost type charges that would scale with time on track.

Description of counterfactual

Cost allocation for the variable element of NR's forward looking efficient costs is calculated based on vehicle type share of total 'equivalent' gross tonne miles but, as noted above, we do not envisage that this method of charging would be used to recover direct variable costs.

Cost allocation for the fixed charge is based on similar principles, whereby the fixed charge is allocated between train operating companies based on relative vehicle miles by each operator. Fixed costs are not apportioned to freight operators.

Relevant factors impacting the form and/or the effectiveness of the option

- Franchising (Factors Report Section 3.2)
- Track access arrangements (Factors Report Section 3.3)

Option 8: Track occupancy charge

- Network scope and specification (Factors Report Section 4.3)
- Economic viability of freight/ open access operators (Factors Report Section 4.4)

Impact on stakeholders

Applying this option would mean that some freight operators would pay a share of the fixed costs, which currently they do not. Under this option, all else being equal, slower train services such as freight would face higher charges and faster train services such as inter-city traffic would face lower charges.

Other options that complement and conflict with proposed option

As a relatively crude form of scarcity charge, use alongside another charge focused on scarcity such as a LRMC scarcity charge (Option 3), administered scarcity charge (Option 4) or auctions (Option 5) could result in double counting of scarcity costs.

The track occupancy charge option could complement the avoidable cost option (Option 1) but only for the allocation of common costs as an alternative to other traffic measures that act as proxies for the network capacity occupied by each train service.

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
	There is no material impact of this charging approach on system safety. Although it should be noted that there is an incentive to introduce faster trains, which should be overseen by regulators to ensure system safety is not at risk. Given that is option is seen as a method for allocating fixed costs, it should not encourage any given train to run faster on a day-to-day basis.							
Consistency with law	=	=	=	=	=	=	=	=
	We expect that precedent from the HS1 concession indicates that this option would be consistent with legal requirements. **Further legal analysis is required in this area.**							
Funding of NR efficient costs	=	=	=	=	=	=	=	=
	This approach relates to how fixed costs are allocated to (and thus paid for by) different operators so it is not expected to affect the overall level of funding of NR. An assumption here is that the resulting allocation would not remove operators from the market causing a negative impact in NR funding, or that any such impacts would somehow be compensated for by the regulatory regime, at least in the long term.							
Allowance for market conditions	=	=	=	=	=	=	=	=
	Introducing track occupancy charges to allocate fixed costs would result in freight charges for some commodities being set at higher than wear and tear levels, which depending on application may mean that freight operators might require greater protection as in SoW "protect freight." However, as we expect that fixed charges allocated using track occupancy would be applied as mark-ups, not costs directly incurred, we expect that the protections to avoid charges above the level any given market could bear would bind.							

A single approach for the network as a whole	+	+	+	+	+	+	+	+
	The track occupancy charges would be applied across the network. This criterion has been marked positive, as the current allocation is only applied to franchised passenger operators.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=
	Track occupancy charges have the potential to be more cost reflective than the status quo if scarcity costs are highly correlated with time on track. However, track occupancy charges are a relatively blunt tool such that the improvement of cost-reflectivity for peak services may come at the expense of higher charges for trains at less busy times, where the cost of track occupancy is lower.							
Efficient whole-system whole-life industry net costs	=	=	=	=	=	=	=	=
	Track occupancy charges would potentially change the balance of passenger and freight charges, presumably leading to lower passenger charges and higher freight charges. Such a change could be expected to lead to a change in the mix of services provided, altering both the balance of passenger versus freight and the pattern of services provided by passenger and freight operators. The potentially significant impact this option could have on freight would not apply to the 'protect freight' SoW, as it would be neutralised by an explicit policy decision to support freight. However, there would still be a rebalancing between passenger operators running at different speeds, recognising that in the long term, at least some slower services are more costly in terms of use of capacity. We note however, that in the shorter term because of the way that train scheduling works in mixed railways, fast trains could put more strain on the network than slow trains (see discussion in 'Non-arbitrary allocation of costs' criterion). Overall, because the signals given by this option are so broad, it is hard to say if it performs better or worse than the current method for allocating fixed costs.							
Efficient long run investment decisions	=	=	=	=	=	=	=	=
	As discussed above, track occupancy charges might be more cost reflective than the status quo at least for some operators. This has the potential to incentivise more efficient long-term investment decisions, especially if the charges are applied to constrained parts of the network. However, providing effective investment incentives requires a regulatory regime that is fully aligned with that objective. The track occupancy option for the current SoW has been marked neutral as the current regime has a number of features that would reduce the effectiveness of the investment incentives. In particular, the central planning nature of the investment decision making process. The point here is that price signals do not matter (or matter less) if decisions are taken centrally considering other variables. However, even in SoWs such as 'beneficiary pays,' where central planning features are reduced, enabling more effective investment incentives, the signals that would be provided are so untargeted that it is not clear that a more efficient overall outcome would be achieved. Track occupancy charges would approximate a form of capacity charge, but they would not fully reflect the opportunity cost of scarce capacity.							

Efficient performance management	=	=	=	=	=	=	=	=
	This option might relieve some congestion in certain SoWs but there is not a clear direct impact of this charging approach on performance management.							
Efficient use of network capacity	=	=	=	=	=	=	=	=
	As discussed above, track occupancy charges might be more cost reflective than the status quo for some services but the ability for this option to provide efficient signals for the use of network capacity overall depends on the uncertain correlation between time on track and capacity constraints. If the correlation were found to be positive and strong on a mixed-use railway, this option has the potential to encourage efficient use of network capacity. However, providing effective use of capacity incentives requires a regulatory regime that is fully aligned with that objective such that any such benefits could only be established in SoWs such as "Dynamic railway" and "On-rail comp."							
Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=
	There is not a clear direct impact of this charging approach on predictability. If more complicated versions of this option were implemented (e.g. based on actual times rather than timetabled times), predictability could become an issue.							
Simplicity	=	=	=	=	=	=	=	=
	Provided the Track occupancy charges are based on timetabled paths (not actual paths used) and scheduled journey times of services (as is the case for HS1) this is likely to be relatively simple to administer as timetabling decisions and planning frameworks are already in place for NR and train operating companies.							
Transparency	=	=	=	=	=	=	=	=
	There is not a clear direct impact of this charging approach on transparency.							
Low transaction costs	=	=	=	=	=	=	=	=
	There is not a clear direct impact of this charging approach on transaction costs.							
Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	=	=	=	=	=	=	=	=
	There is not a clear direct impact of this charging approach on NR accountability.							

Non-arbitrary allocation of costs	=	=	=	=	=	=	=	=
	As method to allocate fixed costs, track occupancy has significant drawbacks when applied on mixed railways. Because of the way that train scheduling works in mixed-use railways, it is not necessarily the case that the slow trains place more strain on the timetable. It could actually be the reverse, depending on the pattern of traffic. In other words, this charge is appropriate on HS1 because it is a high-speed railway, and on high-speed railways we can say that a slow train imposes greater costs through disruption than high-speed trains. On mixed railways this less certain, particularly if there is infrastructure in place such as passing loops. As a result, we have marked this criterion as neutral in all SoW as it is not clear that it would result in an allocation of costs that is any more or less arbitrary than for current fixed charges.							
Optimal traffic growth	=	=	=	=	=	=	=	=
	As a relatively blunt form of scarcity charge, it is not clear that its introduction would result in traffic growth that is any more or less optimal than with the current use of traffic metrics.							
Aligning industry incentives	-	-	-	-	-	-	-	-
	This charge would give operators an incentive to run faster trains or as noted by one freight operator, it might at least give them a strong incentive to get priority in setting the timetable. It might give NR a perverse incentive to slow-down train services if applied as part of variable charges but we expect that if use were restricted to fixed charges, that incentive would be removed. A track occupancy charge is likely to be most effective in a single use network but we have concerns that that the HS1 experience, with limited freight operations, could be scaled-up to the network as a whole. In particular, in a mixed-use network, there may be value in making slow train services even slower than they would if operating in isolation if that can make other trains run faster. The overall network might be operated more efficiently if for example freight operators wait in passing loops to allow faster trains to pass. We expect that a track occupancy charge would work against such existing practices that facilitate the mixed-use nature of the network. As noted in the description of this option, it could be possible to remove some of this incentive by excluding time spent in passing loops but we are not sure if that would be feasible or produce the desired effect in practice.							
Value for money for funders, taxpayers and users	=	=	=	=	=	=	=	=
	For all the reasons discussed above, it remains unclear if this option would lead to increased value for money for funders, taxpayers and users.							

Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	-	-	-	-	-	-	-	-
	Track occupancy charges might be seen as a simple way to introduce scarcity costs into charges but it is hard to tell if overall the blunt, potentially mixed signals they might send in a mixed use network would perform any better than current traffic metrics for allocating fixed costs. There was consensus amongst participants at the RDG Review of Charges workshop on 25th August 2015 that while this option has been implemented on HS1 it is not appropriate for a complex mixed-use network where there is a risk it could create perverse incentives and have detrimental impact on freight.							

Option 9: Geographic Disaggregation of the Variable Usage Charge

The VUC covers marginal wear and tear costs associated with the use of the network. It is currently disaggregated by vehicle type, but not by geography. A more geographically disaggregated VUC would more accurately reflect the marginal costs associated with different types/ages of track, which may vary significantly across the network.

Key characteristics

Description of option

The VUC covers wear and tear costs directly caused by the passage of trains. Currently the VUC only differentiates the charge by vehicle type, but the cost also varies according the nature of the track. Under this option, the variable usage charge (VUC) would be applied at a more granular level to also to capture different wear and tear costs by track type and location.

The rationale behind this option is that it may allow for a higher degree of cost reflectivity. A geographic split of the VUC would ensure that network users pay proportionately based on their impact on the parts of the network they use.

In particular, the impact on tracks is driven by a number of factors such as:[45]

- type of track structure;
- track condition;
- elapsed time;
- curvature;
- topography; and
- location.[46]

The same principles of the VUC itself would not necessarily change compared to the counterfactual, but rather it would have to be calibrated and applied at a more granular level to take account of the above factors.

This can be done at various levels of geographical disaggregation (e.g. by region and/or by route). An important consideration on the level of granularity would be the extent to which track types differ across say, lines, routes or regions. This is important because as the granularity decreases (i.e. less geographic disaggregation) the geographic unit will be made up of various different types/age of track that may have a range of direct usage costs associated with them. These would necessarily have to be averaged unless a more granular approach is taken. Network Rail has therefore previously argued that a disaggregated VUC would likely have to capture NR's c.300 strategic route sections in order to avoid the loss in cost reflectivity from averaging.[47]

The implementation of this option also requires geographic data to be sufficiently developed and reliable to support the calibration of the VUC. For example, ORR has expressed concern that in the work done by NR on route based charging, that their estimates of the VUC were not sufficiently robust, in particular related to how usage costs varied with curvature.[48]

ORR has in the past considered a separate VUC for Scotland as opposed to England and Wales. This is only a relatively minor deviation compared with the current VUC that is applied GB-wide. For the purposes of this assessment we consider geographic disaggregation to be a more granular level than

[45] CEPA (2010) "High Level Review of Track Access Charges and Options for CP5"
[46] The cost of correcting to track wear can vary with location, for example because of accessibility and the local costs of doing work.
[47] NR (2011) "NR letter to ORR – Geographic disaggregation of the variable usage charge"
[48] ORR (2008) "Update on the framework for setting outputs and access charges and SBP assessment" p78.

this, such regional or route based[49] (though we do not specify exactly what the level of granularity should be).

Description of counterfactual

Currently the VUC captures the maintenance/renewal costs of tracks, civil structures and signalling to the extent they experience wear from usage – they also experience significant wear simply from weather and the passage of time. Equivalent charges are applied across the network. It is currently calculated based on national average usage costs associated with a 'representative' track section.[50]

There are separate VUCs specified by vehicle type and it is therefore cost reflective in the sense that vehicles with a high rate of wear will pay a higher cost. However, all vehicles will pay the same level of VUC regardless of whether they run on, for example, a main line or a branch line, constructed to quite different standards, which will both experience different wear due to the passage of traffic, and have different maintenance costs in response to that wear.

The VUC methodology was amended for CP5 (compared to CP4) and is based on a number of factors such as: axle load, operating speed, unsprung mass and bogie primary yaw stiffness (indicative of its curving ability).[51] ORR consulted on geographic disaggregation of the VUC at PR13 decided not to pursue it due to the relatively high level of complexity it introduced.[52]

Relevant factors impacting the form and/or the effectiveness of the option

- **Economic viability of freight/ open access operators** (Factors Report Section 4.4)
- **Data availability, measurement, and billing** (Factors Report Section 4.7)

Impact on stakeholders

Open-access: this will introduce an additional price signal to open-access operators that was not previously present. Inevitably, the VUC would rise in some cases and fall in others, possibly quite materially. Therefore, it is difficult to predict the impact on open-access operators though there may be viability and route planning implications.

Freight: Significant concerns were raised at PR13 about the potential impact of geographic disaggregation of the VUC on freight and the resulting ability to compete with road. It was also recognised that undue burden should not be placed on freight operators having to pay multiple different VUCs, as their vehicles would inevitably cross VUC charging boundaries. This is also true for some passenger services, and was raised as a concern by NR,[53] but as with open-access, it is unclear whether the VUC would on balance be higher or lower than the counterfactual. Nonetheless, there may be implications for viability and route planning.

Franchised operators: Franchisees are protected in the short-term from changes in the VUC. In the long term, a geographic VUC would signal more clearly the true cost of operating on particular routes to franchisees and their funders. This could also affect the longer-term subsidy requirements of particular franchised services and routes.

Network Rail: This should not impact NR's ability to finance itself but it is clear that there will be transition costs associated with incorporating a greater level of detail into its billing system. By comparison, geographic variability in charging for electric current took 2 years and £7.5 million to

[49] Alternatively the c.300 strategic route sections suggested by NR. NR (2011) "NR letter to ORR – Geographic disaggregation of the variable usage charge."
[50] NR (2014) "The Variable Usage Charge (VUC) in CP5"
[51] NR (2014) "The Variable Usage Charge (VUC) in CP5"
[52] ORR (2013) "Draft determination of NR's outputs and funding for 2014-19" p470.
[53] NR (2011) "NR letter to ORR – Geographic disaggregation of the variable usage charge"

Option 9: Geographic Disaggregation of the Variable Usage Charge

implement.[54]

Other options that complement and conflict with proposed option

Scarcity charge: Geographically disaggregating the VUC has the potential to alter incentives for using different parts of the network that could be mitigated by an accompanying scarcity charge.

Citing NR's work at PR08, it was noted by ORR that the marginal maintenance / renewal costs of using busy mainlines is relatively low compared to rural lines (see table below).[55] This is in part due to the fact that NR's asset management regime that adapts in step changes to higher traffic volumes while the VUC focuses on marginal impacts of traffic. NR note that, if the VUC were to focus on the marginal cost "at the point of the step change" then the relationship between VUC and traffic might well be the opposite.[56]

Table 6.1: Network Rail's variable cost estimates by route category and track curvature

£ per kgtkm (2006–07 prices)	All curvature	'Straight'	'Mixed'	'Curvy'
Network average	1.79	1.48	2.24	3.20
Primary	1.30	1.10	2.12	n/a
London & South East	1.84	1.61	2.29	n/a
Secondary	3.04	2.88	3.00	6.19
Freight	2.58	1.81	3.13	n/a
Rural	6.44	5.27	6.63	9.58

Source: ORR (2008)[57]

Both CEPA and ORR raised concerns that this could alter the long-term incentives for using different parts of the network, as operators would be encouraged to move vehicle from less congested lines to more congested lines. They both noted that this would be mitigated by the use of a scarcity charge, while ORR went as far to say that route based charging would not be applied without an accompanying scarcity charge.[58, 59]

Other charging options: This option would complement the environmental charge and LRMC options, as there are similar difficulties in their application in that they also require specification by geography.

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
	No clear direct impact.							
Consistency with law	=	=	=	=	=	=	=	=
	No clear direct impact							

[54] Ibid.
[55] ORR (2008) "Update on the framework for setting outputs and access charges and SBP assessment" p76
[56] NR (2012) "NR letter to ORR – Geographic differentiation of variable usage charges"
[57] ORR (2008) "Update on the framework for setting outputs and access charges and SBP assessment". p77.
[58] Ibid. p78.
[59] CEPA (2010) "High Level Review of Track Access Charges and Options for CP5"

Funding of NR efficient costs	=	=	=	=	=	=	=	=

This option would more accurately reflect the marginal cost of travelling over the network. Efficient costs should therefore be more apparent/ more accurately measured (i.e. users will pay for costs actually incurred). While this more precise allocation of costs may be desirable (e.g. from a regulatory perspective) it does not necessarily imply that NR is more able to recover efficient costs overall. Therefore, this option is graded as amber.

Allowance for market conditions	-	-	-	-	=	-	-	-

Some parts of the network may experience an increase in the VUC compared to the counterfactual while others may experience a decrease. Therefore, it is difficult to predict how this will affect network users. There has been concern raised by NR and echoed in ORR's PR13 Draft Determination that a geographic VUC may cause viability issues for freight operators. This concern is legitimate, but is mitigated for freight in the 'Protect freight' SoW. Therefore, this option is graded as amber in the 'Protect freight' SoW and red in all others.

For rural services, where a route based VUC could be higher than mainlines, it may put pressure on the viability of these services. This may lead to the requirement of additional subsidies for services on these routes or more highly specified franchise agreements if these services were to continue.

A single approach for the network as a whole	=	=	=	=	=	=	=	=

The geographical de-averaging of the VUC would lead to a VUC that is more 'bespoke' by nature than the current VUC. However, this does not mean that the methodology would itself be different across the network. That is, the VUC would be calibrated for different cost drivers across the network and this would be done in a consistent manner. In that sense, it is no less of a single approach than the current VUC. Therefore, this option is graded as amber.

Objectives	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=

This option would provide a more cost reflective VUC and therefore ensure that NR receives funding that reflects more closely actual costs that are (or will be) incurred. Overall it should not provide significant risk to service cost recovery, but neither does it provide convincing benefits versus the counterfactual (which is itself cost-reflective on a vehicle-type basis). Therefore, this option is graded as amber.

Efficient whole-system whole -life industry net costs	+	+	+	+	+	+	+	+

A geographic VUC would be more reflective of efficient costs. It would also send stronger price signals that in theory will cause rail users to change their behaviour and lead to a more allocative efficient outcome.[60][61] Therefore, this should enable changes in patterns of service that result in benefits exceeding efficient costs directly incurred.

Therefore, this option is graded as green.

[60] However, as mentioned previously scarcity charges may be required to prevent users moving trains to already congested parts of the network.

[61] The extent to which rail users change their behaviour will depend on their price elasticity of demand.

Efficient long run investment decisions	+	+	+	+	+	+	+	+
	More accurate and clear price signals should increase market efficiency. As CEPA (2010) describes, a more localised short-run marginal cost should increase allocative efficiency of network capacity relative to geographically averaged charges.[62] This in turn may lead to more efficient consumption and investment decisions. In particular, investment decisions may become more efficient under the 'Regional powers' SoW as the cost reflectivity of the charge would allow more informed investment decisions to be made at the local level. Therefore, this option is graded as green.								
Efficient performance management	=	=	=	=	=	=	=	=
	While a more cost reflective VUC may encourage a more efficient use of the network it is not clear that this necessarily implies an improvement in the efficiency of the performance management regime. Therefore, this option is graded as amber.							
Efficient use of network capacity	+	+	+	+	+	+	+	+
	More accurate and clear price signals should increase market efficiency and more localised short-run marginal cost should increase allocative efficiency of network capacity. As CEPA (2010) describes, a more localised short-run marginal cost should increase allocative efficiency of network capacity.[63] For example, if the current VUC is above the geographic VUC than some operators may be priced off the network. Conversely, if the current VUC is below the geographic VUC than some operators will be running services that are economically inefficient. However, having geographically defined VUCs (e.g. at the route level) does not transmit signals about scarcity of network capacity any better. As mentioned above, ORR also mentioned that a route based VUCs would encourage operators to use more congested lines and would have to be accompanied by a scarcity charge to mitigate this. It is clear that the VUC does not capture scarcity costs, and if that is not addressed it is capable of making worse the problems of not properly recognising those scarcity costs. However, under all states of the world, provided other distortions in charging were also addressed, it would help allocate traffic to parts of the network that have the lowest marginal wear and tear costs and therefore be more economically efficient than the counterfactual. We rate it green because it is capable of being an important and valuable measure that would improve the efficiency of network usage. Nevertheless, it needs to be recognised that it may only achieve that do so when properly combined with complementary measures.								
Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=
	The initial specification of the charge may cause some confusion in the industry, as changes to route-level VUCs may initially be unpredictable. However, once the methodology is set it should not be any less predictable than the current VUC. Therefore, this option is graded as amber.							

[62] CEPA (2010) "High Level Review of Track Access Charges and Options for CP5"
[63] Ibid.

Simplicity	-	-	-	-	-	-	-	-
	NR are of the view that in order to properly apply geographic disaggregation the level of detail required would be far beyond what is currently collected and would be, in practice quite complex. CEPA (2010) shared the view that regional marginal cost pricing could lead to a more complex regime overall.[64] Undoubtedly, more granular detail on the VUC would imply a more complicated calculation due to regional calibration of the charge. There would also be increased regulatory burden from the need update geographic VUCs network enhancements as the quality and age of rails would impact the marginal wear and tear costs. Furthermore, it would complicate billing for operators that cross charging boundaries and would pay multiple VUCs. Therefore, this option is graded as red.							
Transparency	=	=	=	=	=	=	=	=
	Transparency is not currently an issue with the VUC as it follows a clear methodology. A geographically disaggregated VUC would also be based upon a methodology, only this would be at a more granular level. Therefore, overall there is no clear benefit or detriment to transparency of the charging regime as a whole. Therefore, this option is graded as amber.							
Low transaction costs	-	-	-	-	-	-	-	-
	The introduction of multiple charging areas creates a more complex billing process for companies. This would undoubtedly lead to higher transaction costs. Therefore, this option is graded as red.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	+	+	+	+	+	+	+	+
	The increased cost reflectivity of the VUC means that there is potentially more clarity in NR's maintenance/renewal performance versus what is implied by the VUC. This would increase the ability to benchmark costs across geographic areas (e.g. routes). Therefore, this option is graded as green.							
Non-arbitrary allocation of costs	+	+	+	+	+	+	+	+
	Currently there is one VUC for the whole network. A geographic VUC would be more cost reflective and by definition allocate costs to network users in a less arbitrary manner than the current blanket approach. Therefore, this option is graded as green							

[64] Ibid.

Optimal traffic growth	+	+	+	+	+	+	+	+	The geographic VUC would not capture any scarcity costs, only differing marginal costs of wear and tear across the network. There will be a mix of impacts on various operators and may adversely affect some services that are valued by customers (e.g. rural services). Nonetheless it should allow for more efficient industry costs, investment decisions and capacity usage as described above, allowing the network to get closer to 'optimal traffic growth'. Under the 'Specified franchises' SoW, the ability of franchisees to react to changes in demand is curtailed. A geographic VUC would likely do little in this case to change this compared to the counterfactual charging regime. However, it would still allow price signals to flow through to open-access and freight operators. Therefore given Green, given its potential, but it needs to be recognised that it may only achieve that when properly combined with other complementary measures.
Aligning industry incentives	=	=	=	=	=	=	=	=	By encouraging traffic to move to where it is cheapest to operate, subject to the caveats noted, to that extent it helps align industry incentives. A complicating factor is that NR has a choice of what standard to renew track to when time comes to renew it. The lower income levels from higher standard track might give it a weaker incentive to renew track to higher standards. Therefore, this aspect may misalign incentives. It is unclear where the balance lies, so we give an amber grading overall.
Value for money for funders, taxpayers and users	=	=	=	=	=	=	=	=	A geographically based VUC would give taxpayers and end-users more confidence in the variable charges that they are supporting. Value for money will only materialise to the extent that marginal wear and tear costs do in fact differ materially by geography. It may be that the additional costs associated with complexity may outweigh the benefits of cost reflectivity. To establish this would require robust disaggregated data, which has been a barrier to geographic VUCs in the past. The ability of this option to deliver value for money has also been doubted by NR in the past.[65] The net impact of this option is unclear so it has been graded as amber.

[65] NR (2011) "NR letter to ORR – Geographic disaggregation of the variable usage charge"

Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	=	=	=	=	=	=	=	=

Overall, a geographically differentiated VUC would allow for greater cost reflectivity in terms of marginal costs of wear and tear over the network. This should allow for more efficient investment decisions and allocation of capacity (in the sense that the true marginal costs of the network would be more accurately reflected). It would also increase NR's accountability by facilitating benchmarking of maintenance and renewal costs at a more granular level and reduce the arbitrary nature of the current VUC.

It is clear that there are high data requirements, though obtaining engineering estimates to construct the charge would be possible (and in fact may be useful knowledge from NR's perspective). These estimates would likely remain relatively stable over the short term and are therefore unlikely to change over the course of a price control.

This option would add a significant amount of added complexity both from ORR's perspective (in terms of developing and updating geographic estimates) and from operators' perspective in terms of more complex billing arrangements. Overall, it would add a significant level of complexity to the current charging structure. It has also been recognised by the ORR that a scarcity charge would be required in addition to geographic VUCs. These charges are discussed in options 3, 4 and 5.

Overall, there are potentially significant efficiency benefits from greater cost reflectivity that are accompanied by a relatively high data burden and increased complexity. In isolation, this option may not be desirable as it appears that a geographically disaggregated VUC would require some form of scarcity charge to accompany it. These charges together could form the basis of a new charging package. Therefore, this option is graded as amber overall.

Option 10: Average cost charges

A mix of fixed and variable charges is currently used to recover NR's revenue requirement. Under this option, only variable charges set at a level expected to achieve full cost recovery would be used.

Key characteristics

Description of option

This option would see variable charges as the basis for all cost recovery from operators – there would be no fixed charge. The variable charge would be based on the average cost (based on total costs, i.e. fixed and variable) associated with the appropriate metric – say train kilometres. This could be applied to all operators – franchised passenger, freight and open access.

The rationale for this type of charge would be a simplification of charges, as is the case in postal charges The fact that this leads to cost recovery with no additional charges, and can be viewed as fair as all operators are treated the same.

There are other versions of this charge that could be envisaged. For example, using an average fixed cost alongside the existing variable costs. We do not consider this and other options as they either would replicate the strengths and weaknesses of the option we consider here or are close to some of the other options considered.

Description of counterfactual

The counter factual would be a continuation of the existing mix of fixed and variable charges levied in different mixes by type of operator.

Relevant factors impacting the form and/or the effectiveness of the option

- Legal – given the requirement for a minimum charge that is clearly below the average cost this charging option would fail in the current state of the world.
- Franchising.

Impact on stakeholders

Clearly, such a significant change in the charging approach could have a major impact on all stakeholders. If, as proposed, the approach were applied to all operators then the fact that the average cost would include both variable and fixed costs, then freight and open access operators would see increases in their charges. This could reduce the charges for franchised passenger operators. There would also be a distributional impact on the franchised passenger operators – so some could end up paying more than currently even though the average recovery from franchised passenger operations would decline.

Other options that complement and conflict with proposed option

Since this approach is focused on recovering the allowed revenue from users, no other general charge is likely to be needed. Consequently, other charging options aimed at recovering general costs would be in conflict with this. Options for recovering specific costs, like coal spillage, could be complements to this option, depending on how average costs are defined.

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=

No change from the current situation.

Consistency with law	-	-	-	-	-	-	-	-
	Unless there is a change in the law for the minimum charge to be levied, this approach would be unlawful in any state of the world as the minimum charge is the average charge and that includes elements which the law currently excludes. If an average fixed cost approach was adopted and only applied to those operators who currently pay mark-ups this problem would be removed.							
Funding of NR efficient costs	-	-	-	-	-	-	-	-
	Effectively this approach introduces volume risk for NR and so may lead to over- or under-recovery of efficient costs.							
Allowance for market conditions	-	-	-	-	-	-	-	-
	The average charging option clearly fails to take into account market conditions with respect to ability to pay for open access operators and freight.							
A single approach for the network as a whole	+	+	+	+	+	+	+	+
	It is a simple, single, clear approach to charging.							
Objectives	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=
	No change.							
Efficient whole-system whole -life industry net costs	=	=	=	=	=	=	=	=
	No change.							
Efficient long run investment decisions	=	=	=	=	=	=	=	=
	No change.							
Efficient performance management	-	=	=	=	=	=	=	=
	Some negative impacts around removing existing mark-ups etc. that send some performance signals. Difficult to say what would happen in other states of the world.							
Efficient use of network capacity	-	=	=	=	=	=	=	=
	Some negative impacts around removing existing mark-ups etc. that send some performance signals. Difficult to say what would happen in other states of the world.							
Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	+	+	+	+	+	+	+	+
	Simple, clear approach that is easy to forecast.							
Simplicity	+	+	+	+	+	+	+	+
	Simple, clear approach that is easy to forecast.							

Transparency	+	+	+	+	+	+	+	+
	Simple, clear approach that is easy to forecast.							
Low transaction costs	+	+	+	+	+	+	+	+
	Simple, clear approach that is easy to forecast.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	=	=	=	=	=	=	=	=
	Not clear if there is any change from the existing situation.							
Non-arbitrary allocation of costs	-	-	-	-	-	-	-	-
	Average costs are arbitrary in the sense that they do not link charges to the costs actually incurred by providing service to those specific users.							
Optimal traffic growth	-	-	-	-	-	-	-	-
	No signal for efficient expansion of service etc. as the average cost is the charge paid by everyone. Perverse outcomes may arise. Too great a demand for high cost routes may arise because users are only charged average cost, leading to inefficient investment and growth. The reverse could be true for low cost routes.							
Aligning industry incentives	-	-	-	-	-	-	-	-
	While everyone would have similar charges, their incentives would be very different owing to the incidence of the charges.							
Value for money for funders, taxpayers and users	-	-	-	-	-	-	-	-
	While the actual amount paid by taxpayers may fall, clear policy objectives such as encouraging freight onto rail could fail and impose other costs on funders, taxpayers and users.							
Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	-	-	-	-	-	-	-	-
	While there are clearly some advantages around implementation, reflected in the Judgement criteria, the impact of this approach on the objectives of charging (and its unlawful nature given the criteria for the minimum charge) means that this approach scores highly negatively. Average cost approaches are appropriate when revenue collection is all that matters rather than sending economic signals for current and future use.								

Option 11: Greater NR exposure to TOC revenue ("Revenue sharing")

There are two main elements of the current regime that currently involve, or potentially involve, revenue sharing: the revenue sharing mechanism in franchise agreements; and the volume incentive. This option involves giving NR an even stronger financial incentive to focus its activities on those that would boost farebox revenue over those that would simply boost traffic.

Key characteristics

Description of option

This option involves giving NR a financial incentive by giving it even more exposure to movements in operator revenues. It is likely in practice that this means passenger ticket revenues, as recorded by existing industry mechanisms. It is unlikely to be practical to apply it to other sources of revenue. The ORR, ATOC and NR also jointly commissioned L.E.K. to examine how a number of different options for cost and revenue sharing could work in practice ahead of PR13.[66]

There are already revenue sharing mechanisms in the industry, and it could be modelled upon, or based upon, one of these, (both described in the counterfactual section below).

The revenue sharing mechanism could be modelled on the "cap and collar" mechanisms between funders and franchised operators, which have often been used for reducing franchised passenger operator revenue risk in the later years of franchise contracts, but which are now being phased out in favour of alternative risk reduction methods. The cap and collar method is based on a benchmark level of revenue, and rates of sharing that increase the further actual revenue is from the benchmark.

Alternatively, the present volume incentive from funders to NR could be adapted by strengthening the elements of it that involve sharing revenues. For example, this could be done by increasing the incentive rate that is applied to the outperformance in terms of passenger farebox revenue, or by adding additional volume measure that related to revenues (or removing those that do not relate to revenues).

It would also be possible to devise an entirely new method. Revenue sharing mechanisms do not necessarily have to be based upon benchmark levels of revenue, nor do they need to have dead bands or varying rates.

While current bespoke arrangements to align incentives (such as alliances) are available, simple methods assigning a fraction of revenue to NR are possible, but given the large change in charges, there would have to be compensating changes elsewhere in the charging and/or franchising system.

Description of counterfactual

There are two elements of the current incentive regime that involve, or potentially involve, revenue sharing: the revenue sharing mechanism; and the volume incentive. We discuss both of them below.

The revenue sharing mechanism. Many franchised passenger operators currently receive significant revenue sharing support from the DfT under the so-called "Cap and Collar" arrangements but this is not currently being used in franchise replacements. In some recently awarded franchises and on-going franchise replacement processes, the DfT has constructed, or is considering, revenue adjustment mechanisms based upon GDP and/or employment measures.

The volume incentive. The purpose of the volume incentive is to encourage NR to grow passenger and freight traffic over the control period. ORR sets targets for a number of traffic indicators for the control period. If NR outperforms the targets it receives additional money from the DfT in the following control period. However, if traffic levels are lower than expected over the control period it receives less money in the following control period. The traffic indicators are:

[66] L.E.K. (2011) "Rail industry cost and revenue sharing" available on the ORR website here

Option 11: Greater NR exposure to TOC revenue ("Revenue sharing")

- passenger train miles;
- passenger farebox revenue;
- freight train miles; and
- freight 1,000 gross tonne miles.

Within the volume incentive, the second indicator (Passenger farebox revenue) involves a degree of revenue sharing, as the higher the revenue of passenger operators the higher the reward NR receives. However, as the incentive is paid for by the DfT, there is no direct flow here from actual operator revenues to NR.

In addition to the two mechanisms described above, "alliancing" is a further smaller scale option that exists in the industry and can serve to align incentives between NR and operators on discrete projects.

Relevant factors impacting the form and/or the effectiveness of the option

The implementation of this option may require coordination over risk sharing mechanisms in franchise contracts, which lie within the power variously of DfT but also other devolved authorities, and vary considerably in their financial arrangements. This would be to ensure the overall effect of both the NR and franchise mechanisms was desirable.

If the mechanism required a benchmark level of revenue, it cannot be guaranteed that the form of every franchise bid would provide a suitable benchmark.

Impact on stakeholders

There could be substantial movements of funds, depending upon the form of the incentive that would require calibration and adjustment of other funding flows in the system. It would have considerable impact on the suitable design of franchise contracts. NR would now have a direct interest in the passenger income of the railway, and franchised operators would have less interest. However, as current incentives based on revenues are implemented between funders and either NR or ORR, the ability to strengthen these signals to NR would depend on funders' appetites to do so.

As part of workshops held as part of the 2011 L.E.K. work on cost and revenue sharing noted an unanimous and "overwhelming" negative reaction from participant franchised passenger, open access and freight operators given concerns that such arrangements would be untargeted, ineffective or unlikely to work as intended.

Other options that complement and conflict with proposed option

While a number of the considerations for revenue sharing remain the same irrespective of other options examined, some may be more compatible than others. In particular, Avoidable Cost charging (Option 1) might complement revenue sharing as it has the potential to expose NR to greater revenues from investments made on a more commercial basis in SoWs such as "Dynamic railway" and "On-rail comp."

Option 11: Greater NR exposure to TOC revenue ("Revenue sharing")								
Performance against criteria								
Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
There is no material impact of this option on system safety. Although it should be noted that there is an incentive to earn more passenger revenue, which might imply heavier usage of the network, which should be overseen by regulators to ensure system safety is not at risk.								
Consistency with law	=	=	-	=	=	=	=	=
As this option relates to incentive payments working within existing mechanisms, we assume that this option will remain consistent with law. **Further legal analysis is required in this area.**								
Funding of NR efficient costs	=	=	=	=	=	=	=	=
This option might imply a slight change in terms of introducing more variability in NR funding (assuming the incentives are symmetric). However, the option has been marked as neutral, given that the change is unlikely to be material to NR's investors, and could be compensated for example by recognising the additional variability in the remuneration of the cost of capital for example.								
Allowance for market conditions	=	=	=	=	=	=	=	=
As this we expect it unlikely that payments would be made directly from operators to NR under this option, we assume that it would have no effect on this criterion.								
A single approach for the network as a whole	-	-	-	-	-	-	-	-
It would be difficult to apply the revenue sharing incentive outside the franchised passenger area. Strengthening existing arrangements would serve to exacerbate the lack of a single approach for the whole network. There might be difficulties in areas where different franchising methods are used. For example, operator-specific benchmarking might have to be used, and it could not necessarily be guaranteed that the form of a franchise bid would provide this benchmark.								
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=
There is not a clear direct impact of this option on service cost recovery. However, a stronger incentive with both up and downside might generate some volatility in NR's income.								

Efficient whole-system whole -life industry net costs	+	+	+	+	+	+	+	+
	The revenue sharing is likely to motivate NR to be more responsive to demand, enabling improvements in the pattern of services, including making some small investments to achieve that. While one representative from NR at the RDG Review of Charges workshop on 25th August 2015 noted that NR did take into account the volume incentive when considering enhancements, the 2011 L.E.K. work indicated scepticism from operators that strengthening incentives would be effective, at least in the short term.							
Efficient long run investment decisions	=	=	=	=	=	+	=	=
	Revenue sharing is likely to motivate NR to be more responsive to demand. This has the potential to encourage more efficient long term investment decisions. However, providing effective investment incentives requires a regulatory regime that is fully aligned with that objective. The Revenue sharing option for the current SoW has been marked neutral as the current regime has a number of features that would reduce the effectiveness of the investment incentives that revenue sharing might provide. In particular, the central planning nature of the investment decision making process. The point here is that investment incentives do not matter (or matter less) if decisions are taken centrally considering other variables. It is also likely that the revenue sharing incentive mechanism would require regular readjustment so that overall revenues and funding remained in balance, with the effect that incentives would be blunted in the long term. For all these reasons, only the SoWs "beneficiary pays," where significantly less central planning could be expected, has been marked positive.							
Efficient performance management	=	=	=	=	=	=	=	=
	There is not a clear direct impact of this charging approach on performance management.							
Efficient use of network capacity	=	+	+	=	=	+	+	=
	As discussed above, Revenue sharing has the potential to incentivise NR to be more responsive to demand, especially in the short term. This has the potential to incentivise more efficient use of network capacity, and make minor infrastructure changes. However, one operator expressed a concern that a strong revenue incentive to NR might disadvantage PSO services wishing to secure additional paths given the inability to offer potential upside. However, providing effective use of capacity incentives requires a regulatory regime and organisational culture that is fully aligned with that objective. The Revenue sharing option for the current SoW has been marked neutral as the current regime has a number of features that would reduce the effectiveness of the use of capacity incentives. In particular, the central planning and contractual nature of the capacity allocation process. The point here is that network use incentives do not matter (or matter less) if decisions are taken centrally considering other variables. The SoWs "dynamic railway", "on-rail competition," "beneficiary pays" and "capacity allocation," have been marked positive, as these would reduce certain central planning and contractual features, and thus are more likely to enable capacity allocation incentives.							

Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=
	There is not a clear direct impact of this charging approach on predictability.							
Simplicity	=	=	=	=	=	=	=	=
	Modifying the existing revenue sharing mechanisms might be complicated. There would be difficulties aligning it with the franchising regime, and correcting other funding flows and/or charges for the potentially large change in money flows, rebasing it from time to time, and consistency with other aspects of the railway regulatory regime. Modifying the existing volume incentive might be a simpler way to give NR a financial incentive by exposing it to movements in operator revenues. We note that in both cases, the necessary information would be readily available for TOCs, but might be more difficult to obtain for freight operators. For these reasons, the option has been marked as neutral, under the assumption that only the existing volume incentive is modified. If the existing revenue sharing mechanism was modified, the mark would probably be negative.							
Transparency	=	=	=	=	=	=	=	=
	There is not a clear direct impact of this charging approach on transparency.							
Low transaction costs	=	=	=	=	=	=	=	=
	There is not a clear direct impact of this charging approach on transaction costs.							
Axioms	**Current**	**Dynamic railway**	**On-rail comp**	**Specified franchises**	**Protect freight**	**Beneficiary pays**	**Capacity allocation**	**Regional powers**
NR accountability	+	+	+	+	+	+	+	+
	The revenue sharing option could be understood as a way of making NR more accountable for the results obtained by operators. However, the presence of existing revenue sharing mechanisms might mean that simply changing the magnitude of the incentive has little impact on this criterion.							
Non-arbitrary allocation of costs	=	=	=	=	=	=	=	=
	There is not a clear direct impact of this approach on cost allocation.							
Optimal traffic growth	=	+	+	=	=	+	+	=
	In principle, in the SoWs that would enable this, increasing the revenue sharing could incentivise efficient long run investment decisions and efficient use of network capacity, which in turn could lead to the growth of traffic volumes where the net benefits of doing so are positive.							
Aligning industry incentives	+	+	+	+	+	+	+	+
	There would be more aligned incentives for NR and operators, which could lead to more co-operation among them. However, the presence of existing revenue sharing mechanisms might mean that simply changing the magnitude of the incentive has little impact on this criterion. Furthermore, views expressed by operators in 2011 regarding the ability for NR to respond to such incentives might mean that the increase in exposure would need to be large or follow a concerted period of cultural change before the desired effects could be felt.							

Value for money for funders, taxpayers and users	=	+	+	=	=	+	+	=

For all the reasons discussed above, the introduction of more revenue sharing could be expected to be beneficial mostly in the SoWs that could potentially be aligned with the introduction of a stronger revenue incentive.

Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	+	+	+	+	+	+	+	+

While current bespoke arrangements to align incentives (such as alliances) are available that address operators previously expressed concerns about NR's ability to respond to financial incentives, there are some advantages of introducing greater revenue sharing across the sector. With a substantial revenue share these advantages could be quite large. However, substantial revenue sharing is more likely to be achieved by using the existing revenue sharing mechanism, which involves a number of implementation challenges, most notably aligning it with the franchising regime.

The analysis above has indicated potential benefits from this option across all SoWs but the potential to realise those gains is lesser in the "Current," "On-rail comp," "Protect freight" and "Regional powers" SoWs where operator behaviours are largely driven by funder's objectives rather than NR's actions or price signals to them.

As acknowledged as part of the 2011 L.E.K. work in this area, "[t]here is a broad acceptance of the conceptual benefits of 'sharing'" but there are key practical implementation and operational issues that would need to be addressed to overcome serious reservations from operators. Participants at the RDG Review of Charges on 25th August 2015 expressed the view that there was value in the current volume incentive and that it should remain in place, regardless of the views in the group on whether it should be stronger or not. It is clear that increasing NR's exposure to operator revenues is not seen as a particular area that the industry wishes to push forward. The group thought that there were alternative approaches to aligning incentives, such as closer working relationships between operators and route managers.

ANNEX B STATION CHARGING INITIAL ASSESSMENTS

This annex includes the high-level assessments for longlist options 12-14 relating to reforms to station charging:

- Option 12: Regulate station QX;
- Option 13: Station-by-station LTC; and
- Option 14: Station revenue sharing.

Option 12: Regulate Station QX

A qualifying expenditure (QX) charge is levied at all stations but only the management fee element at stations managed by NR is overseen by the ORR. A regulated QX charge would provide an independent challenge to these charges for the day-to-day operation of stations that are currently negotiated confidentially between Station Facility Owners (SFOs) and operators at each station.

Key characteristics

Description of option

Regulate the entire QX station charge for all SFOs to provide an independent challenge to these charges for the day-to-day operation of stations.

The ORR would assess and agree with operators the level of the entire QX charge as a revenue cap. All of QX would be set based on expected efficiency savings and be updated annually for RPI movements. This is currently only the case for the "management fee" covering central support costs and profit at managed stations where NR is the SFO.

Description of counterfactual

QX charges arise at station served by more than one operator where the SFO "off-charges" a proportion of its costs to other users based on traffic forecasts.[67] It therefore applies to a relatively small sub-set of the network. The annual charge is around £40m of the £300m charges at the stations managed by NR. [68] Except for the management fee at managed stations, the level of the QX charge is not regulated.

The principal elements of the QX charge relate to day-to-day operations expenditure to provide services and amenities at stations and include station cleaning, utilities and provision of competent and suitably trained staff.

Unlike the long term charge (LTC) for stations, QX charges are not published and there is no central information available.[69] Operators negotiate charges with the SFO under the conditions of Annex 2 of the station access conditions.[70]

NR described the process of negotiating QX at managed stations for CP5 as follows:

> *"In the course of negotiating the QX charge with TOCs, one of the principles followed is, where NR makes efficiency through its own initiative then no change will be made to the QX charge. However, where NR and the TOCs work together to jointly effect a saving then a reduction will be made to QX by an agreed amount at an agreed date."*[71]

At franchised stations, QX charges are agreed between the SFO and the beneficiaries of the expenditure, with NR (and presumably the ORR) having no visibility of them.[72] Similarly, QX is not regulated for third party SFOs, such as at Southend Airport.

Relevant factors impacting the form and/or the effectiveness of the option

- Franchising (Factors Report Section 3.2)

[67] Passenger operators attending the second stations workshop on 27th August 2015 noted that it would be difficult to conduct QX negotiations based on actual traffic.
[68] NR (2013) "SBPT3278 Stations and depots income" available on the NR website here p2
[69] CP5 LTC charges are available on the NR website here
[70] Station access conditions and related annexes are available on the ORR website here
[71] NR (2013) "SBPT3278 Stations and depots income" available on the NR website here p5
[72] NR Infrastructure Limited and First Rail Holdings Limited (2010) "Reference to Access Disputes Panel in respect of interpreting the split between day to day Maintenance and Repair of Retail Telecomms and CCTV and other Retail Telecommunications Equipment at Franchised Stations" available on the Access Disputes Committee Website here p8

Option 12: Regulate Station QX

- Industry complexity (Factors Report Section 4.2)
- Network scope and specification (Factors Report Section 4.3)
- Data availability, measurement, and billing (Factors Report Section 4.7)

Impact on stakeholders

Changes to QX affect franchised passenger operators as station users and SFOs. NR is the SFO at managed stations. Franchised passenger operators may be SFOs under short and long leases. There is currently one independent SFO.[73]

ORR stated that for CP6, if the QX charge were retained, it would like the process for approving the NR QX management fee to be better aligned with the periodic review of NR's outputs, charges and funding. The ORR indicated that this could be achieved by NR submitting a proposal as part of its strategic business plan, backed by support from the relevant train operators.[74]

Other options that complement and conflict with proposed option

There are no clear complementarities or conflicts with other options considered in the long list.

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
	Moving from the effective pass-through of directly incurred costs to a revenue cap would introduce incentives for SFOs to reduce expenditure relative to current arrangements. Monitoring arrangements and penalties could be put in place to help ensure cost efficiencies did not come at the expense of falling standards. If it were not possible to achieve this, there is a risk that reductions in station cleaning services and station staffing might lead to small reductions in the safety of the railway system. The potential impact of this would be muted in the "specified franchises" SoW where franchisees have very little freedom to adjust service provision but NR would still be affected.							
Consistency with law	=	=	=	=	=	=	=	=
	No conflict has been identified between regulating QX and requirements from relevant regulations and laws. As QX is not currently regulated, it is not clear that the ORR currently has the powers to regulate QX but if it does not, we anticipate that it would not be problematic to acquire.							
Funding of NR efficient costs	=	=	=	=	=	=	=	=
	The full regulation of QX could put pressure on NR to uncover efficiencies in the operation of stations. However, assuming that the allowance would be set by the ORR at an appropriate level, regulation of this charge should not affect NR's ability to recover total efficient costs of providing and improving all services.							

[73] Stobart Rail currently operates the London Southend Airport Railway Station.

[74] ORR (2015) "NR managed stations – decision on the approval of the qualifying expenditure (QX) management fee for control period 5 (CP5)" available on the ORR website here p3.

Allowance for market conditions	=	=	=	=	=	=	=	=
	Assuming that regulation of QX would be based on cost directly incurred, as now, a regulated QX charge should have no impact on the ability of a market segment to bear the cost. While franchised passenger operators would be protected from changes until the stopping pattern changes, open access operators would be exposed to changes, suffering if regulation led to an increase in charges but benefitting from efficiencies where they are uncovered.							
A single approach for the network as a whole	+	+	+	+	+	+	+	+
	Regulating the full QX charge would provide an opportunity to align the treatment of the charge across managed and franchised stations. Currently the QX management charge is regulated for managed stations but is not regulated for franchised stations.							
Objectives	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=
	Regulated charges would be based on efficient costs directly incurred.							
Efficient whole-system whole-life industry net costs	=	-	-	=	=	=	=	=
	Current QX negotiations provide a mechanism through which costs and standards are agreed between the SFO and users. This allows changes to be made where benefits exceed the change in costs. A regulated QX charge might be less flexible than the current arrangements but participants at the second RDG Review of Charges meeting on options for stations charging explained that the link between the level of QX charges and the level of service received was weak, and that information was treated in an unnecessarily confidential manner. This indicated that current arrangements might not be as flexible as they could be but most station users are also SFOs at their own franchised stations and have their own information against which they can challenge QX at others' stations. The only group of users without this benefit would be open access operators. However, requirements for non-discriminatory treatment should enable them to benefit from other user's negotiating power. Therefore, while the additional rigidity of the regulated charges might not have much impact in many SoWs, particularly as at least some franchised operators are held harmless to station charges, it could be noticeable in the two SoWs with less highly specified franchise agreements.							
Efficient long run investment decisions	=	=	=	=	=	=	=	=
	As indicated by the ORR's statement on QX for CP6, there is no clear link between QX and NR's wider plans. Regulating QX could allow the ORR to consider the charge alongside LTC and facility charges. A more complete analysis of the efficient costs of station investments might aid better investment decision making. It might also remove any incentive to inflate QX given its current preferable treatment compared to regulated activities. However, the materiality of these benefits is not certain in any SoW.							
Efficient performance management	=	=	=	=	=	=	=	=
	There is no clear impact of this charging approach on efficient performance management.							

Efficient use of network capacity	=	=	=	=	=	=	=	=

There is no clear impact of this charging approach on efficient use of network capacity.

Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=

There is no clear impact of this charging approach on the volatility of the level of charges across multiple control periods.

Simplicity	+	+	+	+	+	+	+	+

The QX charge is not currently well understood. Information is treated in a confidential manner and there is no central record of QX charges. A regulated tariff could be specified at a sufficient level of detail to allow understanding of its constituent elements. It could also be recorded centrally to allow comparisons across stations, enabling greater contestability.

Transparency	+	+	+	+	+	+	+	+

QX charges are currently calculated based on principles set out in Annex 2 of the station access conditions. The current direct cost incurred approach is quite simple but there is a lack of transparency regarding the negotiations between SFOs and users, the resulting value of charges and the corresponding service levels.

One open access passenger operator noted that the lack of transparency potentially hid cross-subsidisation of SFO services, with station beneficiaries paying for services that only benefit the SFO, such as carparks.

A regulated QX charge might require more steps and econometric analysis but the resulting outcome should be more transparent.

Low transaction costs	-	-	-	-	-	-	-	-

Regulating QX would create a greater regulatory burden for SFOs and the ORR during the periodic review. This would require the development of detailed cost estimates ideally backed by evidence and gathered at station level from a combination of NR and passenger operators. While this may not be a large increase compared to the scale of current activities, it may be disproportionate for the size of QX. Regulating QX would reduce the need for passenger operators to negotiate directly with SFOs. However, the overall net impact is likely to be an increase in transaction costs.

Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	=	=	=	=	=	=	=	=

Regulating QX has the potential to make SFOs more accountable to their customers. While they currently negotiate charges with users, the scope to contest assertions on efficiency and the link between charges and service levels is weak.[75] Regulation could help challenge SFO's assertions and create a level of transparency sufficient to create a link between costs and outcomes.

[75] Southeastern (2010) "Review of arrangements for establishing access charges for CP4" available on the ORR website here.

Non-arbitrary allocation of costs	=	=	=	=	=	=	=	=
	There is no clear impact of this charging approach on the arbitrariness of cost allocation.							
Optimal traffic growth	=	=	=	=	=	=	=	=
	There is no clear impact of this charging approach on traffic growth.							
Aligning industry incentives	=	=	=	=	=	=	=	=
	Greater transparency of the basis of QX charges and the rights they convey could facilitate greater co-operation between SFOs and station users to improve efficiency and adaptation to evolving needs. The scope for this to be achieved is greatest in the "dynamic railway" and "on-rail comp" states of the world but regulating the charge could create a barrier to achieving such outcomes. Therefore, the impact is expected to be neutral in all SoWs.							
Value for money for funders, taxpayers and users	=	=	=	=	=	=	=	=
	The QX charge is based on costs incurred, not ex ante efficient costs. The lack of information on these charges is a barrier to understanding whether there is a significant difference between these two and whether they are justified in the detail. The reason for QX not being fully regulated is not clearly articulated in ORR documentation. However, its current treatment may be well aligned with the objective of ensuring that SFOs do not reduce QX costs such as cleaning or station staffing. These are important for customers' experience and cost reductions, which more rapidly translate into passenger experience than renewals or enhancement expenditure on stations. It is uncertain whether regulating QX would increase value for money. It depends on the degree to which costs are not currently efficient but also on the ability to enforce standards during the review period if it were regulated. Therefore, without further information available, this option is marked as neutral across all SoWs.							
Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	=	=	=	=	=	=	=	=
	The current approach is consistent with a no compromise approach to station operation standards but current arrangements have persisted for a long time and it is difficult to determine if charges are based on efficiently incurred costs. Regulating QX would be a big change for this type of expenditure on stations so without being able to determine if the current approach fulfils its objectives, it is difficult to recommend such a change. Despite this, outside this review there may be value in a more root and branch review of the regulatory regime for stations beyond charging and investigation of non-charging reforms to more directly address areas of concern indicated by participants at RDG station charges workshops. For example, areas for further investigation might include the potential to make the level and breakdown of QX charges more publicly available, and to refresh the guidelines for the allocation of costs such as new ticket gates. Should an approach such as improving the transparency of QX charges be taken forward and it is found that costs are both inefficient and that greater transparency does not facilitate greater efficiencies, regulating QX could be an option to consider.							

Option 13: Station-by-station LTC

The long term charge (LTC) for the use of franchised stations is set to recover NR's maintenance, renewal and repair costs (MRR) for each franchisee's complete portfolio of stations during the price control period. A station-by-station LTC would ensure that the charge for each station within the portfolio also reflects expenditure at each station, providing a clearer basis for franchisees to challenge these charges at each location and to improve the understanding of what the charge is designed to deliver.

Key characteristics

Description of option

NR is generally responsible for the MRR of station buildings and Station Information and Security Systems (SISS).[76] It charges franchised station facility owners (SFOs) holding station leases a regulated LTC. This charge is used to recover the cost of MRR across the portfolio of stations included in each franchise contract.[77]

Setting the LTC station-by-station would be a move to increase its transparency to SFOs and users building upon and perhaps helping to develop existing station-by-station asset management plans. This would enhance their ability to contest its level at each location. Charges would be set based on the expected efficient MRR at each location during the price control period rather than being allocated a share of MRR at the portfolio level. Bottom-up estimates of efficient MRR would be used to set charges for each station, capturing each station's planned renewals and repair schemes, operator-specific expenditure and route-wide expenditure.

Description of counterfactual

The current LTC is recovered as individual station-specific charges but as described by NR, "franchised station LTCs are in effect set at the portfolio level."[78]

For CP5, LTC charges were set in a "top-down" manner, where the ORR determined efficient MRR expenditure for each portfolio of stations. The portfolio-level charge was then allocated to each station based on modelled expenditure over the forthcoming 35-years. The first five forecast years included bottom-up estimates for certain costs. The forecast for the subsequent 30 years was top-down.

Under the current LTC, total portfolio MRR is recovered through charges in the same period it is incurred even if the benefits of such expenditure span multiple control periods. However, the application of the charge across a portfolio of stations, serves to smooth-out the recovery of the expenditure at each station over a longer period of time.

Relevant factors impacting the form and/or the effectiveness of the option

- Franchising (Factors Report Section 3.2)
- Industry complexity (Factors Report Section 4.2)
- Network scope and specification (Factors Report Section 4.3)
- Data availability, measurement, and billing (Factors Report Section 4.7)

[76] RDG (2014) "Charges and incentives user guide" available on the RDG website here p20

[77] Where a franchisee has full repairing station lease agreements for the portfolio (such as the current arrangements for the Greater Anglia franchise), Network Rail does not collect a LTC.
At managed stations

[78] Network Rail (2013) "Explanatory note and draft price lists for CP5 franchised and managed station Long Term Charges" available on the Network Rail website here p5

Option 13: Station-by-station LTC

Impact on stakeholders

A station-by-station LTC would affect franchised and open access users of franchised stations by making the charges at individual stations more volatile, although the sum of charges paid might be unchanged. It would similarly affect NR as the station landlord at particular locations but not across the portfolio. Temporary increases in charges at individual stations to recover lumpy expenditure (assuming no other mechanism is put in place to smooth the charges) could encourage open access operators to avoid stations requiring significant works during a particular review period.

Other options that complement and conflict with proposed option

There are no clear complementarities or conflicts with other options considered in the long list.

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
	There is no clear impact of this charging approach on system safety.							
Consistency with law	=	=	=	=	=	=	=	=
	No conflict has been identified between setting a bottom-up station-by-station LTC and requirements from relevant regulations and laws.							
Funding of NR efficient costs	=	=	=	=	=	=	=	=
	No impact has been identified from moving to a bottom-up station-by-station LTC on the ability to fund NR's efficient costs.							
Allowance for market conditions	=	=	=	=	=	=	=	=
	No impact has been identified from moving to a bottom-up station-by-station LTC on the ability of a market segment to bear the cost.							
A single approach for the network as a whole	+	+	+	+	+	+	+	+
	The LTC at managed stations is currently calculated on a bottom-up basis. Moving to a bottom-up station-by-station LTC for franchised stations would align the approaches across the different station groupings.							
Objectives	**Current**	**Dynamic railway**	**On-rail comp**	**Specified franchises**	**Protect freight**	**Beneficiary pays**	**Capacity allocation**	**Regional powers**
Service costs recovery	+	+	+	+	+	+	+	+
	The move to a bottom-up station-by-station LTC would result in more cost-reflective charges for each station. The portfolio-level charge would remain at the same level of cost reflectivity.							

Efficient whole-system whole-life industry net costs	+	+	+	=	+	+	+	+
	The LTC is seen to encourage the maintenance of the "as-is" state and encourages like-for-like replacements even in cases where not required.[79] The portfolio-based nature of the LTC creates a disconnect between the actions required at station-level to reduce costs and the charges that SFOs pay. When a cost-efficiency is realised, it is difficult to identify if it is an absolute saving that could be passed on through charges or if it has allowed greater expenditure to be incurred elsewhere within the portfolio. If the LTC were set on a station-by-station basis, SFOs would have a clearer basis on which to demand cost reductions from NR to realise reductions in the LTC. These benefits could be realised in any SoW except where the franchises are more highly specified.							
Efficient long run investment decisions	=	=	=	=	=	=	=	=
	A bottom-up station-by-station LTC would serve to provide greater transparency on charges within the review period. It is not clear that there is a direct link to the quality of long-run investment decisions beyond greater pressure from SFOs and users to reduce costs.							
Efficient performance management	=	=	=	=	=	=	=	=
	There is no clear impact of this charging approach on efficient performance management.							
Efficient use of network capacity	=	=	=	=	=	=	=	=
	There is no clear impact of this charging approach on efficient use of network capacity.							
Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	-	-	-	-	-	-	-	-
	Station charges do not currently include a RAB or other mechanism (e.g. escrow accounts) to recover historic expenditure over time in line with the benefits it delivers.[80] Instead, long-term forecasts are used to smooth the cost of lumpy station-specific investments. For the LTC charge to capture expenditure incurred during the control period at both the portfolio level and at each station, the station charge would need to reflect expenditure only during the review period rather than a longer time horizon. Consequently, the station-level charges would become more volatile than at present. However, this would not affect the volatility of the overall portfolio charge paid.								

[79] RDG (2015) "Review of Charges Phase 2b: Assessment of the current charges and incentives regime" available on the RDG website here p36

[80] It is not expected to be practical to introduce RABs for each of the c. 2,500 stations on the network.

Simplicity	+	+	+	+	+	+	+	+
	LTC is currently recovered on a station-by-station basis so a bottom-up station-by-station LTC charge would not necessarily be more complex than current arrangements. In fact, removing the long-term forecast components could make the charge more tangible and readily understandable.							
Transparency	+	+	+	+	+	+	+	+
	A bottom-up station-by-station LTC would be more transparent at the station level. It is possible that a tighter link between expenditure and charges might encourage greater involvement from stakeholders at the right times to improve the station planning process and to improve their knowledge of station plans.							
Low transaction costs	-	-	-	-	-	-	-	-
	Greater transparency over LTC at the station level might lead to more challenges from beneficiary operators when agreeing charges at each station.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	+	+	+	+	+	+	+	+
	Greater transparency of the LTC at station level might make NR more accountable for its activities at each station.							
Non-arbitrary allocation of costs	+	+	+	+	+	+	+	+
	A greater link between the station-level expenditure and charges would allow expenditure to be attributed more precisely than if allocated across all stations within the portfolio.							
Optimal traffic growth	-	-	-	=	-	-	-	-
	Without a mechanism, such as a RAB, to allow expenditure to be smoothed over time, volatile charges might make operators without highly specified contracts avoid stations during periods where lumpy investments are being recovered.							
Aligning industry incentives	+	+	+	=	+	+	+	+
	Greater transparency of expenditure might facilitate greater cooperation between NR, SFOs and other users of stations as part of the process of agreeing LTC charges. SFOs might not be able to take advantage of greater transparency if franchises are more highly specified.							
Value for money for funders, taxpayers and users	+	+	+	=	+	+	+	+
	If greater transparency can facilitate greater accountability and pressure to reduce costs, it might be possible for the value for money of station charges to improve.							

Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	-	-	-	-	-	-	-	-

While the current approach is somewhat complex, the use of forecast expenditure provides a relatively simple way to smooth charges at each station over time, closer in line with the benefits they provide. A RAB-based approach would allow smoothing of charges over time while retaining transparency over costs. However, that is not likely to be a practical or proportionate approach for the thousands of stations on the network.

Work could be undertaken to improve the information behind the current LTC to increase its contestability at the portfolio level. However, moving towards greater cost-reflectivity at the station-level might be a disproportionate move, resulting in greater volatility for charges at each location and resulting in an overall red grading for this option in all SoWs.

While participants at the RDG Station Charging workshops expressed the view that this option might indirectly help to improve the existing bottom-up station planning processes, the real issues that need to be addressed in this area lie outside charging and relate to cost allocation, information, franchising and the contractual framework (for example relating to thresholds for reopeners and the treatment of over-specified or redundant assets).

Option 14: Station revenue sharing

There is currently no financial incentive to align NR's station maintenance activities with the interests of franchised station facility owners (SFOs) and other operators. A station revenue sharing mechanism would address that gap by giving NR an exposure to operators' ticket revenue at each station.

Key characteristics

Description of option

This option involves giving NR a financial incentive by exposing it to movements in operator revenues at franchised stations. As for the network charging revenue sharing option, it is likely that this would be paid for by government funders rather than direct transfers from operators and be based on passenger ticket revenues, as recorded by existing industry mechanisms. Where appropriate, this might also extend to station tenancy, advertising, carpark and other SFO revenues.

The introduction of station revenue sharing would encourage Network Rail to focus its asset stewardship activities on areas with the greatest potential to improve passengers' experience and boost ticket revenue.[81] This would improve the alignment of incentives between Network Rail as station landlord providing maintenance, renewal and repair (MRR) and the franchised passenger (SFO) holding the lease and stopping its trains at the station.

As for the network revenue sharing option, this option could be implemented as a station-specific volume incentive with station-specific revenue benchmarks or as part of the revenue sharing mechanisms in franchise contracts.

Description of counterfactual

There are currently no revenue sharing mechanisms specific to station charging.

Relevant factors impacting the form and/or the effectiveness of the option

- Franchising (Factors Report Section 3.2)
- Industry complexity (Factors Report Section 4.2)
- Network scope and specification (Factors Report Section 4.3)
- Data availability, measurement, and billing (Factors Report Section 4.7)

Impact on stakeholders

The implementation of this option may require coordination over risk sharing mechanisms in franchise contracts, which lie within the power variously of DfT and other devolved authorities, and vary considerably in their financial arrangements. This would be to ensure the overall effect of both the NR and franchise mechanisms was desirable.

If the mechanism required a benchmark level of revenue, it cannot be guaranteed that the form of every franchise bid would provide a suitable benchmark.

Other options that complement and conflict with proposed option

While a number of the considerations for revenue sharing remain the same irrespective of other charging options, certain charges may be more compatible than others. In particular, any broader revenue sharing mechanism would need to be adapted to avoid double counting of revenue.

[81] RDG (2015) "Review of Charges Phase 2b: Assessment of the current charges and incentives regime" available on the RDG website here p41.

Option 14: Station revenue sharing								
Performance against criteria								
Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
There is no clear impact of this option on system safety. It is assumed that minimum requirements for safety would need to be sufficiently strong that it would not be possible to gainfully sacrifice system safety.								
Consistency with law	=	=	=	=	=	=	=	=
As this option relates to incentive payments similar to elsewhere in the regime, we assume that this option will remain consistent with law. **Further legal analysis is required in this area.**								
Funding of NR efficient costs	=	=	=	=	=	=	=	=
This option might imply a slight change in terms of introducing more variability in NR funding (assuming the incentives are symmetric). However, the option has been marked as neutral, given that the change is unlikely to be material, and could be compensated by recognising the additional variability in the remuneration of the cost of capital for example.								
Allowance for market conditions	=	=	=	=	=	=	=	=
As this we expect it unlikely that payments would be made directly from operators to NR under this option, we assume that it would have no effect on this criterion.								
A single approach for the network as a whole	-	-	-	-	-	-	-	-
It would be difficult to apply the revenue sharing incentive outside the franchised passenger area. There may be difficulties in areas where different franchising methods are used e.g. in franchises where the operator has some responsibility for stations maintenance and renewal. Operator-specific benchmarking might have to be used, and it cannot be guaranteed that the form of a franchise bid would provide this benchmark.								
Objectives	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=
There is not a clear direct impact of this option on service cost recovery. However, a stronger incentive with both up and downside might generate some volatility in NR's income.								
Efficient whole-system whole -life industry net costs	+	+	+	+	+	+	+	+
Revenue sharing is likely to motivate NR to be more responsive to demand, enabling improvements in how the asset stewardship of the station can improve passenger experience and ticket revenue. However, one open access operator suggested that investigation of this link would likely show it to be very marginal and likely dwarfed by other factors.								

Efficient long run investment decisions	=	=	=	=	=	+	=	=

Revenue sharing is likely to motivate NR to be more responsive to demand. This has the potential to encourage more efficient long term investment decisions. However, providing effective investment incentives requires a regulatory regime that is fully aligned with that objective.

The Revenue sharing option for the current SoW has been marked neutral as the current regime has a number of features that would reduce the effectiveness of the investment incentives that revenue sharing might provide. In particular, the central planning nature of the investment decision making process. The point here is that investment incentives do not matter (or matter less) if decisions are taken centrally considering other variables.

It is also likely that the revenue sharing incentive mechanism would require regular readjustment so that overall revenues and funding remained in balance, with the effect that incentives would be blunted in the long term.

For all these reasons, only the SoWs "beneficiary pays," where significantly less central planning could be expected, has been marked positive.

Efficient performance management	=	=	=	=	=	=	=	=

There is not a clear direct impact of this charging approach on performance management.

Efficient use of network capacity	=	+	+	=	=	+	+	=

As discussed above, revenue sharing is likely to encourage NR to be more responsive to demand, especially in the short term. This has the potential to incentivise more efficient use of station assets but this requires a regulatory regime that is fully aligned with that objective.

The Revenue sharing option for the current SoW has been marked neutral as the current regime has a number of features that would reduce the effectiveness of the use of capacity incentives. In particular, the central planning and contractual nature of the timetabling process and fares policy. The point here is that network use incentives do not matter (or matter less) if decisions are taken centrally considering other variables.

The SoWs 'dynamic railway', 'on-rail competition', 'beneficiary pays' and 'capacity allocation', have been marked positive, as these would reduce certain central planning and contractual features, and thus are more likely to enable capacity allocation incentives.

Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=

There is not a clear direct impact of this charging approach on predictability.

Simplicity	-	-	-	-	-	-	-	-
	Introducing station-specific revenue sharing mechanisms would be complex. There would be difficulties aligning it with the franchising regime, correcting other funding flows and/or charges for the potentially large change in money flows, rebasing it for specific stations from time to time, and ensuring consistency with other aspects of the railway regulatory regime. Currently there is no station-specific volume incentive that could be adapted, as per the broader network revenue charging option. Significant work would be required to calculate station-specific revenue benchmarks, as well as determining how to allocate revenue to departing, arriving and transiting passengers.							
Transparency	=	=	=	=	=	=	=	=
	There is no clear direct impact of this charging approach on transparency.							
Low transaction costs	-	-	-	-	-	-	-	-
	Given the absence of existing station revenue sharing mechanisms we anticipate significant transaction costs to establish benchmarks, the appropriate scope of revenues and to reconcile revenues from different types of passenger to each location.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	+	+	+	+	+	+	+	+
	The revenue sharing option could be understood as a way of making NR more accountable for the results obtained by operators at each station.							
Non-arbitrary allocation of costs	=	=	=	=	=	=	=	=
	There is not a clear direct impact of this charging approach on cost allocation.							
Optimal traffic growth	=	=	=	=	=	=	=	=
	There is not a clear direct impact of this charging approach on optimal traffic growth.							
Aligning industry incentives	+	+	+	+	+	+	+	+
	There would be more aligned incentives for NR and operators, which could lead to more co-operation among them and a more seamless experience for customers. However, given a lack of information in this area, we would recommend that more detailed work to scope the materiality of the current potential misalignment of incentives would need to be undertaken before choosing to pursue this option.							
Value for money for funders, taxpayers and users	=	+	+	=	=	+	+	=
	For all the reasons discussed above, the introduction of more revenue sharing could be expected to be beneficial mostly in the SoWs that could potentially be aligned with the introduction of such charge.							

Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	-	-	-	-	-	-	-	-

There are some advantages of introducing station revenue sharing but it is possible that in cases where the benefit from doing so would be greatest, it may be more appropriate to make the franchised SFO responsible for MRR instead of Network Rail. Although there may be some issues where a single party has more control over facility charges, this would internalise the misaligned incentives and would remove the need for revenue sharing. This option is not available for network assets due to legal requirements for vertical separation but is an option that the DfT has already implemented through the franchising regime for Greater Anglia and Essex Thameside. Bespoke arrangements such as alliances could also be explored at certain locations.

A station-specific revenue sharing mechanism could be implemented within a broader revenue sharing mechanism but the additional burden of isolating station-specific effects might not be justified. Therefore, while the conceptual benefits of revenue sharing at a broader level are well known there appears to be significant barriers to achieving them at station level. Solutions outside of the charging and incentives regime appear to be better placed to resolve issues regarding the alignment of incentives at stations.

ANNEX C PERFORMANCE REGIME INITIAL ASSESSMENTS

This annex includes the high-level assessments for longlist options 15-18 relating to the performance regime:

- Option 15: Reset benchmarks more frequently;
- Option 16: More granular, rebranded capacity charge;
- Option 17: Payments < or > compensation; and
- Option 18: Recover end-user compensation.

Option 15: Reset benchmarks more frequently

The current regime has a capacity charge that compensates NR for the anticipated impact of actual traffic growth on NR's Schedule 8 payments, i.e. traffic growth makes the likelihood of knock-on delays from incidents more likely which would increase the payments NR must make through Schedule 8. Instead of having two-way payments, the capacity charge could be replaced by an annual update to NR's Schedule 8 benchmark to take into account the estimated additional Schedule 8 cost of traffic growth/ reduction.

Key characteristics

Description of option

The Schedule 8 benchmark for passenger operators is adjusted each year to reflect the growth/ reduction in traffic on the network, but NR's benchmark is only updated on a price control basis. This option proposes that NR's benchmark also includes provisions to account for increases or decreases in traffic on an annual basis rather than on a price control basis as at present.

This option would remove the need for a separate capacity charge. The capacity charge recovers the estimated additional Schedule 8 costs to NR from increasing traffic on the network. If the Schedule 8 benchmark is updated more frequently to take account of the increase in traffic and the anticipated knock-on effects on NR's Schedule 8 performance, the capacity charge will no longer be required as NR will not be financially penalised through Schedule 8 for that traffic increase: they remain financially neutral to increases in traffic, as the current capacity charge intends.

See RDG Phase 2b Report Features: 8.4; 8.5; 8.6; and 8.7

Description of counterfactual

There is a Schedule 8 benchmark for NR and also benchmarks for each train operator. NR's benchmark is set for the price control period (5 years) and reflects annual changes in NR's performance targets, with the train operator benchmarks also updated to reflect changes in traffic levels. If in the first year of a control period a train operator or NR implements change that brings about an improvement in performance which brings them a financial 'reward' through Schedule 8, and if that improvement is maintained, then they will receive that financial reward for the remainder of the price control period and it will be lowered/removed for the next price control period as the change is taken into account in the resetting of the benchmark.

There is additionally a capacity charge, which is designed to make NR financially neutral to the addition of more traffic to the network: it is calculation-based and uses train-miles as the unit measure. It recovers the estimated additional Schedule 8 costs from increasing traffic on the network, and is therefore heavily linked to Schedule 8 at present – if Schedule 8 payments increase then the capacity charge must also.

Some industry participants also view the capacity charge as having an incentive objective, that it is a form of 'scarcity charge' which incentivises operators to use the Network efficiently, however this is not the main intention of the capacity charge which is about ensuring NR has efficient cost recovery.

Relevant factors impacting the form and/or the effectiveness of the option

- *Track access arrangements*: freight, charter, and open access operators are protected from large increases in the capacity charge in the current control period, paying CP4 charges on 'existing' traffic and CP5 charges only on 'new traffic', however it will be necessary to ensure that absorbing the charge into Schedule 8 does not have a negative impact on these operators. Franchised passenger operators pay full CP5 rates across-the-board.
- *Data availability, measurement, and billing*: it is unlikely there will be any issues with gathering the correct data, however there may be a period of delay between a year finishing and its data being ready to calculate the following year's charges – there might therefore be a delay to some

Option 15: Reset benchmarks more frequently

billing.

Impact on stakeholders

The absorption of the capacity charge into Schedule 8 should in general be helpful for industry stakeholders – even if the net flows between parties do not change, there is the benefit that it would remove the capacity charge as a separate aspect which is not particularly well understood across the industry (see RDG Phase 2b Feature 8.7), not least due to its name being interpreted sometimes as misleading as to its purpose.

Other options that complement and conflict with proposed option

More granular, rebranded, capacity charge: absorbing the capacity charge into Schedule 8 calculations would be inconsistent with a separate rebranding and changed calculation of the capacity charge.

Revenue sharing: The revenue sharing option gives NR a financial incentive by exposing it to movements in operator revenues (likely mainly passenger ticket revenues). It is likely to incentivise NR to be more responsive to demand needs to encourage increases and improvements in services, which would complement this option.

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
	This option is unlikely to have a negative impact on system safety as it should result in no net change in the flow of funds between train operators and NR in relation to traffic growth and therefore in investment incentives.							
Consistency with law	=	=	=	=	=	=	=	=
	The absorption of the capacity charge into Schedule 8 benchmarks would not have any legal implications. The Railways Infrastructure (Access and Management) Regulations 2005, Part 4 Section 14, state that NR (as the infrastructure manager) is required to establish a performance scheme to minimise disruption and improve the performance of the network. This may include penalties, compensation, and bonuses, but must be non-discriminatory across the network (this is met, as we discuss in the relevant sub-section below). There is nothing that implies a factor updating for traffic and congestion related compensation must take a specific form within the scheme. This mirrors Article 36 of Directive 2012/34 in EU law. In addition, ORR has the power under the Railways Act 1993 to prepare, publish, and vary model clauses for track access agreements. Model clauses are standard clauses that are attached to all track access agreements of similar type. In particular, these model clauses set out the charges and incentives.							

Funding of NR efficient costs	=	=	=	=	=	=	=	=
	Absorption of the capacity charge into Schedule 8 should not impact the funding of NR efficient costs, as it was used to recover additional Schedule 8 costs that would no longer exist (on such a large scale) if this option is implemented, however there might be some impact in funding NR's costs if the time lag in benchmark adjustments is not addressed correctly, i.e. through later balancing the benchmark according to actual traffic vs. projected. Time lags would arise because while the capacity charge is levied per unit of traffic, the benchmarks are set over a period of time and there would be a delay between changes in traffic and updates in the benchmarks.							
Allowance for market conditions	=	=	=	=	=	=	=	=
	This option would result in freight no longer paying capacity charges but also receiving less Schedule 8 compensation – given that the impact of this is intended to be neutral, there should be no impact either way on the competitiveness of freight.							
A single approach for the network as a whole	+	+	+	+	+	+	+	+
	By re-calculating NR's benchmarks for traffic changes on an annual basis as is done for the passenger operators, Schedule 8 is closer to being 'a single approach for the network as a whole' in its methodological approach to the calculations.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	-	-	-	-	-	-	-	-
	There will be a time lag in implementing updates to the charge to take account of traffic, and therefore a risk that NR will not fully recover its costs unless there is for example a wash-up arrangement in place. The impact of the lag on NR revenues will depend on a number of factors and it is difficult to determine the magnitude at this stage, however the impact will be negative in comparison to the current system where a charge is levied on each service automatically (although both systems risk over or under recovery through inaccurate assumptions of the impact of extra trains on delay/ Schedule 8 payments).							
Efficient whole-system whole -life industry net costs	=	=	=	=	=	=	=	=
	Updating the benchmarks should have little impact on the incentivising or enabling of changes of the pattern of service, beyond a potential small positive incentive through removing the capacity charge that is explicitly levied per mile travelled.							
Efficient long run investment decisions	=	=	=	=	=	=	=	=
	By updating the benchmark to take account of traffic on an annual basis, but not on any other aspect, there should be no negative impact on this criterion as the update should not take into account improvements to the network/ performance, which will have taken investment from NR.							
Efficient performance management	=	=	=	=	=	+	+	=
	Ensuring that the Schedule 8 benchmark is up to date according to traffic levels should provide a good incentive to NR to ensure it manages its unplanned works efficiently, given that it knows its Schedule 8 benchmark / allocation each year but only has an estimate of capacity charge until after the fact. Therefore, this is an improvement to efficient performance management under all states of the world, with a particularly large impact in SoW where there is more dynamic railway and more on rail competition, but perhaps less so when franchises are more highly specified.							

Option 15: Reset benchmarks more frequently								
	However, a reduction in efficient use of network capacity, as discussed above and below respectively, would be likely to neutralise the impact of this incentive, therefore the scoring of most SoW for this criterion is neutral apart from SoW 'beneficiary pays' and 'capacity allocation' where a small positive impact could apply on balance.							
Efficient use of network capacity	=	=	=	=	=	=	=	=
	It is not clear that this option would have a large effect on this criterion. Some industry participants view the capacity charge as also being to incentivise (/act as a price signal for) the efficient use of current network capacity, and effect that would be reduced by replacing the capacity charge with updating the Schedule 8 benchmark for traffic annually. However, it is not clear that the incentive is efficient, it has been reported (RDG Phase 2B report) that the incentive is not strong as many do not understand the charge.							
Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	+	+	+	+	+	+	+	+
	NR knows its Schedule 8 benchmark / allocation each year but only has an estimate of capacity charge until after the fact. Therefore, this option is an improvement to predictability of NR's net costs/ revenue in relation to Schedule 8 and the capacity charge, given the variability of the capacity charge.							
Simplicity	+	+	+	+	+	+	+	+
	This change would reduce the complexity of the charging regime overall through negating the need to have a separate capacity charge, which is not particularly well understood. This would be the same in all SoW.							
Transparency	+	+	+	+	+	+	+	+
	Absorbing the capacity charge more obviously into Schedule 8 rather than having it as a separate charge will aid understanding and transparency of the Schedule 8 performance regime in all states of the world.							
Low transaction costs	-	-	-	-	-	-	-	-
	Through removing the calculation of a separate charge (the capacity charge), it may reduce transaction costs. However, updating the benchmark on a regular basis to account for traffic may lead to higher transaction costs, even more so if provisions are put in place to solve the time lag issue discussed above. Overall impact in the current SoW may be negative, with no clear difference for alternative SoW, although this scoring is of ambiguous magnitude.							
Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	+	+	+	+	+	+	+	+
	This option would improve the accountability of NR as it ensures that its Schedule 8 benchmark more accurately reflects its required level of performance. The capacity charge refunds NR for potential delay compensation in advance of any delay actually occurring and regardless of whether the delay and subsequent compensation payments actually occurs. In contrast, increasing the benchmark will protect NR from							

Option 15: Reset benchmarks more frequently								
	any additional compensation it might have to pay should any delay actually happen.							
Non-arbitrary allocation of costs	-	-	-	-	-	-	-	-
	Given that NR has benchmarks on a 'Service Group' basis, while the capacity charge, is on a 'Service Code' basis, which is more granular, replacing explicit capacity charges with updates to the benchmarks might cause the allocation of costs to be less directly reflective of the source of those costs thus making it more arbitrary.							
Optimal traffic growth	+	+	+	+	+	+	+	+
	By more accurately and regularly reflecting the traffic that NR has to facilitate in its Schedule 8 benchmark, this option helps to ensure NR is neutral to new traffic, including in encouraging the sale of Access Rights to assist open access operators in running services which add extra value on top of franchised passenger services. This option will have a greater impact in the SoW where there will be greater flexibility to train operators (dynamic railway and on rail competition).							
Aligning industry incentives	=	=	=	=	=	=	=	=
	This option does not have an impact on the alignment of incentives for industry parties to cooperate.							
Value for money for funders, taxpayers and users	=	=	=	=	=	=	=	=
	There will potentially be increases in transaction costs as discussed above, but given the potential benefits of improving the process of reimbursing NR for the Schedule 8 impacts of increases in traffic, the overall impact is ambiguous.							
Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	=	+	+	=	=	=	=	=
	There are some clear benefits to this regime, however there will be costs involved in implementing the option especially if certain issues are not addressed, such as the time lag for NR. Overall the impact is likely to be neutral or very slightly positive in many SoW, even less so in the SoW 'capacity allocation' given the reduced ability of the capacity charge and Schedule 8 to impact allocation of capacity here, but slightly more positive in the SoW 'dynamic railway' and 'on-rail comp' where there is greater flexibility to train operators.							

Option 16: More granular, rebranded capacity charge

The current regime has a capacity charge that compensates NR for the anticipated impact of actual traffic growth on NR's Schedule 8 payments, i.e. traffic growth makes the likelihood of knock-on delays from incidents more likely which would increase the payments NR must make through Schedule 8. These charges are on a 'Service Code' level[82] for passenger operators (fixed for others) and have a weekend discount.

This option proposes making the charge more cost-reflective through introducing further granularity - taking account of peak and off peak trains, and using further geographic disaggregation. Alongside this, the charge could be rebranded, e.g. renamed to sit under the volume incentive, to aid understanding of it.

Key characteristics

Description of option[83]

This option aims to ensure that it more accurately reflects the impact of the extra traffic on delays, and to improve understanding of the capacity charge by the industry (see RDG Phase 2b Feature 8.7).

- The capacity charge could be made more granular, for example including further differentiation on the geography and time of the service in relation to its impact on delay. The capacity charge is on a 'Service Code' level and was made more granular for CP5, as it was previously on a higher level (Service Group), however it could go further still for CP6. The charge is also only split on time by weekend and weekday[84], with a weekend discount, which could be more detailed through taking account of peak and off peak.
- To make it more immediately clear that it is linked so tightly to Schedule 8, this option proposes to rebrand the capacity charge, which should make its impact stronger. This could be implemented through a renaming (to make Schedule 8 more obvious) or through adding it as a component within the Volume Incentive, which would involve having the two charges calculated separately but together under the 'volume incentive' title (franchised passenger operators don't pay the volume incentive so a 'merge' of the two into the same calculation would not be worthwhile).

See RDG Phase 2b Report Features 8.4, 8.6, 8.7

Description of counterfactual[85]

The capacity charge is levied per mile on network users and reimburses NR for the expected increased Schedule 8 costs incurred because of increased traffic, encouraging efficient use of the network and neutralising the Schedule 8 impact on NR of additional traffic. At present, the capacity charge is calculated using a formula (as opposed to on a claim-by-claim basis). For passenger services it is calculated on a 'Service Code' level; freight and chartered operators have a single rate across the entire network. All capacity charges have a 33% weekend discount.

The volume incentive is to incentivise NR to encourage increases in traffic: if they exceed expected growth (passenger and freight) in a control period, they will receive more money in the following

[82] "A specific set of services that operate along the same parts of the rail network and share the same origin and/or destination." ORR (2013) Periodic Review 2013: Final determination of NR's outputs and funding for 2014-19

[83] RDG (2014) Charges and Incentives User Guide
ORR (2013) Periodic Review 2013: Final determination of NR's outputs and funding for 2014-19
NR (2013) Periodic Review 2013: Capacity Charge Conclusions and Draft Pricelists

[84] NR (2013) Periodic Review 2013 – Capacity Charge Conclusions and Draft Pricelists

[85] For a more in-depth description of these and other access charges in GB Rail, refer to the *RDG Charges and Incentives User Guide (2014).*

Option 16: More granular, rebranded capacity charge

control period, with a symmetrical downside if growth is lower than expected.

The capacity charge and volume incentive are currently separate: ORR have emphasised[86] that the intention of the Volume Incentive is to represent the (social) value of increases in volume, rather than to reflect the cost of increases in volume to NR through Schedule 8 delays/payments as the capacity charge does.

Relevant factors impacting the form and/or the effectiveness of the option

- Industry complexity (Factors Report Section 4.2)
- Balance of risk and reward for asset light companies (Factors Report Section 4.5)
- Data availability, measurement, and billing (Factors Report Section 4.7)

Impact on stakeholders

This option should have a positive impact on NR through ensuring that its Schedule 8 payments net of its capacity charge receipts are more reflective of its actual performance. However, the impact is likely to be small.

This option should have a positive impact on operators through making the capacity charge clearer and therefore also on end-users through ensuring that the incentive regime is more effective in bringing about optimal traffic and usage of the network. It also ensures that franchised and open access operators are paying more accurate capacity charges according to their track usage. This might be seen as a disadvantage by those who might be faced by higher charges in more congested areas offset by lower charges to those who avoid those areas, however this is a positive change for the industry and is better reflecting the source of increased costs to NR.

Other options that complement and conflict with proposed option

Reset benchmarks more frequently, would conflict as it would remove the need for a separate capacity charge.

Scarcity charging or *scarcity auctions*, might complement, as it would make a more detailed attempt at charging operators for use of the most congested areas of the network, but for the opportunity cost rather than for the actual cost caused through wear and tear.

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=

This option should not have a negative impact on safety or on the incentive to invest in safety-relevant aspects of infrastructure in any SoW.

[86] ORR (2012) "Periodic Review 2013 Volume Incentive Consultation" available on the ORR website here.

Consistency with law	=	=	=	=	=	=	=	=

This option would not create any inconsistencies with law. Charges are allowed, but not required, to be aggregated to avoid large fluctuations. Charges must also be transparent, non-discriminatory, and consistent with effective competition, which the analysis below demonstrates is true for this option.

The Railways Infrastructure (Access and Management) Regulations 2005, Part 4 Section 14, state that NR (as the infrastructure manager) is required to establish a performance scheme to minimise disruption and improve the performance of the network. This may include penalties, compensation, and bonuses, but must be non-discriminatory across the network (this is met, as we discuss in the relevant sub-section below). There is nothing that implies a factor updating for traffic and congestion related compensation must take a specific form within the scheme. This mirrors Article 36 of Directive 2012/34 in EU law.

In addition, ORR has the power under the Railways Act 1993 to prepare, publish, and vary model clauses for track access agreements. Model clauses are standard clauses that are attached to all track access agreements of similar type. In particular, these model clauses set out the charges and incentives.

Funding of NR efficient costs	+	+	+	+	+	+	+	+

The improvement of the capacity charge would make the funding of NR's assumed efficient costs more accurate, through effectively refunding the additional (estimated efficient) costs that will be incurred through Schedule 8 as a result of an increase in traffic.

Allowance for market conditions	=	=	=	=	=	=	=	=

If the current allowances for freight remain in place, there should not be any impact of this option on the impact of competitive pressures on freight – freight and chartered operators pay a set charge across the whole network.

A single approach for the network as a whole	=	=	=	=	=	=	=	=

The methodology of the calculation across the network would remain the same, just at a higher level of granularity. Therefore, this option would not have a strong impact on this criterion.

Objectives	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	+	+	+	+	+	+	+	+

This option would have a positive but very small impact on NR's service costs recovery through ensuring greater accuracy of the capacity charge income in terms of the Schedule 8 efficient payments that would result from the increase in traffic on the network.

Efficient whole-system whole -life industry net costs	+	+	+	=	+	+	=	+

This option would improve the capacity charge's ability to make NR neutral to a change in traffic levels, and therefore would have a small but positive impact on this criterion. This would have less of an impact in 'capacity allocation' and 'highly-specified franchises' SoW where the flexibility on capacity is lower, and a higher impact in the 'dynamic railway' and 'on-rail competition' SoW where the flexibility is higher.

Efficient long run investment decisions	=	=	=	=	=	=	=	=
	A higher capacity charge in certain areas of the network should act as a signal that the area might need more investment. However, given that it neutralises NR's potential Schedule 8 (efficient) payment increases from increases in delay, the incentive for NR to invest in those areas is neutralised also. It acts as a signal but not an incentive, therefore the effect is neutral in all SoW.							
Efficient performance management	=	+	+	=	=	=	=	=
	This option would have a positive but very small impact on the performance regime's incentives on NR through ensuring the accuracy of its Schedule 8 payments net of capacity charge income. This applies in all SoW but with a lesser impact in 'capacity allocation' and 'highly-specified franchises' SoW where the flexibility on capacity is lower, and a higher impact in the 'dynamic railway' and 'on-rail competition' SoW where the flexibility is higher.							
Efficient use of network capacity	+	+	+	+	+	+	+	+
	A more granular capacity charge with a greater focus on constraints would help to move the railway towards a more efficient use of that capacity – operators will only be willing to pay the higher rate if they will receive sufficient benefits for the use of that track. This would have a less strong impact on freight and charter operators, which pay their charges on a network level, and this would have to remain the case to avoid reducing the economic viability of those operators. This would have less of an impact in 'capacity allocation' and 'highly-specified franchises' SoW where the flexibility on capacity is lower, and a higher impact in the 'dynamic railway' and 'on-rail competition' SoW where the flexibility is higher.							
Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=
	This option should not have an impact on the predictability of the charges.							
Simplicity	=	=	=	=	=	=	=	=
	Rebranding the capacity charge to make its intention and application clearer would contribute to making it more understandable, however increasing its granularity would make it more complex – therefore there is an overall neutral or near-neutral impact on this option in all SoW.							
Transparency	+	+	+	+	+	+	+	+
	Rebranding the capacity charge to make its intention and application more clear would contribute to making it more understandable.							
Low transaction costs	-	-	-	-	-	-	-	-
	Increasing the granularity of capacity charge could result in an increase in transaction costs through the greater level of detail that is required in calculating and charging							

Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	=	=	=	=	=	=	=	=
	This option would not have a significant impact on NR accountability, although there might be a slight positive impact through ensuring that its Schedule 8 payments net of capacity charge is more accurate to the actual non-efficient delay caused.							
Non-arbitrary allocation of costs	+	+	+	+	+	+	+	+
	A more granular capacity charge should have a positive impact in terms of this criterion as it ensures greater targeting of cost recovery towards those causing the cost.							
Optimal traffic growth	+	+	+	+	+	+	+	+
	A more granular (and therefore accurate) capacity charge would have an overall positive impact on this criterion because it neutralises the Schedule 8 impact of accepting new traffic on the network – therefore removes part of any disincentive for NR to not accept new traffic. This would be true for all SoW, but perhaps less of an impact in 'capacity allocation' and 'highly-specified franchises' SoW where the flexibility on capacity is lower, and a higher impact in the 'dynamic railway' and 'on-rail competition' SoW where the flexibility is higher.							
Aligning industry incentives	+	+	+	+	+	+	+	+
	This option should slightly improve the alignment of industry incentives by ensuring that NR is more neutral to new traffic. It also ensures that users of a more congested area have their impact on Schedule 8 payments more accurately reflected in their capacity charge and therefore there is a greater incentive to utilise the available network capacity efficiently.							
Value for money for funders, taxpayers and users	+	+	+	=	+	+	=	+
	By improving the accuracy of the regime and the net Schedule 8 payments this option might represent a small but positive impact on value for money, in all SoW but with a lesser impact in 'capacity allocation' and 'highly-specified franchises' SoW where the flexibility on capacity is lower, and a higher impact in the 'dynamic railway' and 'on-rail competition' SoW where the flexibility is higher.							
Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	+	+	+	+	+	+	+	+
	This option would improve the current impact of the charge in most SoW, with transaction costs as the main negative impact, and would importantly help to ensure that the capacity charge is better understood which is crucial to ensuring that it is actually creating the incentive effect that is intended. However, as an incremental change to the capacity charge it is not clear that, while these positive impacts exist, they would be significant enough to justify the increase in cost required to implement and update a more granular and rebranded capacity charge. While this option is therefore graded green, this is tentative.							

Option 17: Payments < or > compensation

NR is required to pay Schedule 8 compensation to train operators for unplanned disruption to their services, currently 100% of the calculated impact (using a pre-determined formula), to align the financial incentives between NR and train operators. This option looks at changing to paying less than 100% (to incentivise train operators to help reduce disruption) or greater than 100% (to increase the incentive factor on NR).

Key characteristics

Description of option

Schedule 8 payments requires compensation for unplanned service disruption caused to a train operator's service caused by other train operators or NR, to align the financial incentives (to not cause disruption to operators' services) and is subject to a benchmark. Therefore, NR is subject either to a penalty or to a bonus depending on its performance. Performance in Schedule 8, and the benchmark, is measured in terms of number of minutes of lateness with proxy figures for cancelled trains.[87]

The payments could be set above or below the current level of 100% of estimated lost revenues, which would have a positive impact on stakeholders if it led to improved performance, i.e. fewer and/ or shorter delays.

- **Setting payments below 100%** could incentivise the train operators to work together with the party causing the delay (NR or another train operator) to help minimise service disruption. This might be inappropriate if the impacted party was unable to influence the possibility or magnitude of the delay. For CP5, ORR looked at the impact of two levels of reduction in Schedule 8 payment rates, 10% and 25%, however chose to retain 100% payments.
- **Setting payments above 100%** is likely to be more appropriate if it is considered that even paying the correct amount of compensation (for the financial impact caused) consistently under-incentivises NR (or other train operators) to minimise disruption delays.
- **It would also be possible, theoretically, to include have both < and > 100% applied within the same regime where which one is applied is decided for each event depending on its 'type'.** However, undercompensating some users while overcompensating others may be deemed discriminatory and would immediately receive a negative scoring for all of the 'judgement' set of criteria below. Therefore, this hybrid option has been excluded from the analysis.

This case study focuses on <100%, using this option for the scorings throughout. This is the most plausible of the three variants of this option and was considered at length in PR13. Wherever the scoring would have been different for the >100% option, the score will be marked with an asterisk symbol (*) with an explanation in the text.

This option should not be used to correct a current over or underestimation of the financial impact of a delay, rather if that concern exists, it should be addressed through improving the calculation of the financial impact.

See RDG Phase 2b Report Feature 8.3, encourage joint industry working to optimise whole-industry performance.

Description of counterfactual

Schedule 8 payment rates compensate train operators for disruption to their service that are caused by other train operators or NR. The payments are currently set at 100% of full compensation for

[87] There is the potential to claim additional compensation through the Sustained Poor Performance (SPP) option, if a train operator can demonstrate that Schedule 8 has not adequately compensated them.

estimated lost revenues – although this is benchmarked so payments are required when performance falls below the baseline level (and bonuses apply when it performs better than the benchmark).

This applies to franchised passenger train operators and also to freight, open access and charter train operators, although there are separate compensation calculations for these two categories of train operator to reflect their differing business models.

Relevant factors impacting the form and/or the effectiveness of the option

- Economic viability of freight / open access operators, and of franchised operators (Factors Report Section 4.4)
- Balance of risk and reward for asset light companies (Factors Report Section 4.5)

Impact on stakeholders

If the impacted train operator was unable to reduce the chance or magnitude of the delay, then providing compensation covering less than 100% of the financial impact is ineffective in acting as an incentive to reduce disruption to services.

Similarly, as compared to a situation of 100% or <100% compensation, payments above 100% of the calculated financial impact might reduce the incentive on train operators to assist NR (or other train operators, as appropriate) to minimise the chance and magnitude of delay having an impact on NR (through paying higher compensation) and end-users (through facing more or longer delays).

Should a change in either direction prove an efficient incentive to the relevant parties, unplanned disruptions to the network would be reduced and therefore have a positive impact on end-users, train operator. NR is likely to benefit from <100% if they pay less compensation as a combined result of <100% compensation payments and fewer or less intense instances of compensation being payable due to more efficient work through train operators being more cooperative. The impact on NR of the other two options is more ambiguous.

Whether a > or <, or equal to 100% payment is appropriate in each case is likely to depend on the cause of that specific delay, however it is likely that an overall balancing could be achieved therefore removing the need to implement < and > beside each other within the same regime is which might not be desirable particularly given the increase in transaction costs and reduction in simplicity, predictability, and transparency.

Analysis at PR13 showed that it costs more for a train operator to mitigate the effect of delays than they would lose if they simply did not attempt to get involved in solving disruption, which is the main reason for the <100% option not being implemented for CP5.[88] This situation does not seem to have changed significantly since 2012, and therefore it is likely that this point remains relevant for the upcoming price review.

Other options that complement and conflict with proposed option

Revenue sharing: the collaborative approach that <100% compensation would seek to incentivise is also proposed in the network revenue sharing option, therefore these options might complement each other in a charging and incentives regime – or conflict each other if >100% is implemented alongside revenue sharing.

Possessions payments < or > 100% compensation: it could be beneficial to ensure that the possessions and performance regimes are in line with each other. Currently Schedule 4 (possessions) represents a discount as compared to Schedule 8 (performance) given that passengers (and

[88] SDG and ORR (2012) "Reduction in Schedule 4 and Schedule 8 payment rates: Analysis of Incentive and Financial Effects. Final report for consultation".

Option 17: Payments < or > compensation

therefore revenue) are considered to be less sensitive to disruption when it is planned, particularly given the reliance on online 'journey planners' rather than paper (or downloaded) timetables.

Performance against criteria								
Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=*	=*	=*	=*	=*	=*	=*	=*
	There is an ambiguous and likely small impact of this charging approach on system safety. *There could be a risk of reducing the incentive for NR to implement required works (or cause them to rush emergency works) if the charge is greater than 100%.							
Consistency with law	=	=	=	=	=	=	=	=
	A performance regime is required by EU law: Article 36 of Directive 2012/34 establishes that "There shall be a performance scheme that can include penalties, compensation and bonuses." This would imply that there is room for ORR to maintain or renew the level of payments within the performance regime. In addition, ORR has the power under the Railways Act 1993 to prepare, publish, and vary model clauses for track access agreements. Model clauses are standard clauses that are attached to all track access agreements of similar type. In particular, these model clauses set out the charges and incentives. Therefore, this proposed option would not create inconsistencies with EU or UK law.							
Funding of NR efficient costs	=	=	=	=	=	=	=	=
	This option should not affect the total revenues received by NR for efficient performance and therefore its ability to recover the efficient cost of providing its services.							
Allowance for market conditions	-*	-*	-*	-*	=*	-*	-*	-*
	Freight (and open access operators) would be financially disadvantaged under this option, as they would receive lower compensation, affecting their economic viability – this would be a significant reason not to carry this option forward if alternative arrangements could not be implemented to protect these other operators. This impact is less strong in the 'protect freight' SoW where it is assumed they will be less exposed. *Payments of >100% would conversely assist freight.							
A single approach for the network as a whole	=	=	=	=	=	=	=	=
	Charges being > or < 100% would have a neutral effect on this criterion, as the decision would apply across-the-board.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=
	This option should not impact service costs recovery in any SoW.							
Efficient	+	+	+	=	+	+	+	+

whole-system whole -life industry net costs	<100% compensation would incentivise the impacted train operators (whether affected by NR or by another train operator) to cooperate with the party responsible for the delay/ disruption, to bring about benefits to the service that might not be beneficial enough / possible for that party to bring about individually. This impact will be less strong where franchises are more highly specified (SoW 3) and stronger where competition is stronger (SoW 1 and 2).							
Efficient long run investment decisions	-*	-*	-*	-*	-*	-*	-*	-*
	This option, by reducing compensation costs to NR, could reduce its long-term investment decisions in all SoW: it could reduce its incentive to invest by reducing the potential cost of delays that might be caused by a lack of investment. While negative, this impact is likely to be small. *The incentive to invest to prevent delays would be higher if >100% compensation is paid by NR.							
Efficient performance management	+	+	+	=	+	+	+	+
	If <100% compensation would sufficiently encourage the passenger operators to work together with NR to minimise disruption, then this would lead to more efficient performance management. This would have less impact in the more highly specified franchises SoW (or be inconsistent with it), since that SoW involves greater franchise protection from NR's charging and incentives regime elements.							
Efficient use of network capacity	=	=	=	=	=	=	=	=
	This option should not have strong impacts on the allocation of network capacity.							
Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=
	Setting an across-the-board < or > 100% compensation level would not affect the predictability of the structure and level of charges.							
Simplicity	=	=	=	=	=	=	=	=
	Either < or > 100% across-the-board should not impact the simplicity of the regime in any SoW.							
Transparency	=	=	=	=	=	=	=	=
	Either < or > 100% across-the-board should not impact the transparency of the regime in any SoW.							
Low transaction costs	=	=	=	=	=	=	=	=
	Either < or > 100% across-the-board should not impact the transaction costs of the regime in any SoW.							

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	-*	-*	-*	-*	-*	-*	-*	-*
	<100% compensation would place less emphasis on NR's accountability, as it assumes that other parties are also partially responsible for minimising delays and disruption. Although this is portrayed as a negative impact on NR's accountability, this option should only be implemented if it is considered that the affected train operators need to take more responsibility/ risk for disruptions. *>100% would place more emphasis on its accountability.							
Non-arbitrary allocation of costs	=*	=*	=*	=*	=*	=*	=*	=*
	The rationale behind this option is to better allocate the cause of the financial repercussions of delays and to incentivise minimising delays, the disruption costs caused by NR (or sometimes by other train operators). < 100% compensation should ultimately only be chosen if it is considered that the cost of disruption is attributed both to NR and the relevant train operator – therefore it is difficult to rate this option anything but neutral. *It is possible that >100% could be considered an arbitrary allocation of costs as "= 100%" would be used if NR is responsible for the entire cost while >100% compensation is an arbitrary mark-up unrelated to actual costs, used purely for incentive purposes. This assumes that, as discussed above, >100% is not used to correct for perceived errors in the calculation of compensation (as such errors should be fixed through the calculation itself).							
Optimal traffic growth	=	=	=	=	=	=	=	=
	There will no clear impacts of this option in any SoW.							
Aligning industry incentives	+*	+*	+*	=*	=*	+*	+*	+*
	<100% compensation would be considered to better align the incentives of NR (or another train company causing disruption) and the affected train operator, such that the train operator would be more inclined to help to minimise the delay as they will not receive full compensation for the period of delay. However, analysis at PR13 showed that it costs more for a train operator to mitigate the effect of delays than they would lose if they simply did not attempt to get involved in solving disruption – therefore, the alignment is not as strong as hoped, if existent at all.[89] *>100% would make train operators less incentivised to minimise delays, which would result in incentives being less well aligned. This impact would be even less strong in the SoW where franchises would be more highly specified, since they will be more protected from the financial effects of NRs charging and incentives regime and would be less flexible to be able to assist NR.							

[89] SDG and ORR (2012) "Reduction in Schedule 4 and Schedule 8 payment rates: Analysis of Incentive and Financial Effects. Final report for consultation"

Value for money for funders, taxpayers and users	-	-	-	-	-	-	-	-

< 100% compensation would only facilitate a better service for customers if the train operators involved are able to act on the intended incentive to help minimise disruption (otherwise the operators will still have a disrupted service and will receive lower compensation impacting their ability to invest elsewhere in their service). Similarly, >100% compensation only facilitates a better service for customers if NR is able to respond to the additional performance incentive.

SDG's analysis and the DfT separately made it clear in PR13 that the train operators are not sufficiently able to respond to a reduction in the payment rates to justify the loss in compensation. Further, reducing Schedule 8 payments would "not deliver any benefits that would be worth the increased financial impact for Government (taking into account that such a change would have revenue support implications as well as implications for franchise payments)".[90] Therefore, this option likely represents worse value for money for funders (and taxpayers) unless it can be proven that significant factors have changed since, which does not appear to be the case.

Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	=	=	=	-	=	=	=	=

The more plausible of the three options is for compensation at <100% of the calculated financial impact, which would have some positive impacts for some of the criteria discussed above, however the overall impact of the incentive is unsure and the costs involved are very high.

Furthermore, the franchised train operators will attempt to price the reduction in compensation into future franchise agreements, thereby reducing the impact of its incentive effect as each new franchise renewal occurs.

Similarly there is no strong positive impact anticipated from setting >100%.

This analysis and these grades are not intended at this stage to capture the interactions of this option with other areas of the performance regime and the wider regulatory regime; these would need to be taken into consideration as part of any more detailed analysis of the impact of this option.

[90] SDG and ORR (2012) "Reduction in Schedule 4 and Schedule 8 payment rates: Analysis of Incentive and Financial Effects. Final report for consultation"

Option 18: Recover end-user compensation

NR currently compensates train operators for the long-term financial impact of disruptions to services, which does not include a short-term component to reimburse passenger operators for passenger compensation (i.e. that paid through Delay Repay or as required through the conditions of carriage); this option proposes including such a component.

Key characteristics

Description of option

This option would involve passenger operators receiving specific compensation through Schedule 8 that reimburses it for compensation paid to its passengers as a result on disruption caused by NR or other train operators. This would involve adjusting the compensation calculation in Schedule 8 to include a pre-calculated amount according to type/ severity of delay. The reimbursement would be more accurate in the situation where there is a system in place to automatically reimburse passengers, such as through smart cards (as will be implemented on C2C from 2016[91]).

Further, the compensation (to both passengers and passenger operators) could be more reflective of actual financial impact by taking into account the impact of delays or cancellations on a user's entire journey rather than simply each service or 'leg' of a journey, and this would need to also be reflected in the Schedule 8 payments under this option.

See RDG Phase 2b Report Feature 8.12

Description of counterfactual

Schedule 8 payments compensate train operators for the long-term financial impact of unplanned service disruption caused by NR (or other operators), ensuring that the party that causes the delay is responsible for covering the financial impact of that delay.[92]

End-user compensation such as payments through Delay Repay, a national scheme used by most GB train companies to compensate passengers for delays 30 minutes or longer rather than the 'Conditions of Carriage' requirement of 60 minutes, is not recoverable through the Schedule 8 payments.

Delays are considered on a service basis rather than a journey basis: if a delayed train would cause a connecting train to be either 'on time and empty' or 'late and with passengers', the connecting train is not encouraged to wait as it would then be penalised under Schedule 8 if it also becomes delayed.

Relevant factors impacting the form and/or the effectiveness of the option

- Economic viability of freight and open access operators, and of franchised operators. (Factors Report Section 4.4)
- Balance of risk and reward for asset-light companies (Factors Report Section 4.5)
- Data availability, measurement, and billing (Factors Report Section 4.7)

Impact on stakeholders

Passenger operators would benefit from NR being more incentivised to reduce delay, including through investments, and also benefit from the compensation payment itself (relative to a situation where compensation is not reimbursed). Freight operators might be impacted if they are required to pay compensation for having delayed passenger operators, and are unlikely to benefit much from any changes to compensation they are eligible to receive under this option.

[91] C2C (2014) "Passenger's Charter Nov 2014"

[92] RDG (2015) "Review of Charges Phase 2b: Assessment of the current charges and incentives regime." Features 8.2 and 8.12

Option 18: Recover end-user compensation

NR (and other operators causing delays) would be more incentivised, through higher payments to other parties, to minimise those delays – this will be a cost to the relevant parties but should represent better value for money and efficiency for the network as a whole.

Other options that complement and conflict with proposed option

'Schedule 4 payments < or > compensation' would potentially complement or conflict with this option, given that the incentives in that option (whether to incentivise passenger operators to work with NR through <100% compensation or to increase the incentive on NR to improve through >100% compensation) through compensation changes are not dissimilar to some of the incentives involved in deciding whether to pass-through end-user compensation or not.

It is possible that the 'payments < or > compensation' option could be used to implement the 'recover end-user compensation' option - payments could be set >100% compensation as an attempt to reimburse delayed train operators for their compensation requirements. However, this would be inaccurate and risk reducing the incentive on train companies to improve its compensation payments and process, and, as discussed in that case study, it is suboptimal to use <or>100% where a change to the calculation itself is possible.

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
	This option, by increasing Schedule 8 costs to NR, would have an ambiguous impact on NR's investment: it could increase its incentive to invest by increasing the potential cost of delays that might be caused by a lack of investment, but it could also reduce its incentive to carry out short-term non-emergency works through increasing the cost of doing so.							
Consistency with law	=	=	=	=	=	=	=	=
	This option should not be inconsistent with the law in any SoW. The Railways Infrastructure (Access and Management) Regulations 2005, Part 4 Section 14, state that NR (as the infrastructure manager) is required to establish a performance scheme to minimise disruption and improve the performance of the network. This mirrors Article 36 of Directive 2012/34 in EU law. This performance scheme may include penalties, compensation, and bonuses, but must be non-discriminatory across the network (this is met, as we discuss in the relevant sub-section below). There is nothing that implies the inclusion of passenger compensation if not permitted.							
Funding of NR efficient costs	=	=	=	=	=	=	=	=
	This option should not affect the funding of NR's efficient costs given that it applies to situations where performance is worse than a benchmark.							
Allowance for market conditions	-	-	-	-	=	-	-	-
	Freight operators might be impacted if they are required to pay compensation for having delayed passenger operators, and are unlikely to benefit much from any changes to compensation they are eligible to receive under this option. They will likely be less impacted in the SoW where freight is more protected.							

A single approach for the network as a whole	=	=	=	=	=	=	=	=
	This option will refund an estimation of compensation provided to passengers, and whether it represents a single approach for the network as whole will depend on the specific form of the calculation that is included in Schedule 8. However, passenger operators are increasingly moving towards more similar schemes (i.e. joining Delay Repay) and therefore differences are likely to narrow, making this less of an issue. With the introduction of smart cards enabling automatic passenger refunds, the differences between operators/ routes should narrow further.							
Objectives	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=
	This option should not affect the efficient service costs recovery.							
Efficient whole-system whole-life industry net costs	=	=	=	=	=	=	=	=
	This option should not affect efficient whole system whole life industry net costs.							
Efficient long run investment decisions	+	+	+	+	+	+	+	+
	This option, by increasing Schedule 8 costs to NR, should increase its long-term investment decisions in all SoW: it could increase its incentive to invest by increasing the potential cost of delays that might be caused by a lack of investment. It could also reduce its incentive to carry out short-term emergency works through increasing the cost of doing so, although this impact is likely to be small. There is a small risk that NR could focus its investment in the areas which are likely to cost it more on compensation through the passenger operators having more generous schemes (rather than just because more passengers are delayed) however any such impact is likely to be small. Therefore, the overall impact of this option is likely to be positive.							
Efficient performance management	+	+	+	+	+	+	+	+
	This option should incentivise the efficient management of unplanned work through increasing the cost to NR of causing disruption above its benchmarked level, as this regime is directly about Schedule 8. However, it might also have a positive impact on Schedule 4 if NR is incentivised to become more efficient at its planned works (covered by Schedule 4) to reduce the risk of overrunning and being subjected to Schedule 8 and the related compensation payments.							
Efficient use of network capacity	=	=	=	=	=	=	=	=
	This option should not distort incentives for the allocation and use of available network capacity.							
Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=
	If using a calculation/estimation method, this option does not impact the predictability of the Schedule 8 payments, as the payments can be calculated shortly after the delay has occurred, as at present.							

Simplicity	=	=	=	=	=	=	=	=
	This option should not have any impact on the simplicity of charges to operators, although it will make their compensation payments slightly more complex.							
Transparency	=	=	=	=	=	=	=	=
	This option should not have any impact on the transparency of charges.							
Low transaction costs	-	-	-	-	-	-	-	-
	The closer the reimbursement is to actual reimbursement of compensation, rather than an estimate, the more transaction costs will increase by, so the magnitude of the impact on this criterion depends on the specific details of implementation. However, as the network adopts smartcards on a growing basis, automatic refunds will become more readily and widely available, therefore the same calculation as used for the automated refunds will be included in the Schedule 8 payments to ensure full reimbursement. Under this scheme, the increase in transaction costs (of implementing this option, assuming smartcards / automated refunds are funded elsewhere) is minimised in all SoW. Therefore, while this criterion remains red it is not strongly so.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	+	+	+	+	+	+	+	+
	This option increases NR's accountability through ensuring that it pays a more representative amount of the financial impact that its delays have on the train operators, in all SoW.							
Non-arbitrary allocation of costs	=	=	=	=	=	=	=	=
	This option would not have an impact on the non-arbitrary allocation of enhancement / services costs.							
Optimal traffic growth	=	=	=	=	=	=	=	=
	This option should have a positive impact on promotion of efficient long run investment decisions, and should not have any negative impacts for the promotion of efficient industry costs, therefore should have a neutral or slightly positive impact on incentivising the growth of traffic where net social benefits exist.							
Aligning industry incentives	+	+	+	+	+	+	+	+
	The performance regime is designed with the intention of better aligning industry incentives, through ensuring that the party responsible for the financial impact of a delay is made to cover that financial impact through Schedule 8 payments. Including the short-term costs relating to paying compensation to passengers would further improve this alignment. There might also be a slight reduction to industry incentives, because the cost to passenger operators of paying out compensation for delays has been reduced. Therefore, they are less incentivised to ensure that delays are minimised in magnitude and frequency. The overall effect, however, should be positive.							

Value for money for funders, taxpayers and users	+	+	+	+	+	+	+	+

If passenger operators are to be compensated for the refunds that they give to passengers for delays or cancellations, then it is possible that there will be an improvement to the passenger refund process in that passenger operators might be able to make it easier for passengers to find out about, apply for, receive, and 'cash in' refunds (if provided as vouchers). The refund process creates extra costs for the relevant train operator so this incentive might not be particularly strong, but the removal of the disincentive to encourage claims could be strong enough to bring about an improvement in the claims process.

This impact might be less strong in the SoW where franchisees are more highly-specified since they are less exposed to risk, and more strong in the 'dynamic railway' and 'on-rail comp' SoW where franchisees are more exposed to risk.

Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	+	+	+	+	+	+	+	+

While this option would increase transaction costs, it would have some positive impacts on many criteria if implemented effectively, particularly in the event that smartcards/ automated refunds are available, in particular there would be positive impacts on value for money, investment incentives, and allocation of costs in all SoW.

There is a risk that freight operators would need to be protected from potential compensation payments they are required to give to passenger operators, since this would impact upon the economic viability of freight (and similarly for open access and chartered operators). This scoring assumes that some mechanism is put in place to ensure that fright is adequately protected.

While this analysis provides an overall positive ranking, the magnitude of this impact is unclear, particularly given the small value of compensation claims as a percentage of eligible claims and of total revenue. Recent and upcoming changes to claims might increase this percentage, but the effect is as yet unknown. Further, it is not clear that passenger operators would desire the added complexity that this might bring to the compensation payment (See RDG Phase 2b Feature 8.12).

ANNEX D POSSESSIONS REGIME INITIAL ASSESSMENTS

This annex includes the high-level assessments for longlist options 19-22 relating to the possessions regime:

- Option 19: More frequent ACS recalculation;
- Option 20: Benchmarked regime;
- Option 21: Payments < or > 100% compensation; and
- Option 22: Reform discounts.

Option 19: More frequent ACS recalculation

The Access Charge Supplement (ACS) allows NR to recover the amount it is expected to pay out in Schedule 4 compensation (paid to operators as compensation for disruption caused by possessions) over the price control period, should it undertake the estimated level of works at an efficient level. The ACS is set ex-ante at the start of a price control period based on the estimated volume of works that will be carried out during that period. More frequent recalculation of the ACS could be used to adjust the baseline Schedule 4 cost (and the ACS) for variations in the volume of renewal and maintenance activity during the price control period.

Key characteristics

Description of option

The proposed option involves improving the accuracy and/or frequency of the Access Charge Supplement (ACS) calculation to better reflect specific conditions faced by train operators. This could involve re-setting the ACS annually, which would contribute to enhancing the accuracy of the ACS. For example, there are some concerns with losses incurred by passenger operators through the ACS when planned work is not carried out (as the compensation payments are then lower than the ACS payments), and there has previously been some suggestions that ACS should take account of these work cancellations. At the CP5 price determination, East Coast proposed that passenger operators should be able to claim back ACS payments for planned work not carried out, on the basis that in CP3 and CP4 NR over-recovered on Schedule 4 payments as they under-delivered on work against the planned schedule of works.

The total level of actual Schedule 4 compensation paid out by NR is a function of several factors including:

- the volume of upgrade and renewal activity that needs to be carried out - this is largely set out at the start of the price control period based on the output specifications and NR's business plan;
- compensation rates (based on estimated costs of disruption such as running replacement buses, revenue loss, etc.) - this is set periodically by ORR; and
- possessions management (e.g. time required to carry out planned works and scheduling works such as to minimise disruption to timetabled services) - this is controlled by NR who can outperform its baseline estimate by improving its performance.

This option refers primarily to adjusting the ACS based on changes in the volume of engineering works carried out, however a more frequent ACS recalculation could also involve resetting compensation rates if material changes in the cost of disruption are identified.

Description of counterfactual

Franchised train operators receive compensation payments each time their services are disrupted due to NR restricting access to the network infrastructure to undertake planned engineering works under Schedule 4 arrangements. The system is designed to be financially neutral for passenger operators if NR delivers its baseline engineering plans efficiently.

Baseline Schedule 4 costs are recovered through the Access Charge Supplement (ACS), which is fixed ex-ante for the entire duration of the price control. Therefore, if NR takes more/less possessions than expected, it will under/over recover its actual Schedule 4 costs. The estimated Scheduled 4 costs are based on planned maintenance and renewals activity volumes and a unit cost per asset type. If the required possessions are above the estimated level, passenger operators receive more compensation in Schedule 4 payments than they pay out through the ACS and vice versa.

Option 19: More frequent ACS recalculation

Relevant factors impacting the form and/or the effectiveness of the option

- **Franchising regime** – under the current franchised regime, franchised passenger operators are protected against changes in ACS between price control periods therefore this limits the impact of the proposed option.
- **Data availability –** calculating the ACS more frequently will increase data requirements as compared to the current ACS, and the ability to improve the accuracy of the charge depends heavily on the data available and the costs of collecting any additional data.

Impact on stakeholders

Recalculating the ACS on an annual basis would reduce the scope for franchised passenger operators to over / underpay relative to Schedule 4 compensation received due to variations in the level of engineering works carried out by NR.

The proposed option would also reduce the scope for NR to under/over recover its Schedule 4 costs due to variations in the volume of works carried out. In recent years NR over-recovery of its Schedule 4 costs has been linked to planned work not carried out. Based on this recent experience the NR is likely to lose revenue through this change.

Other options that complement and conflict with proposed option

Under a benchmarked possessions regime (Option 20) the ACS would no longer be required. Therefore, this option would become redundant.

Option 15 proposes resetting Schedule 8 benchmarks annually. While the two issues are separate, there could be some merit in reviewing both the performance benchmark and the possessions ACS as part of an annual review process.

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
	The proposed option should have no major impact on system safety, although if it leads to better planned engineering works it might lead to a more well maintained network which improves its safety although this effect is considered marginal.							
Consistency with law	=	=	=	=	=	=	=	=
	Article 35 of Directive 2012/34 establishes that "infrastructure charging schemes shall encourage railway undertakings and the infrastructure manager to minimise disruption and improve the performance of the railway network through a performance scheme. This scheme may include penalties for actions which disrupt the operation of the network, compensation for undertakings which suffer from disruption and bonuses that reward better-than-planned performance." In addition, ORR has the power under the Railways Act 1993 to prepare, publish, and vary model clauses for track access agreements. Model clauses are standard clauses that are attached to all track access agreements of similar type. In particular, these model clauses set out the charges and incentives. The option is consistent with current legislation.							

Funding of NR efficient costs	+	+	+	+	+	+	+	+
	The option would still allow funding of NR's cost for an efficient level of possessions. By adjusting the amount recovered through the ACS annually depending on the volume of works carried out, there is less scope for NR to over / under recover its efficient Schedule 4 costs.							
Allowance for market conditions	=	+	=	=	=	=	=	=
	Under a franchise regime where franchised passenger operators are protected against changes in access charges, recalculating the ACS annually would have little or no impact on the passenger operators' financial performance. Under a SoW where franchised passenger operators are exposed to changes in charges, the proposed option would reduce the financial risk faced by passenger operators. Other operators that do not pay the ACS are not impacted by the proposed option.							
A single approach for the network as a whole	=	=	=	=	=	=	=	=
	The proposed option would apply to all train operators that pay the ACS. There would still be a difference in regimes between train operators that pay ACS (i.e. franchised passenger operators), those that can opt to pay the ACS (open access operators) and those that do not pay the ACS (freight operators).							
Objectives	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	+	+	+	+	+	+	+	+
	The option would still allow recovery of NR's cost for an efficient level of possessions, however might lead to a small improvement given that it should make the amount recovered more accurate (i.e. reduce the current large over-recovery of Schedule 4 costs by NR).							
Efficient whole-system whole -life industry net costs	=	=	=	=	=	=	=	=
	The proposed option will not necessarily impact industry net costs. While it removes the risk of over-recovery by NR, which currently places additional costs on franchised passenger operators, there is a risk of under-recovery which could shift costs to NR.							
Efficient long run investment decisions	+	+	+	+	+	+	+	+
	The proposed option might have some positive impact on this criterion through removing NR's incentive to under-deliver work, thus improving incentives for efficient long-run investment decisions.							
Efficient performance management	=	=	=	=	=	=	=	=
	The proposed option refers to adjusting the ACS more frequently to take account of changes in the estimated level of possessions required due to changes in the volume of network upgrades and renewals carried out by NR. If applied appropriately this should not affect the incentives of NR to minimise possessions disruption through efficient possessions management.							

Efficient use of network capacity	+	+	+	+	+	+	+	+

The proposed option might increase efficient use of the network as updating the ACS to better reflect actual work done would encourage NR to better plan its possessions and enhancements and to carry out planned work.

Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	-	-	-	-	-	-	-	-

Adjusting the ACS annually could result in higher volatility and would make the regime less predictable compared to having the level fixed ex-ante for the entire price control period. It might, however, mean that there is a smoothing of planned works; there is currently a peak in planned works towards the end of a control period, which may be due to NR wanting to save non-essential work until the end of the period to minimise its Schedule 4 liabilities – switching to an annual ACS update should make these peaks much smaller and more frequent.

Simplicity	-	-	-	-	-	-	-	-

The annual recalculation of the ACS would add another layer of complexity to the regime.

Transparency	=	=	=	=	=	=	=	=

The proposed option does not have a major impact on the transparency of the regime, as the ACS would be derived based on the same set of principles as in the present.

Low transaction costs	-	=	-	-	-	-	-	-

The proposed option would lead to an increase in transaction costs particularly as changes in ACS levels would require an adjustment of the financial model used to determine franchise payments. Under a SoW with less franchise protection, such an adjustment would probably not be required thus reducing the transaction costs arising from the proposed option.

Outcomes	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	+	+	+	+	+	+	+	+

The proposed option could be positive in limiting the scope for Schedule 4 under or over recovery due to changes in the volume of work carried out, although it might have limited impact in improving possessions management by NR.

Non-arbitrary allocation of costs	+	+	+	+	+	+	+	+

The proposed option would ensure that the level of ACS better reflects actual Schedule 4 costs based on the volume of works carried out. If the ACS adjustment were done based on variation in the volume of works at route-level then this would also result in a better allocation of Schedule 4 costs among the different passenger operators.

The impact on franchised passenger operators under the current SoW would be limited however due to the protection from changes in access charges. A positive impact would exist in a SoW where such protection is reduced.

Optimal traffic growth	=	=	=	=	=	=	=	=
	There is no clear impact from the proposed option of incentives for optimal traffic growth.							
Aligning industry incentives	+	+	+	+	+	+	+	+
	The impact of the proposed option on this criterion is unclear. It would not affect the current incentive structure for minimising disruption due to the works actually carried out, and franchised passenger operators are mostly protected from changes as the ACS passes through their franchise agreements. However, it might improve the incentives for NR to actually carry out non-essential works to improve the network.							
Value for money for funders, taxpayers and users	=	=	=	=	=	=	=	=
	The proposed option is unlikely to have a material impact under this criterion, as it does not affect incentives for service quality or industry costs.							
Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	=	+	=	=	=	=	=	=
	The impact of the proposed option under the current SoW is limited by the fact that franchised passenger operators have limited exposure to changes in the access charges. The benefit that the option would bring in terms of better reflecting efficient Schedule 4 costs based on volume of works carried out by NR is counterbalanced by the costs associated with added complexity and volatility of charges within the price control period. The proposed option would bring additional benefits in a SoW where franchised passenger operators are exposed to changes in access charges. In that case, a more frequent recalculation of ACS or an ex-post adjustment mechanism reflecting volume of work actually carried out would reduce the financial risk exposure of passenger operators.							

Option 20: Benchmarked possessions regime

The aim of the possessions regime (Schedule 4) is to compensate train operators for the financial impact of planned service disruption, while also incentivising NR to manage possessions efficiently – compensation for franchised train operators is currently payable on all possessions. A benchmark, representing a 'free' possessions allowance, could be used to set a target for an efficient level of possessions to encourage NR to be more efficient in its planning of possessions.

Key characteristics

Description of option

The option involves implementing a benchmarked possessions regime similar to the Schedule 8 benchmark. The benchmark would set an allowed level of possessions for which NR does not have to pay compensation to train operators. Instead of providing compensation each time a possession takes place, payments would only be made if possessions rise above the relevant benchmark.

As there would be no compensation payments paid for efficiently planned and delivered works that meet the benchmark, the baseline Schedule 4 costs would be zero therefore there would be no need for an ACS to recover these costs. Train operators would effectively have to support the costs of disruption up to the target level. However, they would also not have to pay the existing ACS (in the case of franchised passenger operators).

As freight operators currently receive compensation for late notifications and significant disruptions (and do not pay an ACS), it needs to be considered if they would also be subject to a benchmark regime where no compensation would be provided for a certain level of disruption or whether they would receive compensation on the current basis.

The allowed level of possessions ('free' possessions) would be set taking into account the volume of works that NR, is expected to carry out over a given period.

A free possessions allowance was set for Railtrack in the first price control period but ORR decided to replace it with compensation for all possessions at the second price control review in 2000 as it considered this would provide better incentives to reduce the disruption caused by possessions – having a free allowance was considered to under-incentivise NR to outperform the target.

Description of counterfactual

Franchised train operators receive compensation payments each time their services are disrupted due to NR restricting access to the network infrastructure to undertake planned engineering works under Schedule 4 arrangements. This compensation reflects a discount on that due for unplanned disruption under Schedule 8. The system is designed to be financially neutral for passenger operators if NR delivers its baseline engineering plans efficiently. Baseline Schedule 4 costs are recovered through the Access Charge Supplement (ACS). The ACS is fixed ex-ante for the entire duration of the price control. Therefore, if NR takes either more or fewer possessions than expected, it will under/over recover its actual Schedule 4 costs.

Freight operators do not pay the ACS and are entitled to receive compensation based on certain criteria such as late notifications (less than 12 weeks) and significant disruptions (determined by length of diversionary route or departure/arrival time delay). NR's Schedule 4 costs for freight operators are recovered through its general revenue requirement. Open access operators can choose to pay the ACS and receive compensation on the same basis as franchised passenger operators. However, no open access operator has done this so far.

Relevant factors impacting the form and/or the effectiveness of the option

- **Franchising regime -** the current franchising regime offers franchised passenger operators protection against changes in access charges including the ACS but not against variations in the network availability assumptions made at the time of the franchise bid.

Option 20: Benchmarked possessions regime

- **Data availability, measurement, and billing** - setting an accurate possessions benchmark relies on estimating a number of factors including the volume and type of works expected to be carried out by NR over the price review period as well as estimates of the likely disruption caused by each type of work. This issue affects the current regime in the same manner.

Impact on stakeholders

The proposed option would involve some changes to the way the possessions regime is reflected in franchise agreements. Under the current regime, franchised passenger operators factor-in the expected costs incurred including the level of ACS and the expected compensation due to possessions disruption into their franchise agreements. The franchise agreement offers protection against changes in the level of ACS at price control determinations. If the baseline level of expected possessions increases at the next price control review, increases in the ACS would be passed through the franchise agreement and the higher level of service disruption would be mitigated by higher compensation payments leaving the franchised passenger operators are largely unaffected.

Under a benchmarked possessions regime, franchised passenger operators would need to factor-in the expected costs of possessions (if the target possessions level is assumed then no compensation will be factored in). Unless franchise agreements are modified to take account of the changes in the possessions regime, franchised passenger operators will not be protected against potential changes in the possessions benchmark. This uncertainty would have be reflected in an increased risk premium factored in the franchise bids.

NR should not be at a financial advantage or disadvantage through this benchmark should they plan and undertake possessions efficiently, given that changes to ACS will be made to account for the fact of not paying Schedule 4 compensation on the now 'free' possessions.

Freight operators currently do not pay the ACS but get compensation for some disruptions of their services. If some of this compensation is replaced with a free possessions allowance, this will have a negative impact on the income of freight operators.

Other options that complement and conflict with proposed option

As this option would effectively remove the need for an ACS, option 19 (More frequent recalculation of ACS) would also no longer be applicable. However the discussion of how frequent to set ACS might be applicable to similar discussions around how often the benchmark should be set.

Performance against criteria

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=

Under the proposed option NR would decide how best to plan possessions taking account of its free possessions allowance in the same way it currently takes account of its allowed Schedule 4 costs. Therefore, a material change in the way engineering works are planned and carried out would not be expected. There is a risk that train operators might resist possessions when no compensation is provided (i.e. when possessions are within the free allowance) which could mean engineering works might need to be delivered within a shorter possession time. However, it is not clear if this would have a material impact on system safety compared to the current regime.

Option 20: Benchmarked possessions regime								
Consistency with law	=	=	=	=	=	=	=	=
	Article 35 of Directive 2012/34 establishes that "infrastructure charging schemes shall encourage railway undertakings and the infrastructure manager to minimise disruption and improve the performance of the railway network through a performance scheme. This scheme may include penalties for actions which disrupt the operation of the network, compensation for undertakings which suffer from disruption and bonuses that reward better-than-planned performance." The proposed option is consistent with legislation.							
Funding of NR efficient costs	=	=	=	=	=	=	=	=
	The efficient Schedule 4 costs determined under a benchmark regime would be zero. If the proposed option is applied across the whole industry (to freight as well as passenger operators) this would mean that the baseline Schedule 4 costs for freight compensation would also be zero removing the need to recover these costs through other charges/grants.							
Allowance for market conditions	=	=	=	=	=	=	=	=
	Depending on how the benchmark regime is applied to freight operators this could potentially have a negative impact on their financial standing compared to the current regime. If a free possessions target were implemented for the type of disruption that currently attracts compensation, this would reduce the amount of compensation freight operators currently receive and negatively affect their financial viability. There could also be an increase in the risk faced by franchised passenger operators depending on how a benchmarked possession regime would be reflected in franchise agreements.							
A single approach for the network as a whole	=	=	=	=	=	=	=	=
	Similar to the current regime, the proposed option would apply in the same way to all franchised passenger operators but there may still be a different regime applied to freight operators.							
Objectives	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=
	The option would still allow recovery of NR's cost for an efficient level of possessions.							
Efficient whole-system whole -life industry net costs	=	=	=	=	=	=	=	=
	Incentives should be similar to the current regime, although NR may be less efficient in using its 'free' (benchmarked) possessions than in using those it has to pay for.							
Efficient long run investment decisions	=	=	=	=	=	=	=	=
	The proposed option does not provide specific incentives for efficient long-run investment decisions. There may be more hesitance to plan possessions above the benchmark or more haste in using up the 'free' (benchmarked) allowance however the current regime provides similar incentives through under/over recovery of baseline Schedule 4 costs.							

Option 20: Benchmarked possessions regime								
Efficient performance management	=	=	=	=	=	=	=	=
	A possessions benchmark regime that provides a free possessions allowance without rewards for outperformance may weaken the incentives for NR to reduce disruption below the target. If the benchmarked regime provided rewards for outperforming the target then the incentives would be similar to the current regime.							
Efficient use of network capacity	=	=	=	=	=	=	=	=
	Incentives should be similar to the current regime, particularly if the benchmarked regime includes the scope for outperformance of the target.							
Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=
	The predictability of the regime would not be greatly impacted by the proposed option. The possessions target would still rely on estimated volume of work carried out by NR and an estimated impact for type of work.							
Simplicity	+	+	+	+	+	+	+	+
	Removing the ACS and focusing on a possession target would reduce the complexity of the regime and make it easier to understand. It would also make tracking progress over time easier as possessions disruption targets would become the focus of the regime rather than being embedded in the calculation of total Schedule 4 costs.							
Transparency	+	+	+	+	+	+	+	+
	A benchmarked regime would provide better visibility of NR's performance by focusing explicitly on possessions disruption targets rather than on the level of Schedule 4 costs.							
Low transaction costs	=	=	=	=	=	=	=	=
	There would be benefits resulting from removing the need to calculate the ACS however there may also be increased transaction costs related to how variation in possessions targets between price control reviews are captured in franchise agreements.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	=	=	=	=	=	=	=	=
	There are no clear impacts on NR accountability.							
Non-arbitrary allocation of costs	=	=	=	=	=	=	=	=
	The proposed option would not change the basis on which cost are allocated.							
Optimal traffic growth	=	=	=	=	=	=	=	=
	There is no clear impact from the proposed option of incentives for optimal traffic growth.							

Option 20: Benchmarked possessions regime									
Aligning industry incentives	-	-	-	-	-	-	-	-	
	The proposed option might reduce incentives for train operators to agree to possessions when they would not receive compensation (i.e. when possessions are free).								
Value for money for funders, taxpayers and users	=	=	=	=	=	=	=	=	
	The proposed option is unlikely to have a material impact under this criterion.								
Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers	
	=	=	=	=	=	=	=	=	
	The proposed option does not bring material changes to the current incentives structure. The current regime already relies on estimating a baseline level of possessions based on which expected Schedule 4 costs are calculated. The existence of an ACS in the current regime has the effect of making a proportion of possessions 'free' to NR (up to the level of estimated Schedule 4 costs). The current regime allows NR to over/underspend the estimated Schedule 4 cost offering rewards and penalties for out/underperformance. The proposed option can be implemented without the scope for outperformance (i.e. unused free possessions are not rewarded) however this may weaken the incentives on NR to minimise possessions disruption. Overall, the proposed option could bring benefits in terms of simplifying the possessions regime and providing a stronger focus of NR performance against possessions disruption targets. However, it is unclear whether these estimated benefits are sufficient to outweigh the costs of implementing this option.								

Option 21: Possession payments < or > than full compensation rates

The aim of the possessions regime is to realign the incentives of NR and train operators: it incentivises NR to deliver possessions efficiently to minimise the level of service disruptions from it taking possession of the network, through requiring it to pay compensation to affected train operators reflecting the impact on its long term revenue. Adjusting the Schedule 4 payments rates to greater or less than 100% could be a way to alter the level of risk and the incentives faced by both NR and train operators in minimising possessions disruption.

Key characteristics

Description of option

This option involves setting Schedule 4 payment rates deliberately above or below the calculated level of 100% of compensation due because of possessions.

- **Setting payments below the 100% level** means that passenger operators bear some of the cost resulting from service disruption. It aims to incentivise train operators to work together with NR to help deliver possessions in the most efficient way and minimise service disruption. (See RDG Phase 2b Report Feature 7.5 on facilitating the efficient use of possessions by all parties). This option relies on the assumption that train operators are able to influence the efficiency of possessions, which may not always be the case.

  For CP5, ORR looked at the impact of two levels of reduction in Schedule 4 payment rates, 10% and 25%, however chose to retain 100% payments.

- **Setting payments above the 100% level** means that the passenger operator is overcompensated for the cost of disruption. It aims to strengthen incentives for NR to deliver possessions efficiently by raising the cost of disruption and also to offer incentives to train operators to provide engineering works access (See RDG Phase 2b Report Feature 7.6). It may however create other perverse incentives by effectively making train operators better off when a service is disrupted.

A third potential option, applying both less than and greater than 100% compensation in the same regime) depending on the type or location of the possessions, has also been considered. Given that the possessions regime already includes different compensation rates for different types of possessions and that undercompensating some users while overcompensating others may be deemed discriminatory, this hybrid option has been excluded from the analysis.

Given that reduced (less than 100%) payment rates have been considered in the past, we regard this as the most likely option to be looked at by ORR. Therefore this assessment focuses on this option but also provides a discussion of the greater than 100% payment rates too where relevant. The RAG scoring against the assessment criteria is based on the reduced payment rates option. Where the increased payment rates option has an opposite impact, this has been marked with an (*) in the assessment.

It is important to note that this option does not imply correcting a current over or underestimation of the financial impact of possessions; if that concern exists, it should be addressed through updating the calculation of the compensation rates.

Total estimated Schedule 4 costs that NR is allowed to recover would have to reflect payments < or > than 100% compensation. Consequently, the amount recovered from franchised passenger operators through the ACS would also change. If lower/higher compensation were provided, franchised passenger operators would also pay a lower/higher ACS.

Description of counterfactual

Schedule 4 compensation rates cover the costs associated with loss of revenue because of train cancellations or delays and provision of bus replacement services. Schedule 4 compensation is typically determined using a pre-determined formula. This means that while, on average, compensation rates should reflect the costs to the passenger operators of a NR possession, it may

Option 21: Possession payments < or > than full compensation rates

not accurately reflect the costs associated with each possession.

Relevant factors impacting the form and/or the effectiveness of the option

- **Economic viability of freight / open access operators, and of franchised operators** (Factors Report Section 4.4) – reduced compensation rates would have a negative impact on the financial viability of all operators who will receive lower compensation and face greater risk. Increased compensation rates would have the opposite impact;
- **Balance of risk and reward for asset light companies** (Factors Report Section 4.5) – reduced payment rates would increase the uncertainty and risk for train operators;
- **Franchise regime** (Factors Report Section 3.2) – franchised passenger operators are protected against changes in the ACS but not against changes in the amount of compensation received under their franchise agreements. However, the risk arising under/over-compensation of possessions disruption would be reflected in future franchise bids.

Impact on stakeholders

With reduced payment rates, franchised passenger operators would bear some of the costs of possessions disruption and be exposed to the risk of NR taking a larger number of possessions than expected. This would affect existing franchisees. Future franchise bids would reflect the risk associated with reduced/higher payment rates.

The proposed option could have a potentially significant impact on the revenue of freight and open access operators.

The proposed option would also affect the amount by which NR can under or over-recover its Schedule 4 costs. For example, reduced payment rates mean that service disruption caused by NR possessions above the estimated levels would result in a lower under-recovery, while less service disruptions than estimated would result in a lower over-recovery.

Other options that complement and conflict with proposed option

- *Revenue sharing*: the collaborative approach that <100% compensation would seek to incentivise is also proposed in the network revenue sharing option, therefore these options might complement each other in a charging and incentives regime – or conflict each other if >100% is implemented alongside revenue sharing.
- *Performance payments < or > 100% compensation*: for the consistency of the incentives regime, it could be beneficial to ensure that the possessions and performance regimes are in line with each other. Currently Schedule 4 compensation rates includes discounted Schedule 8 revenue loss compensation rates given that passengers (and therefore revenue) are considered to be less sensitive to disruption when this is planned. Changing the ratio of Schedule 4 and 8 payment rates could have implications for how NR treats the risk of overrunning a possession and causing unplanned disruption.

Option 21: Possession payments < or > than full compensation rates								
Performance against criteria								
Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=*	=*	=*	=*	=*	=*	=*	=*
	By reducing the cost of a possession, a payment rate less than 100% would incentivise NR to plan for the most efficient length of possessions having a potentially beneficial impact on the delivery of essential engineering works. A negative impact may however arise from train operators being more reluctant to agree to possessions if they are not properly compensated. The overall impact under this criterion is therefore unclear and likely to be small. *There could be a risk of reducing the incentive for NR to implement required works (or cause them to rush emergency works) if the payment rate is greater than 100%.							
Consistency with law	=	=	=	=	=	=	=	=
	Article 35 of Directive 2012/34 establishes that "infrastructure charging schemes shall encourage railway undertakings and the infrastructure manager to minimise disruption and improve the performance of the railway network through a performance scheme. This scheme may include penalties for actions which disrupt the operation of the network, compensation for undertakings which suffer from disruption and bonuses that reward better-than-planned performance." In addition, ORR has the power under the Railways Act 1993 to prepare, publish, and vary model clauses for track access agreements. Model clauses are standard clauses that are attached to all track access agreements of similar type. In particular, these model clauses set out the charges and incentives. This option is consistent with current legislation.							
Funding of NR efficient costs	=	=	=	=	=	=	=	=
	This option should not affect the ability of NR to recover the efficient cost of providing its services if the estimated Schedule 4 costs that NR is allowed to recover are adjusted accordingly to take account of the actual payment rates rather than the full compensation rates.							
Allowance for market conditions	- *	- *	- *	- *	=*	- *	- *	- *
	A reduction in payment rates would have a negative impact on the financial viability of non-franchised operators in almost all SoWs. In a SoW where there is greater freight protection, the impact of reduced payment rates on the rail freight industry would be neutralised. *If an increase in payment rates were applied, then the impact on the financial viability of non-franchised operators would be positive.							
A single approach for the network as a whole	=	=	=	=	=	=	=	=
	The proposed option would apply similarly to all train operators. There would still be a different possessions compensation applied to franchised passenger operators (who pay the ACS) and non-franchised operators.							

Objectives	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=
	This option should not affect service costs recovery if the Schedule 4 costs that NR is allowed to recover are adjusted accordingly to take account of the actual payment rates rather than the full compensation rates.							
Efficient whole-system whole -life industry net costs	=	=	=	=	=	=	=	=
	Reduced payment rates could incentivise train operators to take action to minimise service disruption. This option could however also make train operators less willing to agree to possessions that disrupt their services. This could result in an excessive emphasis being placed on taking short possessions at times when services would not be disrupted. This may not however the most efficient way to deliver engineering works – one longer possession may be more efficient than several short possessions - thus not delivering benefits in terms of overall industry costs. Increased payment rates would conversely make train operators more willing to agree to possessions thus potentially allowing for possessions that are more efficient. However, it could also make NR more focused on scheduling possessions such that they do not cause disruption and incur compensation payments. This would help minimise disruption but may again result in less efficient delivery of engineering works. Therefore, the overall impact on total industry costs is not clear.							
Efficient long run investment decisions	=	=	=	=	=	=	=	=
	Investment decisions leading to network engineering works are likely to result in more possessions. Reduced payment rates would reduce the costs of possessions and hence reduce the costs of investment. Similarly higher payment rates would increase the costs of undertaking investment. The impact of these options on the overall cost of investment is likely is likely to be immaterial.							
Efficient performance management	+*	+*	+*	+*	+*	+*	+*	+*
	If less than 100% compensation would incentivise the train operators to work together with NR to minimise disruption, then this would lead to more efficient performance management. Also more than 100% compensation could incentivise NR to deliver engineering works more efficiently by avoiding service disruption and also incentivise train operators to provide access when required. However, it may also discourage train operators from working towards minimising disruption, as they would potentially benefit from having longer and more disruptive possessions. In this case therefore, the impact may be uncertain.							
Efficient use of network capacity	-	-	-	-	-	-	-	-
	Possession planning involves a decision by NR on the best way to maximise the efficiency of engineering works while minimising the cost of carrying out those works including the cost of disruption to services. Under both arrangements discussed, NR would not face the true cost of possessions disruption. This may result in altered planning decisions that may not reflect the best use of capacity.							

Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=
	Having a fixed and stable reduction/ increase in compensation payments would not affect the predictability of the charging and incentives regime. If however, there were uncertainty over the reduction/increase applied to compensation rates from one price control review to another then this would make the regime less predictable.							
Simplicity	=	=	=	=	=	=	=	=
	Having a fixed and stable reduction/ increase in compensation payments should not significantly affect the complexity of the charging and incentives regime.							
Transparency	=	=	=	=	=	=	=	=
	Having a fixed and stable reduction/ increase in compensation payments should not significantly affect the transparency of the charging and incentives regime. If however, there were uncertainty over the reduction/increase applied to compensation rates from one price control review to another then this would make the regime less transparent.							
Low transaction costs	=	=	=	=	=	=	=	=
	Having a fixed and stable reduction/ increase in compensation payments should not significantly affect the way compensation is paid in the current regime.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	-*	-*	-*	-*	-*	-*	-*	-*
	Less than 100% compensation would place less emphasis on NR's accountability, as it effectively penalises other parties who may not bear the responsibility for service disruption. Greater than 100% payment rates would place more emphasis on its accountability.							
Non-arbitrary allocation of costs	-	-	-	-	-	-	-	-
	In the context of the proposed option, this criterion is interpreted as referring to the allocation of the disruption costs caused by NR possessions. The assessment depends critically on how the responsibility for the disruption is shared between the parties. If responsibility is considered to rest solely with NR then the proposed option would effectively result in a worse allocation of costs as either train operators would be made to share a portion of these costs or NR would have to pay out more than the actual costs caused. Greater than 100% payment rates could be considered an arbitrary allocation of costs by definition as 100% compensation would be used if NR is considered responsible for the entire cost while any amount higher than 100% would be an arbitrary mark-up unrelated to actual costs, used purely for incentive purposes. This assumes that, as discussed above, this option is not used to correct for perceived errors in the calculation of compensation.							
Optimal traffic growth	=	=	=	=	=	=	=	=
	There is no clear impact of the proposed option on incentives for optimal traffic growth.							

Aligning industry incentives	+*	+*	+*	+*	+*	+*	+*	+*

If train operators have a role to play in delivering more efficient possession planning and minimising disruption, then paying reduced payment rates would better align industry incentives.

*Paying increased payment rates would produce the opposite result, as it would discourage train operators from focusing on minimising disruption.

Value for money for funders, taxpayers and users	-*	-*	-*	-*	-*	-*	-*	-*

Less than full compensation of possessions disruption would increase the risk faced by franchised passenger operators with respect to future possessions. This would be reflected in franchise bids potentially resulting in worse value for money for taxpayers.

Reduced payment rates could facilitate a better service for customers if the train operators involved are able to help minimise disruption, otherwise the operators will still have a disrupted service and be financially worse off due to receiving lower compensation. The SDG analysis for ORR considered that the train operators are not sufficiently able to respond to a reduction in the payment rates to justify the loss in compensation.[93]

Similarly, higher payment rates would reduce the risk faced by train operators with regards to possessions disruption and could potentially result in lower risk premiums in franchise bids. A better service for customers would only result if NR is able to respond to the additional performance incentive and train operators are not sufficiently discouraged by the higher compensation received to address service disruption. A better value for money for end-users could potentially be achieved by directing some of the extra compensation payment to end-users.

Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	=	=	=	=	=	=	=	=

Providing less than full compensation payments could potentially bring some benefits by encouraging train operators to help minimise disruption. The actual outcome however is uncertain and critically depends on the following main issues:

- How much train operators can actually affect the level of disruption caused by NR possessions; and
- How the proposed option impacts on the balance between minimising disruption and maximising the efficiency of engineering work

These outcomes are uncertain and recent ORR work suggests they are probably minimal. In addition, the reduced payment rates would have a clear negative financial impact on freight and open access operators.

Providing more than full compensation payments also has uncertain benefits. It might also raise questions around the justification for paying train operators more than the cost of disruption suffered and what impact this might have on their incentive to minimise disruption for end-users.

[93] SDG and ORR (2012) "Reduction in Schedule 4 and Schedule 8 payment rates: Analysis of Incentive and Financial Effects. Final report for consultation"

Option 22: Reform discounts

Current compensation discounts for early notification of possessions seek to reflect the lower impact on end-users of disruption announced well in advance and also to provide incentives to Network Rail to plan and book possessions early. Reforming the structure of discounts would aim to address some concerns in the industry that discounts incentivise early but not necessarily efficient planning of possessions.

Key characteristics

Description of option

This option involves reforming the discounts applied to Schedule 4 compensation rates when enough advance notice of a possession is given. These discounts lower the incentives for NR to make changes to possession plans after it has notified rail operators of its intention.

If, for example, NR realises after the initial notification that it would be beneficial to lengthen the possession slightly or to rearrange the possession due to the late announcement of a large event that will create heavy passenger demand, the discount scheme at present would discourage such changes in possessions. It may also incentivise NR to book possessions early even when work is uncertain resulting in late cancellations of possessions, a concern expressed by train operators at the PR13 price review process.[94]

Although a reform of the current discount structure could involve increasing as well as reducing the discounts, our assessment focuses on the option of reducing or even removing the discounts altogether as this more clearly addresses the concerns that have been voiced by the industry. The option could also involve modifying the timelines for which discounts are available to reflect, for example, changes in the way users plan their journeys in the digital era.

The issue of early notification discounts has been taken into consideration by ORR in its consultation on the Schedule 4 and Schedule 8 regimes going into the CP5 price determination. It concluded that discounts are still appropriate as they reflected the lower marginal revenue loss for train operators when possessions are notified early. ORR also stated that early possessions planning by NR is driven more by internal timelines (such as the need to produce the Engineering Access Statement) rather than Schedule 4 discounts.

Description of counterfactual

Schedule 4 compensation rates are calculated as a discounted rate against the Schedule 8 compensation that would be applied, to reflect the benefit of providing early notice of a possession and giving train operators and end-users alike more time to make alternative/ appropriate arrangements and thus reduce disruption. The amount of discount is determined by factors that vary according to the amount of notice given to passenger operators, and the type of service that is being disrupted.

There are three levels of notice for possessions, and up to four rates of discounts possible within each level. The discount rates distinguish between Service Groups with a higher or lower number of passengers affected by delays (e.g. a service the south east would have more passengers affected so there is a lower discount applied), using the 'late time multiplier' that is also used for Schedule 8 payments.[95]

- *26 weeks before operation, with the amount payable between 40% and 55%.* This is by the 'New Working Timetable', which is the earliest notification to operators of the next timetable to come into operation, thus the earliest opportunity to inform passengers of upcoming disruption to

[94] ORR (2012) Consultation on Schedules 4 and 8 possessions and performance regimes p.14
[95] ORR (2013) Final determination of Network Rail's outputs and funding for 2014-19 p.801

services.

- *22 weeks in advance, with the amount payable between 63% and 70%.* This allows information in time for inclusion in the 'Informed Traveller Timetable'.
- *Before 10pm the previous night, the amount payable is 85% for all Service groups.* This is when the 'Application Timetable' is set. Any delays announced after this will fall under the Schedule 8 regime and have no discount applied.

Relevant factors impacting the form and/or the effectiveness of the option

The proposed option is relatively unconstrained by the factors affecting the effectiveness of the incentives regime. There are however some implications stemming from these factors that should be considered:

Franchising (Factors Report Section 3.2) – the proposed option would result in changes in total Schedule 4 costs and thus in the amount that needs to be recovered through the ACS. The franchising regime means that at present franchised passenger operators would not be affected by changes in the ACS.

Track Access Arrangements (Factors Report Section 3.3) and **Industry complexity** (Factors Report Section 4.2) - the mixed use of the network and the number of stakeholders involved mean that agreeing on a suitable possessions timetable may be difficult and there may be disagreement around the amount of compensation that is required by each user.

Impact on stakeholders

The main justification for the current regime of discounts is that the further in advance a train operator is made aware of a possession, the lower the impact of that possession on the train operator's revenues; train operators and end-users can manage disruptions more easily if they are given early notification.[96] Removing or reducing discounts could result in NR providing late notifications of possessions that could result in higher costs for train operators and end-users. This impact would then be mitigated by the fact that train operators would receive full compensation for all possessions.

Total compensation paid to passenger train operators for possession disruption would go up which also means that the amount recovered through the ACS would also increase. Under the current SoW, franchised passenger operators would be held harmless against any change in the ACS.

If the franchise protection were removed, the higher compensation that franchised passenger operators would receive would be counter-balanced by an increase in ACS.

Other options that complement and conflict with proposed option

The proposed option does not significantly interact with any of the other proposed options although there may be practical issues to consider around how discounts would be applied if a benchmark possessions regime (option 20) or a regime where payment rates do not match the exact cost of disruption (option 21) is implemented. Generally, this option can be considered as part of a wider package that includes any of the other options.

[96] ORR (2013) Final determination of Network Rail's outputs and funding for 2014-19, p.801

Option 22: Reform discounts

Performance against criteria								
Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
System safety	=	=	=	=	=	=	=	=
	The proposed option could have benefits for system safety if it encourages NR to carry out better planned engineering works rather than focus on planning to minimise disruption. However, we expect this impact to be minimal, therefore given Amber.							
Consistency with law	=	=	=	=	=	=	=	=
	The proposed option is consistent with existing legislation.							
Funding of NR efficient costs	=	=	=	=	=	=	=	=
	Removing/reducing discounts should not affect NR's recovery of efficient costs assuming any reduction in discounts is reflected in the baseline Schedule 4 costs estimated at the start of the price control period. Removing discounts may reduce the ability of NR to over-recover Schedule 4 costs through ACS.							
Allowance for market conditions	=	=	=	=	=	=	=	=
	The proposed option should not affect the viability of train operators. This option would not affect freight operators for example, as they do not receive compensation for possessions notified early.							
A single approach for the network as a whole	=	=	=	=	=	=	=	=
	Similar to current regime. The same regime would apply to all franchised passenger operators but the regime for freight and open access operators would remain different.							
Outputs	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Service costs recovery	=	=	=	=	=	=	=	=
	To the extent that early notification discounts reflect the lower costs imposed on train operators and passengers, removing these discounts would make Schedule 4 less reflective of the costs of disruption – although these higher costs would be offset elsewhere (e.g. through a higher ACS), therefore while the distribution of the recovery of costs might be affected, the actual recovery should not be subject to a significant change. The assessment under this criterion could become positive however if the costs to train operators of early-notified possessions are not as low as assumed by the current level of discounts.							

Efficient whole-system whole -life industry net costs	+	+	+	+	+	+	+	+
	Current regime offers incentive to NR to book possessions early even when scope of works might not be clearly defined. It also disincentives ongoing changes to possessions timetable. This includes instances where a train operator might have made suggestions to improve the possessions plan, but doesn't because it is aware that Network Rail would not be willing to make changes to already booked possessions. Reforming discounts could encourage better planning of engineering works that may result in lower industry net costs.							
Efficient long run investment decisions	=	=	=	=	=	=	=	=
	The proposed option does not have a clear impact on network investment incentives, although it would require more careful planning on NR's behalf when planning and booking possessions – as there will be a greater financial cost of bulk bookings. It might therefore have a small impact on NR's investment decisions.							
Efficient performance management	+	+	+	+	+	+	+	+
	Reforming discounts should encourage better planning of engineering works. Incentives to minimise disruption can still be provided through Possession Disruption Index (PDI) targets that go into the calculation of efficient Schedule 4 costs.							
Efficient use of network capacity	+	+	+	+	+	+	+	+
	Proposed option might have a slight positive impact on the efficient use of the network by removing the incentive for NR to focus on booking possessions early rather than when it is most efficient to do so.							

Judgement criteria	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
Predictability	=	=	=	=	=	=	=	=
	A positive impact on the criteria in this section would occur if the discounts are removed altogether or their number (rather than level) is reduced, since the number of uncertain variables in the calculation would decrease – however this impact is likely to be small.							
Simplicity	+	+	+	+	+	+	+	+
	Removing the discounts would make the charging regime simpler as it would reduce the number of variables that go into the calculation of compensation rates. Reducing discounts rates would result in a similar level of complexity to the current regime.							
Transparency	=	=	=	=	=	=	=	=
	Removing the discounts would reduce the number of variables that go into the calculation of compensation rates, however this change would have a minimal impact on this criterion overall.							
Low transaction costs	=	=	=	=	=	=	=	=
	Removing the discounts would result in a simpler possessions regime but it would still require complex calculations of compensation rates. Therefore, the impact on transaction costs is minimal.							

Axioms	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
NR accountability	=	=	=	=	=	=	=	=
	NR would be still be accountable under the Schedule4 regime for planning and delivering possessions efficiently. There are no clear impacts on NR accountability stemming from the proposed option.							
Non-arbitrary allocation of costs	=	=	=	=	=	=	=	=
	The proposed option would not change the basis on which cost are allocated.							
Optimal traffic growth	=	=	=	=	=	=	=	=
	The proposed option may have beneficial impacts in terms of encouraging efficient network capacity use if possessions are better planned. However, the impact of this on optimal traffic growth is uncertain and probably minimal.							
Aligning industry incentives	+	+	+	+	+	+	+	+
	The proposed option could incentivise better planning and making better use of possessions. Incentives for minimising disruption can still be provided through payments for late notifications/ cancellations of possessions as well as through targets for possessions disruption (such as PDI index) that would affect the baseline amount of Schedule 4 costs that can be recovered by NR through ACS.							
Value for money for funders, taxpayers and users	=	=	=	=	=	=	=	=
	Positive: The proposed option should incentivise better planning and making better use of possessions. This may result in lower industry costs. Negative: Option would also remove/reduce incentive to provide early notice of possessions, which may result in users having to manage disruption at shorter notice.							
Summary	Current	Dynamic railway	On-rail comp	Specified franchises	Protect freight	Beneficiary pays	Capacity allocation	Regional powers
	+	+	+	+	+	+	+	+
	This option is primarily about rebalancing the focus of incentives from aiming to minimise disruption towards better planning of possessions. The viability of this option critically rests on two aspects: 1) how much difference early notifications make in reducing the disruptive impact of possessions; and 2) whether removing/reducing discounts will alter NR's possessions planning process. Assuming this would result in better possessions planning, this option would bring benefits under several of our assessment criteria.							

ANNEX E ASSESSMENT CRITERIA

As explained in Section 3.3, the RDG Vision provides the basis of the assessment criteria used for the initial assessment presented in this report.[97] Table E.1 below, contains the full descriptions of the criteria used. They are presented in this annex for ease of reference when reading the individual assessments in Annexes A to D.

The descriptions provided are drawn from the RDG Vision but, as noted in Section 3.3, four descriptions have been clarified to assist with the process of conducting the initial assessments and to reflect feedback from the industry. In each case, text has been added (identified in the table as underlined text), with no deletions being made.

Table E.1: Assessment criteria

Criterion	Description
Axioms	
System safety	Charges must fund, and should not create incentives to compromise, the safety of the railway system
Consistency with law	The charges and incentives regime should comply with the relevant regulations and laws, including EU and domestic legislation (e.g. Railways Act, and Access and Management Regulations). This includes consistency with the non-discrimination principle and facilitation of effective competition. Further key elements include legal requirements for transparency, efficiency, minimum charges of direct cost incurred, the EU framework for additional charges, and specific impact tests considered by the ORR such as those on the environment.
Funding of Network Rail efficient costs	Total revenues (access charges plus government support) should allow Network Rail to recover the total efficient costs of providing and improving all services
Allowance for market conditions	Where the charges for a service exceed the costs directly incurred for the provision of that service, any mark-up should recognise pressures from competitive external markets and may only be applied if the market segment concerned can bear the cost. For the avoidance of doubt, and to avoid duplication, any legal requirement related to the allowance for market conditions is considered under this option.
A single approach for the network as a whole	The charges and incentives approach and methodology should apply to the whole network, but may be different for different customers with different characteristics. Different methodological decisions regarding the calculations of charges should not be allowed: methodology and policy decisions should be the same for the whole network. This does not mean that actual charges will be the same.

[97] RDG (Dec 2014) *"RDG vision for the charges and incentives regime in the long run"* available here p13-16

Criterion	Description
Objectives	
Service cost recovery	Charges for any service provided by Network Rail should recover at least the efficient costs directly incurred to provide that service. The level at which services are defined will need to be considered
Efficient whole system whole life industry net costs	The charges and incentives regime should incentivise or enable changes in the pattern of service (including in respect of journey times) where the resulting benefits exceed the change in efficient costs directly incurred
Efficient long run investment decisions	The charges and incentives regime should incentivise or enable Network Rail to invest where the long run benefits of the investment exceed its efficient costs
Efficient performance management	The charges and incentives regime should incentivise or enable the efficient management of both planned and unplanned disruptive work
Efficient use of network capacity	The charges and incentives regime should not result in distortionary incentives for the allocation, and should encourage the best use of, available network capacity
Judgement criteria	
Predictability	The regime should avoid undue volatility in the structure and level of charges across multiple control periods, so that operators can predict the future level of charges for a given pattern of operations with a reasonable degree of confidence
Simplicity	All charges to all operators should be easily understood. The regime should be straightforward, transparent, and readily understandable at the point of use by all parts of the industry and broader stakeholders.[98] It must also be practicable to calculate and apply the charges at the required level of granularity.
Transparency	All charges to all operators should be derived from a clear set of principles. Any deviations from these principles should be clearly identified, and their impact clearly shown.
Low transaction costs	The charges and incentives regime should impose low transaction costs.
Outputs	
Network Rail accountability	A transparent regime will result in Network Rail being accountable to its customers, funders and users in relation to charges and incentives. However, full accountability depends on non-charging structure issues such as institutional and contractual mechanisms, which cannot be reflected in a set of

[98] RDG (May 2015) "Review of Charges Phase 2b: Assessment of the current charges and incentives regime" available on the RDG website here p7

Criterion	Description
	objectives that relates to the structure of charges.
Non-arbitrary allocation of costs	If a clear distinction can be made between the base services bought by operators, and the incremental enhancements to those services bought by the DfT, Transport Scotland and other funders, then a charges regime which recovers at least the efficient costs directly incurred to provide any service can generate a non-arbitrary charge for those incremental enhancements. This can result in a non-arbitrary allocation of costs between operators and funders.
Optimal traffic growth	A regime that provides efficient industry costs, efficient long run investment decisions and efficient use of network capacity will incentivise the growth of traffic volumes where the net benefits of doing so are positive.
Aligning industry incentives	Improved efficiency from and greater co-operation (e.g. through alliances) between Network Rail, train operating companies and freight operating companies.
Value for money for funders, taxpayers and users	A regime that facilitates investment and improvements in the customer experience for both passengers and freight users, supporting the trade-offs between competing requirements, and taking into account public funds available.

Key: Underlined text supplements the descriptions provided in the published RDG Vision.

ANNEX F KEY FEATURES OF ALTERNATIVE SOWS

The Phase 2a slide deck,[99] contains a description of the characteristics of each SoW. The key features noted for each SoW are reproduced below for ease of reference when reading the assessments in the preceding annexes.[100]

F.1. A more dynamic railway

- More on-rail competition between passenger operators, i.e. increased provision of passenger services by open access operators.
- Low franchise protection from changes in access charges, i.e. franchisees are on risk for changes to a wider range of Network Rail's access charges.
- Increased franchise flexibility as a result of less highly specified franchise agreements, i.e. franchisees have more freedom to adjust service provision, e.g. in reaction to changes in patterns of demand.
- Beneficiary pays approach to fixed costs, i.e. government no longer provides funding of infrastructure via a 'lump sum' direct network grant and instead directs funding to specific projects or to cover specific industry costs.
- Decisions on allocation of network capacity are no longer based largely around the rights reflected in the existing timetable. Instead, allocation may reflect other factors, such as the overall benefits of use

F.2. On-rail competition via more flexible franchising

- More on-rail competition between franchised passenger operators or from more open access as a result of fewer services being franchised on certain parts of the network.
- Increased franchise flexibility as a result of less highly specified franchise agreements, i.e. franchisees have more freedom to adjust service provision, e.g. in reaction to changes in patterns of demand.

F.3. More highly specified franchises

- Greater franchise protection from changes in the charges and incentives regime, i.e. franchisees are protected from the financial effects of more elements of Network Rail's charges and incentives regime, e.g. the Possessions Regime, Performance Regime and Electric Current for Traction charge.

[99] RDG (May 2015) *"Current and potential alternative states of the world"* available here

[100] A detailed description of SoWs was also produced in the Phase 3 report on factors impacting the form and/or the effectiveness of charges and incentives.

- Reduced franchise flexibility as a result of more highly specified franchise agreements, such as a management contract, i.e. franchisees have very little freedom to adjust service provision, e.g. in reaction to changes in patterns of demand.

F.4. Freight protection / subsidy

- More financial protection or a direct subsidy for freight operators provided by governments.
- This could either be:
    - Protection from changes to Network Rail's access charges; and/or
    - Direct subsidy from government to freight operators to reflect the positive externalities / societal benefits of freight.

F.5. Beneficiary pays for network capability

- Governments no longer provide a lump sum Network Grant directly to Network Rail to fund a mix of new and existing network capability.
- Instead, funding is directed to specific projects, potentially via the users that benefit most from those schemes (e.g. franchised operators or regional funders). Alternatively, funding is provided directly to Network Rail but for specific elements of existing capability, e.g. governments explicitly fund historic financing costs, or the societal benefits of enhancements to the rail network.

F.6. Change in approach to allocation of network capacity

- Decisions on allocation of network capacity are no longer based largely around the rights reflected in the existing timetable. Instead, allocation may reflect other factors, such as the overall benefits (both railway revenues and societal benefits) generated by a particular use of a train path, e.g. intercity, commuter, freight, possession for maintenance. Or, capacity allocation may respond more quickly to changes in patterns of demand.
- In practice, a more analytical approach would be taken to allocating train paths, compared to the current SoW.
- A change in approach to allocating network capacity should be considered in two SoWs:
    - Current capacity / capability remains; and
    - A significant increase in capacity, resulting from the outputs of the 'Digital Railway' and/or a major enhancement project such as High Speed 2.

F.7. Regional decision making

- More responsibility for decision making (funding, policy, operational) at a regional level. For example, with the provision of local passenger service being procured and funded by regional bodies, e.g. Passenger Transport Executives.
- Governments no longer provide lump sum grants directly to Network Rail to fund a mix of new and existing capability. Instead, funding is directed to specific projects, potentially via the users that benefit most from those schemes (e.g. franchised operators or regional funders), or funding is provided directly to Network Rail but for specific elements of existing capability.

ANNEX G NOTE OF DISCUSSION AT INDUSTRY WORKSHOP ON OPTION SELECTION

The table below contains the final decision on which options should be taken through to detailed assessment reached at the workshop and a summary of the discussion.

Table G.1: Summary of industry feedback

Option	Commentary
Network charges	
1. Avoidable cost	**Consensus on taking the option to detailed assessment. While this option was not consistently viewed as one to be pursued, there was consensus that the proposed change in money flows makes allocation of the fixed charge more interesting. With some concern, particularly from freight, it was agreed that this option should be considered further**. Freight - information on avoidable costs could be useful, but putting avoidable costs into charges is not a good option. Acknowledged that further work which demonstrates this point could be valuable to freight. Network Rail - this option could have greater importance given the change in money flows and is therefore of interest to it and to DfT. Governments - Scottish Government is still considering the impact of any changes to money flows, i.e. Network Grant, on its budgets. Passenger operator – this option will be difficult to implement fully, given legislation on cost directly incurred and ability to bear.
2. Ability to pay mark-ups	**Consensus on not taking the option to detailed assessment but on the basis that further consideration would be given to the role of mark-ups in other detailed assessments e.g. avoidable cost.** Freight - pursuing a single mark-up for freight could be a good option to clarify and rationalise the existing charges. Industry would benefit from having clarity on whether charges are being levied for "direct costs" and what was a mark-up for ability to pay. ORR - highlighted that the option had been given an overall red grading in the summary grading despite not receiving any red grades against the individual criteria. Passenger operator – consider this a priority to examine, particularly if other options are difficult to implement within current legislation CEPA explained that it expects some of the options being considered further would be levied as a mark-up, which as legal necessity must have regard to ability to pay. Therefore that consideration of this form of charge might be best dealt with as part of more specific options which would explicitly or implicitly be mark-ups (cf. Options 1, 3, 4, 5, 8, 10, 11).
3. Scarcity charge (long run marginal cost "LRMC")	**Consensus on not taking the option to detailed assessment on the basis that a pure LRMC based charged would likely be 'lumpy' and unmanageable, but noting that material differences could be picked up under the administered Scarcity Charge option (Option 4).** Reference was made to the findings from the Brockley Consulting pilot, which could feed into the consideration of this option.
4. Scarcity	**Consensus on taking the option to detailed assessment, noting qualitative**

Option	Commentary
charge (administered)	**differences with the LRMC (Option 3), and observing that this option could stand alongside a geographically disaggregated VUC (Option 9).** ORR – the present capacity charge, although designed to reflect the performance effect of network crowding, has in part the effect of a scarcity/congestion charge, and an explicit scarcity charge would in part duplicate the effect of this charge. Passenger operator - worry about making the non-commercial rail operations (freight and PSO) look unnecessarily expensive by loading them with the notional opportunity costs of not being able to run commercial services. More efficiently done through an administered access allocation process?
5. Scarcity charge (auctions)	**Consensus on not taking the option to detailed assessment.** The group was persuaded of the impracticality of this option in a complex industry such as rail.
6. Environmental charge	**Consensus on not taking the option to detailed assessment. The view was that this option considers only negative impacts not the benefits of rail and that such an option would not work in isolation (i.e. from similar charges on roads).** Freight - introduction of an environmental charge would require equivalent charging for the road which is not being considered
7. Reservation charge	**Consensus on taking the option to detailed assessment given that it is in use elsewhere in the UK and may be anticipated by legislation. However previous work was noted and it was concluded that the analysis would need to build on this and/ or consider alternative options rather than simply reiterate what has been done previously.** Freight - this option has been investigated many times before and therefore does not require much further analysis. There was a lack of consensus on whether implementing new EU legislation will make the introduction of a reservation charge mandatory. However, it was agreed that revisiting such a charge may have value and this should be done on the basis of a charge akin to that levied on HS1 rather than the option considered by NERA for ORR in 2007.
8. Track occupancy charge	**Consensus on not taking the option to detailed assessment given the risk of perverse incentives in a mixed use railway. Its use as a form of scarcity charge was discussed but the view was this this would be fairly crude and other options (e.g. the administered scarcity charge) would be more interesting to consider is greater depth.** Freight - track occupancy charge would create a strong incentive for operators to get in the timetable first in order not to get slower paths. There was consensus that, whilst this option has been implemented on HS1, it is not appropriate for a complex mixed-use network, where there is a risk it could create perverse incentives and have detrimental impact on freight.
9. Geog. VUC	**Consensus on not taking the option to detailed assessment subject to noting however that introducing a scarcity charge could make it more implementable and that this should be considered as part of the scarcity charge option.** Network Rail - this had been examined recently as part of PR13 and had not been popular with the industry. It was noted that it might be considered as part of a package of charges e.g. alongside a scarcity charge, because lower direct cost routes are generally the more heavily used.

Option	Commentary
10. Average cost charges	**Consensus on not taking the option to detailed assessment.** This option has also been considered previously and rejected e.g. by CEPA for ORR in 2010. It would move the industry away from cost reflective charging which ORR has committed to.
11. Revenue sharing	**Consensus on not taking the option to detailed assessment, given that it was considered relatively recently and was not supported by the industry. However there was a fairly strong view that the current volume incentive should remain in place** Network Rail - revenue sharing has been looked at before and has not been seen as a particular area that the industry wishes to push forward. Whilst there have been challenges with implementing REBS it could be seen that (while "clunky") the volume incentive does have a positive impact and influence decision making for Network Rail. Should be clear that the conclusion is that the volume incentive should remain in place whether or not the group agrees that the incentive should be stronger. The group thought that there were alternative approaches to aligning incentives, e.g. closer working relationships between operators and route managers. Some of the group thought that strong revenue sharing could affect the ability of PSO projects to obtain paths from NR.
Stations charges	
12. Regulate station qualifying expenditure (QX)	**Consensus on not taking any station option to detailed assessment given that each represents a tweaking of current approaches rather than a more significant review of the approach to stations which is perhaps what is needed and might be carried out in other workstreams.** Network Rail - station options could be considered as part of franchise design and alliancing. Passenger operator - Station charges probably need a root and branch review.. It was also noted that the initial assessment templates for stations are being considered by the RDG Stations Charges Working Group and that the issues raised in the templates (which relate to the potential to improve existing metrics) might be pursued by that group.
13. Station-by-station long term charge (LTC)	
14. Station revenue sharing	
Performance regime	
15. Reset benchmarks more frequently	**Consensus on taking the option to detailed assessment because the group was strongly of the view that the current charge has limited credibility in the industry.** Freight - current Capacity Charge should be seen as an insurance premium for increases in volume. Also, this option was something that came up as part of PR08 when Freight put forward a proposal to reset benchmarks.
16. More granular, rebranded capacity charge	**Consensus on not taking the option to detailed assessment unless Option 15 is found to not be workable.** Governments - having an off-peak discount for the capacity charge could influence Welsh Government decisions to add extra services. Passenger operator – no matter how granular, the Capacity charge doesn't seem

Option	Commentary
	to work Group thought that this option could be retained as a fall back from option 15
17. Payments < or > compensation[101]	**Consensus on not taking the option to detailed assessment.** The group noted that this option was considered in detail as part of PR13 and was rejected. Network Rail - if there is a major issue with Schedule 8, it is not here where the problem lies.
18. Recover end-user compensation	**Consensus on taking the option to detailed assessment given the move by DfT towards the creation of more direct links between passenger and industry compensation and the direction of recent franchises which automated refunds.** Network Rail - this issue currently topical and worthy of further investigation. Freight - queried how customer compensation payments in Schedule 8 would affect freight, indicating that it was not clear what the balancing number would be to fund the payments. The further analysis should address this point.
Possessions regime	
19. More frequent access charge supplement (ACS) recalculation	**Consensus on taking the option to detailed assessment.** There was a view from the group that the current arrangements do not acknowledge the fact that Network Rail's work plan inevitably changes from that assumed in the data used to set the ACS. There was a view that Network Rail benefits from these change through over compensation when work is not undertaken or is delayed.
20. Benchmarked regime	**Consensus on not taking the option to detailed assessment.** Participants noted that this option had links to franchising reform but were also of the view that the option delivers little change and is therefore unlikely to be sufficiently beneficial to warrant a more detailed assessment.
21. Payments < or > 100% compensation	**Consensus on not taking the option to detailed assessment.** See option 17
22. Reform discounts	**Consensus on taking the option to detailed assessment given the view that discount rates/timing have not be updated to reflect the fact that passenger now have better and more immediate access to information about works that impact services that they may wish to use.** Network Rail - not clear that the approach remained up to date and this is another example of an area where the industry has strong view that makes this option worthy of further analysis.

[101] These options relate to payments being set at a level greater or less than compensation, the same is true of option 21